Above: Braxted Park © Paul Starr

Farmland - supporting actions

7. Identify space on the least productive land of the farm for habitat creation or restoration

Develop small patches for nature in areas of low crop yield on the farm.

Scale of action

Regional

Nature recovery benefits

- Increases biodiversity, supporting native plant and animal species
- Attracts natural predators of pests, reducing the need for chemical pesticides
- Supports pollinator populations, enhancing crop pollination and improving yields

Wider benefits

- Contributes to soil health
- Prevents erosion
- Sequesters carbon

8. Survey the area to better understand existing wildlife and specific habitat requirements

Use ecologist consultancies or volunteers to survey farmland to provide an overview of current status and suitable interventions.

Survey disused pits and quarries on farmland for their potential for Nature Recovery.

Scale of action

Local

Nature recovery benefits

- Improves understanding of ecological context
- Helps assess the quality, diversity and condition of existing habitats within the study area
- Helps identify rare, threatened and endangered species that may inhabit the area
- Helps detect and monitor invasive species that may threaten native biodiversity

Wider benefits

- Facilitates monitoring and evaluation
- Aids design and placement of interventions
- Engages local communities, citizen scientists and stakeholders in wildlife monitoring and conservation efforts

9. Increase organic matter to feed soils and improve soil quality

Increase use of farmyard manure, compost and living mulch/covercrops.

Avoid disturbing the soil by decreasing ploughing or heavy doses of fertiliser.

Scale of action

Local

Nature recovery benefits

- Provides habitat and food for a diverse array of soil organisms, including bacteria, fungi and earthworms
- Releases nutrients gradually over time, providing a steady supply of nutrition to plants

Wider benefits

- Reduces input costs by reducing the need for synthetic fertilizers and pesticides
- Improves soil structure and quality
- Improves soil water-holding capacity, reducing water runoff
- Controls erosion
- Promotes carbon sequestration
- Reduces environmental impacts associated with chemicals and excess nutrients

10. Control invasive species

Control and manage populations of invasive species.

Regularly monitor farmland for signs of pest infestations or invasive species outbreaks. Early detection allows for prompt intervention and prevents population buildup.

Employ mechanical methods such as hand-weeding, mowing or mulching to physically remove invasive plants.

Scale of action

Regional

Nature recovery benefits

- Protects vulnerable or endangered species
- Can help protect biodiversity by preventing the displacement or extinction of native species

Wider benefits

- Helps protect animals from injury, stress and disease caused by predatory attacks
- Can enhance the resilience and productivity of agricultural landscapes

Farmland

Above: Tolleshunt D'Arcy © Paul Starr

11. Practice nature-friendly farming

Limit the use of pesticides and chemical fertilisers, reduce carbon emissions and use sustainable processing methods.

Prioritise soil health through methods such as reduced tillage, cover cropping and additions of organic matter.

Scale of action

Regional

Nature recovery benefits

- Mitigates climate change
- Promotes biodiversity by creating and maintaining diverse habitats
- Promotes habitat connectivity by maintaining wildlife corridors

Wider benefits

- Improves soil health
- Protects water quality
- Enhances the provision of ecosystem services such as pollination, soil fertility and water purification
- Reduces water pollution and enhances water quality
- Is economically viable and socially responsible

12. Support farm clusters

Work together as groups of farmers locally.

Farms within a cluster are typically located near each other, often within the same region or geographic area.

Scale of action

Regional

Nature recovery benefits

- Allows larger landscape scale nature recovery projects, including connected habitats
- Enhances biodiversity across landscapes, supporting a wide range of native species and ecosystems
- Promotes ecosystem services such as pollination, pest control and soil fertility

Wider benefits

- Enables farmers to share knowledge, exchange best practice and collectively address environmental challenges
- Fosters a culture of conservation and stewardship as well as community cohesion
- Enhances the resilience of agricultural and natural systems to environmental changes and disturbances
- Supports sustainable land management
- Provides opportunities for farmers to collaborate on various aspects of agricultural production

6.6 Urban

Foreword by Southend-on-Sea City Council

With a population of approximately 1.9 million[31] and rising, Essex is one of the most developed counties in England. Southend-on-Sea, Colchester, Chelmsford, and Basildon make up the largest settlements in Essex, but there are many more town and villages adding to the urban nature of the county.

A lot of amazing natural spaces in Essex are tucked away in our cities and towns. From our urban parks, street trees and community commons, to our roof crevices and back gardens, all serve as habitats for wildlife. Swifts, for instance, are migratory birds that visit the UK every year to breed, nesting in roof spaces and other suitable nooks and crannies. Urban spaces have the potential to function as green corridors, or steppingstones, to allow wildlife to connect to the wider landscape.

Parks and gardens provide habitats for a variety of plants, insects, birds, and small mammals. By incorporating diverse plant species and features like ponds, meadows and hedgerows, these green spaces can support a wide range of wildlife. Well-designed parks and gardens can help manage water runoff and reduce the risk of flooding by absorbing rainfall and allowing it to infiltrate into the ground.

However, due to the expanding human population, our green spaces and urban wildlife are under more pressure to make room for new housing and other necessities of urban life. But that does not mean that towns and cities must be devoid of nature. For example, brownfield sites — 'disused developed land' can serve as both a valuable wild space for nearby communities and a refuge for a variety of priority invertebrates. Managing amenity urban green space so that more is left or managed for nature – whether it's scrub, grassland, woodland or wetland – can also help to make habitats bigger and better in urban areas, and is already happening in some places.

Our towns and cities' green and blue spaces are very important right now. They do more than just help save different kinds of plants and animals. They also make the air and water cleaner, reduce the chances of floods and extreme heat, soak up carbon through plants and natural materials, and make people healthier and happier by giving them places to relax and connect with nature. It is therefore important to consider all of these benefits and maximise opportunities for nature recovery when we plan new homes, businesses and other building projects.

As urban areas grow and change there will also be opportunities to improve access to nature for residents, for example by creating or expanding country parks. Southend-on-Sea City Council has a long-standing ambition to create a new country park on its northern edge to increase access to natural green space for residents in the eastern part of the city, and form part of the wider South Essex green infrastructure network.

Southend-on-Sea City Council

Foreword by Colchester City Council

The outdoor spaces closest to us, such as our local parks, gardens, balconies and windowsills represent valuable and vital spaces for nature. Nature recovery action can be achieved on smaller sites and very much begins at home with small steps.

In Colchester City, a network of countryside sites, parks and open spaces of all shapes and sizes are managed with consideration for habitat connectivity.

Wildlife is very adaptable, but it needs the basics to survive, including food, water and shelter and enough space to find mates and breed a successful population. Providing linking routes for wildlife might be in the form of bird boxes on the side of our sheds, hedgehog doorways in our fences, bird baths and longer grass in our gardens, wildlife ponds, wildflower planting, or trailing wisteria on the side of our house. Anything that makes it easier and safer for the wildlife that requires more space to survive, and to be able to move in and out of the wider countryside or neighbouring habitats.

Colchester City Council

Biodiversity priorities

BIGGER HABITAT PRIORITY:
To create 3,100 hectares of new habitats in urban areas in Essex. This can be achieved by creating new green and blue spaces in the heart of our local communities, for example in gardens, balconies and windowsills; and by developing more green roofs and walls, street trees, community gardens, and SUDS.

BETTER HABITAT PRIORITY:
Embrace natural processes and allow natural events to progress organically in our urban parks, gardens and roadside verges, to encourage a more diverse range of wildlife to inhabit those spaces.

MORE CONNECTED HABITAT PRIORITY:
New developments, local amenities and green spaces should all be designed to deliver new and improved spaces for nature, to ensure nature networks are created across our villages, towns and cities, allowing wildlife to travel easily.

Urban - actions

1. Introduce more green space into urban locations

Incorporate green spaces and elements into the urban environment and infrastructure. This can include:

- street trees
- shrubs
- planters
- green roofs and walls
- small green spaces between buildings
- gardens
- ‘play on the way’ features/trails

Encourage and create habitat for birds that nest in or near to buildings e.g. Swifts, House Martins and Swallows. Install bat boxes on buildings and urban trees.

In urban areas, it is crucial to select appropriate species for planting by considering factors such as changing climate, soil type, and maintenance requirements to ensure the landscape’s survival.

Scale of action

Local

District / Borough / City

Nature recovery benefits

- Attracts high levels of biodiversity
- Provides a variety of stepping stones for wildlife

Wider benefits

- Improves the wellbeing of inhabitants
- Reduces noise pollution
- Creates walkable neighbourhoods and promotes healthy lifestyle
- Promotes traffic-free routes in towns and cities
- Brings in investment to towns
- Helps mitigate traffic pollution
- Provides local access to nature
- Offsets carbon emissions
- Improves air quality
- Mitigates global warming
- Reduces flood risk

Below: Brightlingsea © Paul Starr; Bumble bee on flower © Paul Starr; Brimstone © Charlie Oliver

2. Create above ground drainage features in the urban environment

Create shallow depressions in the ground, planted with flowers and vegetation, to help absorb excess surface water runoff.

Scale of action

Local

District / Borough / City

Nature recovery benefits

- Provides biodiversity hotspots and vital sources of food and shelter in urban landscapes for a range of species
- Can help filter pollutants from water before it enters watercourses

Wider benefits

- Slows the rate at which water enters the drainage system
- Protects against surface water flooding due to high rainfall
- Strengthens resilience to drought
- Allows authorities to take a proactive approach to maintenance before flooding occurs
- Reduces the volume of water entering the sewerage network, thus helping to reduce combined sewer overflows

3. Create pocket forests

Plant native trees and shrubs together, to create a compact, biodiversity rich, and ultra-dense environment. These are known as Pocket or Miyawaki forests.

Scale of action

Local

District / Borough / City

Nature recovery benefits

- Accelerates carbon capture
- Generates higher biodiversity

Wider benefits

- Improves individual and community health and wellbeing

4. Manage wildflower strips

Cut wildflower meadows or strips with flower-rich perennial planting, towards the end of the summer /early autumn, and remove the cuttings.

Scale of action

Local

District / Borough / City

Nature recovery benefits

- Helps wildflower habitats get better and richer every year
- Provides valuable habitats for wildlife and important refuge for wildlife in urban spaces
- Supports wide range of biodiversity

Wider benefits

- Improves connection to nature for residents and the community
- Encourages people to do more for wildlife in their own spaces such as gardens or allotments
- Improves residents' health and wellbeing

5. Manage roadside verges for wildlife

Minimise mowing frequency to allow wildflowers and grasses to grow and flower, providing habitat and food for pollinators and other wildlife.

Adopt varied mowing regimes across different sections of roadside verges to create a mosaic of habitats. This includes leaving some areas unmown to develop tall vegetation, while mowing others intermittently to maintain diverse habitat structures. Some verges will need mowing for safety reasons, but consideration for wildlife is recommended.

Minimise the use of herbicides along roadside verges.

Scale of action

Local

District / Borough / City

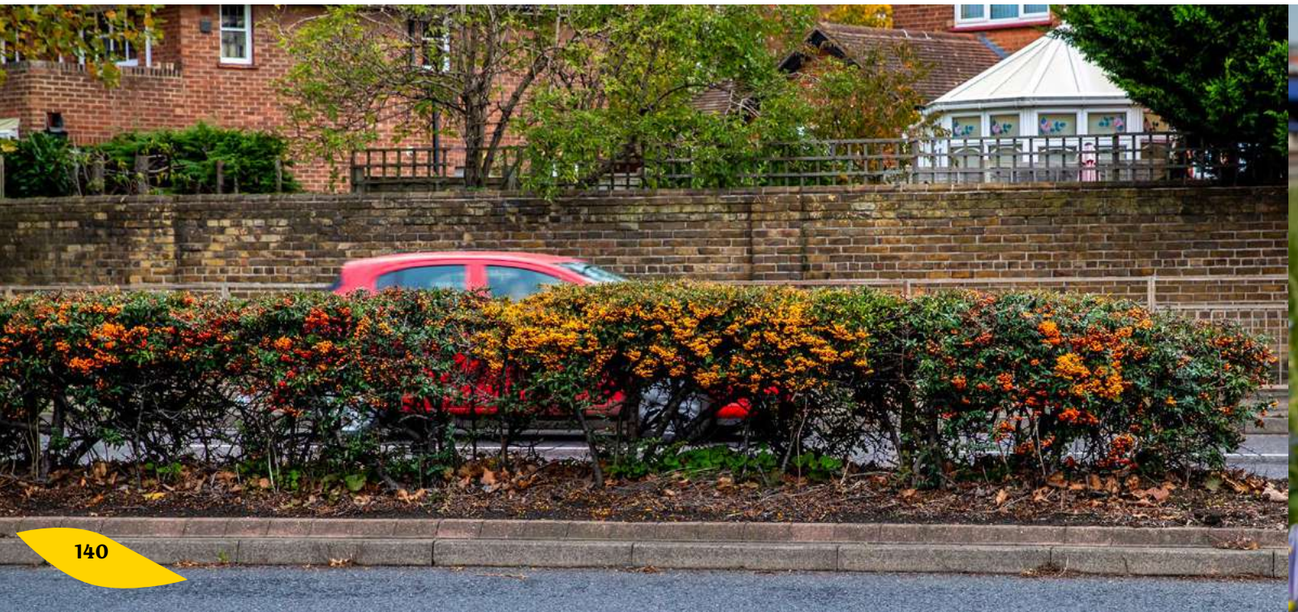
Nature recovery benefits

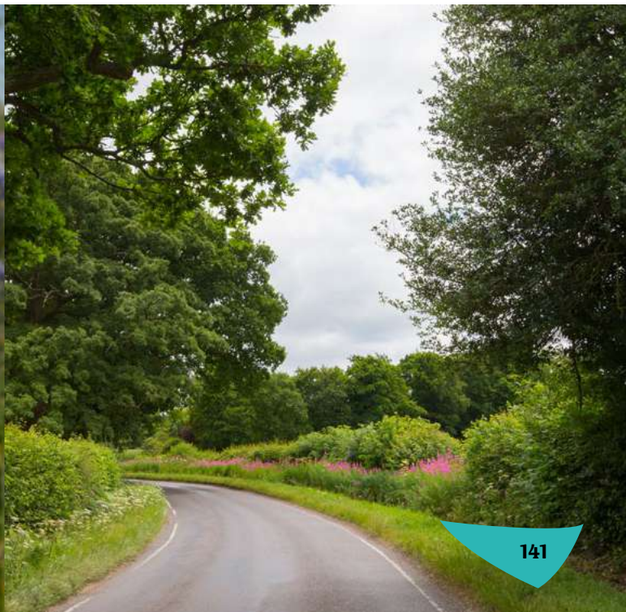
- Roadside verges can serve as important wildlife corridors and habitat refuges in urban landscapes
- Serves as stepping stones and corridors for wildlife movement between larger green spaces in urban areas
- Provides valuable habitat and forage resources for pollinators such as bees, butterflies and other insects

Wider benefits

- Contributes to the overall green infrastructure of urban areas, providing pockets of green space that improve air quality, reduce urban heat island effects and enhance aesthetic value
- Reduces stormwater runoff by absorbing and infiltrating rainwater, reducing the risk of flooding and soil erosion in urban areas
- Improves physical and mental health outcomes for urban residents

Below, left to right: Chelmsford © Paul Starr; Wildflowers, grasses and hedgerows on roadside verges © Essex Wildlife Trust





6. Incorporate green roofs and walls into built environment

Create and embed in urban areas more green roofs and walls – sustainable building features that incorporate vegetation into urban infrastructure.

They can be installed on a variety of building types, including residential, commercial and industrial buildings. On a household level, they can be embedded on the roof of a shed or bin shelter, the roof of a house, or the wall of a house or shed.

They are designed to include a layered system to intercept and retain rainfall.

Scale of action

Local

Household

Nature recovery benefits

- Acts as stepping stones for wildlife, linking areas of greenspace
- Enhances biodiversity

Wider benefits

- Contributes to a more pleasing environment in which to live and work
- Allows water to be fed into a grey water system for use within the building
- Lowers urban air temperatures, helping to combat the urban heat island effect
- Reduces energy needed to heat and cool buildings by keeping them warmer in the winter and cooler in summer
- Absorbs rain water and reduces flooding risk
- Vegetation slows run-off and retains water
- Helps manage stormwater

Above: Monty's Hide, Two Tree Island

7. Create urban wetland

Create or restore urban parks around lakes, streams and ponds.

Start by looking at what water features existed prior to urbanisation in the area. Consider factors such as site accessibility, soil conditions, regulatory requirements and stakeholder engagement.

Scale of action

District / Borough / City

Household

Nature recovery benefits

- Provides habitat for wide range of wildlife
- Urban wetlands provide important breeding, nesting, foraging and migration habitat for wildlife, including birds, amphibians, reptiles, fish and invertebrates.
- Function as green corridors, linking fragmented habitats and facilitating the movement of wildlife between different green spaces in urban environments

Wider benefits

- Reduces the risk of overloading drainage systems during intense rainfall events
- Reduces flood risk by absorbing and storing excess rainwater, slowing down runoff, and reducing peak flow rates during heavy rain
- Serve as natural filters, trapping sediments, nutrients and pollutants from runoff before they enter waterways
- Regulates local microclimates and moderates temperature extremes
- Provides opportunities for outdoor recreation, environmental education and nature-based experiences for local residents and visitors
- Enhances the visual appeal of urban landscapes

8. Plant Trees

Seek advice to ensure that the "right tree is planted in the right place", and so that there is a management plan in place to care for the tree after planting.

Scale of action

Local

District / Borough / City

Household

Nature recovery benefits

- Creates habitats for wildlife
- Reduces flooding risk
- Improves air quality

Wider benefits

- Connects people to cultural heritage
- Promotes health and wellbeing
- Improves streetscape and pride of place, creating more attractive places where people live and work

9. Create a wildlife friendly garden

Design your garden to provide food, shelter and nesting sites for local wildlife. Plant native species and incorporate a variety of flowering plants to attract pollinators. Leave some areas wild for insects and small mammals and install bird feeders and nesting boxes.

Install a mini wetland or garden pond.

If you do not have a garden, consider an allotment. Or consider window boxes for fruit and vegetables or flower planting.

Consider creating hedgehog highways by creating small access points at the bottom of fences and gates, for hedgehogs to get access between gardens.

Use drought tolerant planting schemes and harvest rainwater from roofs to reduce mains water usage.

Scale of action

Local

Household

Nature recovery benefits

- Increases local biodiversity levels
- Creates local refuge for wildlife
- Supports pollinator populations

Wider benefits

- A greener garden can reduce risk of flooding and negative impact of extreme weather events
- Contributes to ecosystem services such as water filtration, soil health and carbon sequestration

10. Compost organic waste

Start a compost bin or pile to recycle garden clippings, food waste and other organic waste into nutrient-rich compost. Composting can enrich soil fertility.

Scale of action

Local

Household

Nature recovery benefits

- Creates a thriving ecosystem for invertebrates

Wider benefits

- Acts a carbon sink – taking carbon out of the atmosphere
- Reduces landfill waste
- Produces nutrient rich soil amendment
- Enriches garden soil
- Reduces need for chemical fertiliser
- Improves soil health
- Conserves water and reduces risk of local flooding

11. Reduce use of pesticides and herbicides in public parks and open spaces

Use more organic fertiliser options or companion planting and reduce or cease use of pesticides and harmful chemicals.

Scale of action

District / Borough / City

Household

Nature recovery benefits

- Urban areas become safer havens for biodiversity, promoting the health of ecosystems and supporting populations of pollinators, natural predators and other beneficial species
- Supports beneficial soil organisms, enhancing nutrient cycling and promoting healthy plant growth
- Improves ecological resilience

Wider benefits

- By reducing exposure to these chemicals, especially in densely populated urban areas where people live, work and play, the overall health and well-being of residents can be safeguarded
- Reduces a major source of pollution, which can have harmful effects on soil, air and water
- Improves water quality, benefiting aquatic ecosystems, recreational water users and downstream communities

Below: Play area © Essex Wildlife Trust

12. Effectively manage urban watercourses

Create or enhance space for nature along river banks passing through urban spaces.

Scale of action

District / Borough / City

Nature recovery benefits

- Creates a buffer for wildlife to travel along the river safely, improving biodiversity connectivity
- Provides important breeding, nesting, foraging and sheltering habitat
- Enhances ecological resilience in urban environments
- Facilitates the movement of wildlife between different green spaces in urban areas

Wider benefits

- Filters pollutants, sediments and nutrients from runoff before they enter waterways, improving water quality in urban rivers and streams
- Riverbank areas offer opportunities for outdoor recreation, leisure and relaxation in urban settings
- Helps mitigate the impacts of climate change by providing natural cooling, shading and carbon sequestration
- When planned at scale, riverbanks can become green corridors offering the opportunity for movement of pedestrians and cyclists from urban areas into the wider countryside

13. Create wildlife crossings

Develop green bridges (or eco-bridges) across large, busy roads such as motorways, that prevent wildlife from moving between habitats.

Scale of action

District / Borough / City

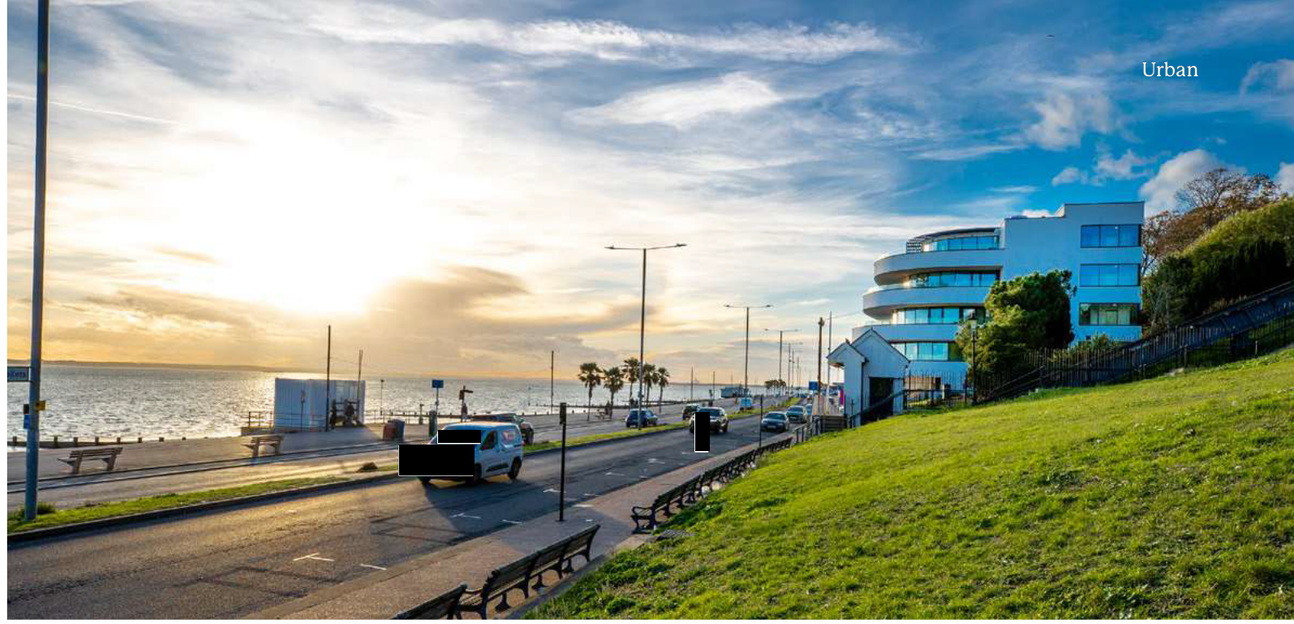
Regional

Nature recovery benefits

- Creates a green corridor for wildlife
- Reduces landscape fragmentation and genetic isolation
- Promotes biodiversity richness

Wider benefits

- Protects both human safety and wildlife populations, reducing the number of collisions, injuries and fatalities
- Improves and supports ecosystem services, by increasing functionality of the landscape and continuity of habitat
- Provides opportunities for recreational activities such as hiking, biking and wildlife watching, allowing people to connect with nature and experience wildlife in their natural habitats
- Enhances the aesthetic beauty and cultural value of transportation infrastructure



Above: Southend on Sea © Paul Starr

Urban - supporting actions

14. Understand existing local habitats and species

Assess the existing biodiversity and connectivity of areas under your management as an important first step to creating new spaces for wildlife and protecting the wider environment.

Monitor biodiversity on brownfield sites as they can often become important habitats for invertebrates and early successional communities.

Scale of action

District / Borough / City

Household

Nature recovery benefits

- Helps to identify the habitat types needed
- Allows consideration of the needs of wildlife in nearby areas and their interactions with humans
- Local knowledge allows for more targeted habitat interventions and efforts to protect and preserve existing biodiversity
- Helps to consider changes to migratory and adaptation patterns of species in response to climate change

Wider benefits

- Local knowledge can inform land use planning and inform adaptation strategies
- Provides important information, and data, for ongoing monitoring efforts
- Fosters community sense of ownership and stewardship for local green spaces
- Citizen science initiatives can encourage community participation in nature recovery efforts

15. Empower communities and raise awareness

Encourage and support communities to engage in environmental activity.

Provide educational opportunities to raise awareness about environmental issues, conservation practices and sustainable living strategies.

Create opportunities for community members to get involved in environmental volunteering and citizen science projects. Promote the use of new technology and mobile recording apps.

Engage youth in environmental activities and leadership opportunities to empower the next generation of environmental stewards. Partner with schools, youth organisations, and youth councils to integrate environmental education into extracurricular activities.

Establish community gardens, parks and green spaces that provide opportunities for people to connect with nature, grow food and engage in outdoor activities.

Forge partnerships and collaborations with community organisations, environmental groups, schools, businesses and government agencies to leverage resources, expertise and networks. Work together on joint initiatives, projects and campaigns that address local environmental challenges and priorities.

Scale of action

Local

District / Borough / City

Regional

Nature recovery benefits

- Increases consideration for nature and wildlife in daily behaviours
- Raises awareness of the importance of nature

Wider benefits

- Encourages greater action for the benefit of all
- Creates a sense of ownership, pride and responsibility among residents
- Promotes environmental stewardship
- Promotes physical activity, social interaction and mental well-being among community members
- Offers opportunities for experiential learning, skill development and capacity building
- Strengthens the sense of place and local identity within neighbourhoods and urban areas

Right, top to bottom: Trust Links Community Garden Westliff © Paul Starr; Market Hill Garden, Maldon, Essex © Paul Starr

6.7 Freshwater and Wetlands

Foreword by Essex and Suffolk Rivers Trust

Our rivers are the lifeblood of the county but are increasingly under pressure from abstraction, pollution, habitat degradation and the extremes of climate change.

To increase their resilience, we must restore natural processes, slowing flow to enable better use of our floodplains and improving diversity of flow rates to maintain the gravel beds so essential to river-flies and fish (including the highly endangered Essex brook lamprey).

We must promote the vital role of bankside trees shading our rivers, which provide the woody habitats so important for a diversity of habitats for mammals and fish. Most importantly we need to buffer our rivers from the impacts of development: we must ensure there is land either side of our rivers which can be used by wildlife and which will help prevent watercourses becoming polluted.

Only by nurturing and restoring our rivers can we keep them resilient against future challenges.

Essex and Suffolk Rivers Trust

Biodiversity priorities

BIGGER HABITAT PRIORITY:
To create 22,000 hectares of new freshwater habitats and to enhance the water quality of our river network, by creating 6,000 hectares of new river buffer habitat.

BETTER HABITAT PRIORITY:
Improve ecological status and quality of water bodies through the enhancement of river wildlife buffers, creation of in-channel features, reconnection of the floodplain, flood storage and sustainable drainage systems.

MORE CONNECTED HABITAT PRIORITY:
Invasive Non Native Species (INNS) eradication at landscape scale, which would allow connectivity of safe habitat for native species.

Foreword by WWT

Wetlands are one of the world's most biodiverse habitats, providing habitat for many threatened species and vital stopover sites for migratory waterbirds. It is estimated that 40% of the world's plants and animals depend on wetlands, and that every year, 200 new species are discovered in freshwater wetlands[32].

Wetland habitats can also help to mitigate the impacts of climate change, being one of the most effective carbon sinks on the planet.

In coastal areas, saltmarshes can accumulate and store vast amounts of carbon, due to their rapid sedimentation rates and the ongoing burial of organic material. But wetland loss and degradation can transform wetlands from carbon sinks to carbon emitters.

Wetlands can reduce flood risk by absorbing floodwater and regulating flows; and help to clean water, by removing nutrients, pesticides and sediment from agricultural runoff, and filtering pollutants from industrial and urban runoff.

WWT research has also shown that when people spend time around wetlands, they can reduce levels of anxiety, stress and depression[33].

With 75% of UK wetlands having been lost over the last 300 years, there is a huge potential for wetland restoration and opportunity to bring back vital ecosystem services and biodiversity to the UK[34].

As part of a national study to map potential for wetland restoration focussed on maximising their ecosystem service provision, WWT has identified around 51,200 hectares of wetland potential in Essex. This includes:

- 18,100 hectares for water treatment
- 3,700 hectares for flood resilience
- 8,200 hectares of wetlands to improve urban wellbeing
- 21,200 hectares of saltmarsh potential[35]

This potential is mostly focused on the Essex coastline, where there is opportunity to expand existing saltmarsh areas through managed realignment; and to the south of Chelmsford where wetlands could potentially provide significant water quality benefits.

Essex has considerable potential to help in the recovery of the UK's wetlands and improving landscape resilience more widely. By seizing this opportunity, Essex can reap the biodiversity-boosting, carbon-sinking, water-purifying, flood-buffering, and mood-lifting benefits that wetlands bring.

WWT

Freshwater and wetlands - actions

1. Reduce or eradicate sources of pollution

Use organic fertilizers instead of chemical fertilizers and pesticides.

Promote sustainable agricultural practices to minimize nutrient runoff, sedimentation and pesticide contamination in freshwater habitats.

Encourage farmers to implement conservation tillage, cover cropping and nutrient management strategies to protect water quality.

Scale of action

Regional

Nature recovery benefits

- Supports diverse aquatic species
- Enhances the quality and availability of aquatic habitats, including rivers, lakes, wetlands and streams.
- Promotes growth of aquatic plants and algae, which form the base of freshwater food webs
- Can protect populations of rare and vulnerable species and help them recover

Wider benefits

- Minimises risks of waterborne illnesses and contamination, safeguarding public health and well-being
- Supports fisheries and food security
- Promotes sustainable fish populations
- Improves water purification, flood control and nutrient cycling
- Enhances water quality

Below: Kingfisher © Jon Hawkins

2. Re-establish lost ponds

Restore ponds which have become lost in the landscape over time, mostly due to agricultural land reclamation and often through in-filling.

Where ponds have been lost permanently, create new ponds in the landscape to compensate for those lost.

Scale of action

Local

Nature recovery benefits

- Can support diverse aquatic and semi-aquatic species, contributing to the conservation of freshwater biodiversity
- Provides habitat for amphibians, invertebrates and other wildlife
- Improves the connectivity of freshwater habitats
- High numbers of wetland plant seeds remaining in the soil may be resurrected, leading to fast colonisation of wetland plant species

Wider benefits

- Can provide opportunities for cultural and educational engagement where lost ponds have historical and cultural significance
- Can contribute to landscape resilience
- Helps regulate water flow, filter pollutants and support nutrient cycling, improving water quality and ecosystem functioning

3. Create and enhance green infrastructure to improve water quality

Improve woodlands, grasslands, meadows, scrub and hedgerows alongside or buffering freshwater habitats. This can include the restoration and maintenance of ditches.

Scale of action

Regional

Nature recovery benefits

- Can provide shade and evaporative cooling, moderating water temperatures and creating more favourable conditions for aquatic life
- Enhances biodiversity

Wider benefits

- Helps manage nutrient runoff and reduce risk of eutrophication and harmful algal blooms
- Filters pollutants from stormwater runoff, improving water quality before it enters water courses
- Reduces pollutants reaching water bodies
- Helps stabilise soils and reduce erosion, preventing sedimentation and reducing turbidity in water bodies
- Mitigates floods
- Boosts climate change resilience

Above, left to right: Tufted duck © Essex Wildlife Trust; Silver-Washed Frittilary © Andrew Armstrong; Water vole © Essex Wildlife Trust

4. Manage invasive species

Strategically manage the eradication of INNS, for example working from upstream to downstream along a river system.

Remove the invasive non-native species Himalayan Balsam alongside riverbanks by pulling the plant out by the roots.

Remove other INNS such as Floating Pennywort and New Zealand Pygmyweed and dispose of plant matter securely.

All users of waterways should adopt personal biosecurity measures following the ‘Check, Clean, Dry’ procedure for clothing and equipment.

Eradicate mink, which represent a major cause of decline in water voles and ground nesting birds. It is important to note that eradication efforts for mink or any invasive species should be carried out in conjunction with projects outlined by organisations already undertaking invasive species control, with careful consideration of ecological impacts and in compliance with relevant regulations and ethical guidelines.

Scale of action

Regional

Nature recovery benefits

- Protects endangered species
- Improves habitat quality
- Conserves biodiversity
- Enhances food availability
- Boosts ecosystem resilience
- Allows for the restoration of native habitats, which are often more resilient and better suited to supporting native wildlife
- Helps preserve native flora and fauna and protects their habitats

Wider benefits

- Helps restore ecosystem processes, ensuring the proper functioning of ecosystems and the services they provide

5. Remove barriers to fish passage

Use the **Essex Fish Migration Roadmap** to identify areas where navigation for aquatic life would be restored by removing barriers to fish passages. The removal of barriers should not be completed without the involvement and engagement of key stakeholders and expertise, including government agencies, conservation organisations, local communities and landowners in the planning and implementation process.

Scale of action

Regional

Nature recovery benefits

- Enables better movement of species across the freshwater landscape, including migratory species like salmon, trout and eels
- Allows fish to access upstream spawning and rearing habitats, restoring natural migration patterns and promoting healthy fish populations
- Reconnects fragmented river and stream habitats, enhancing habitat connectivity and promoting gene flow among fish populations

Wider benefits

- Increases fishery productivity and supports sustainable fisheries management
- Improves connectivity between rivers and floodplains, allowing fish to access important floodplain habitats for feeding, spawning and refuge during high-flow events
- Healthy fish populations contribute to water quality by controlling algae growth, consuming organic matter and recycling nutrients

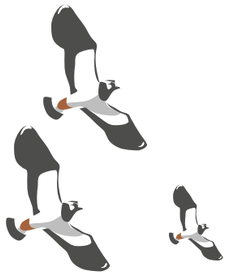
6. Create river buffers

Enhance natural buffers along waterways to filter pollutants.

Create wildlife river buffers by establishing vegetated zones along the banks of rivers and streams to provide habitat for wildlife, improve water quality and protect the integrity of the waterway.

Scale of action

Regional



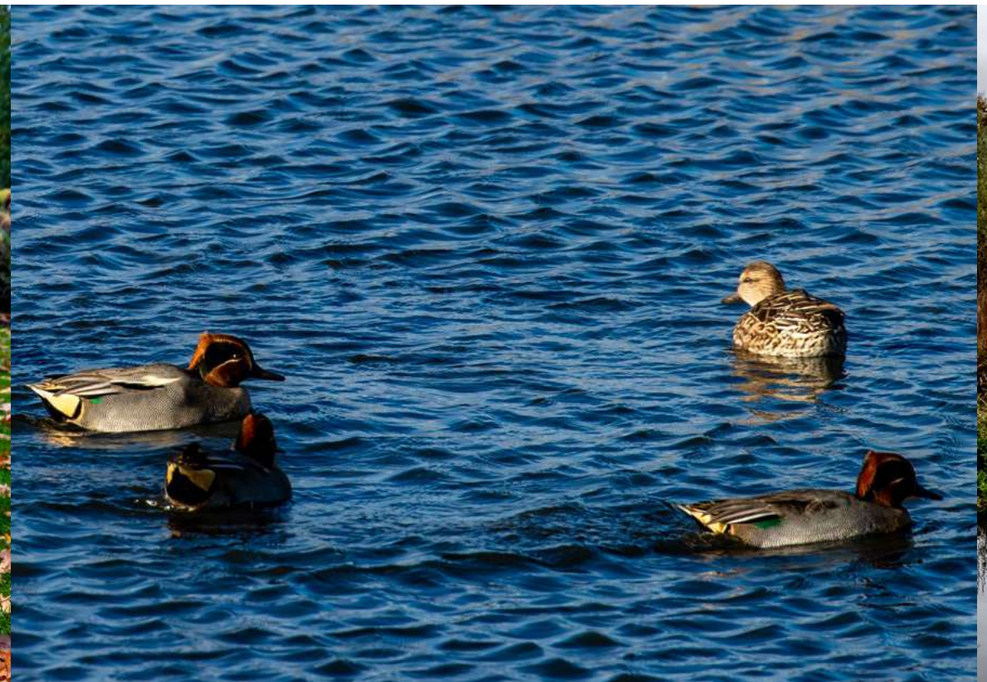
Nature recovery benefits

- Habitat enhancement
- Provides habitat for a diverse range of plant and animal species, such as fish, amphibians, insects and mammals

Wider benefits

- Helps filter and absorb pollutants, sediment and nutrients from surface runoff, thereby improving water quality.
- Acts as natural floodplains, absorbing and slowing floodwaters during heavy rainfall or high flow events

Below, left to right: Mute Swan © Paul Starr; Eurasian Teal © Paul Starr; Chelmer Valley Nature Reserve © Paul Starr



7. Safeguard deep peat sites by restoring natural hydrological function

Restore natural hydrological function by blocking up or removing drainage features on site.

Where removal of trees on deep peat is proposed, the Peatland Decision Support Framework Tool[36] should be used to inform decisions.

Scale of action

Local

Nature recovery benefits

- Habitat for rare and specialist species

Wider benefits

- Stores and sequesters carbon
- Slows the flow of water on the landscape

Freshwater and wetlands - supporting actions

8. Empower communities to manage local freshwater habitats

Co-design, co-create and co-manage wetland creation in the community, for example via school and community outreach.

Scale of action

Local

Nature recovery benefits

- Promotes sustainable use of freshwater resources, ensuring long-term viability and resilience of aquatic ecosystems
- May allow better monitoring and enforcing of regulations, leading to more effective protection of freshwater habitats against illegal activities and pollution

Wider benefits

- Fosters a sense of ownership and responsibility, leading to more active involvement in conservation efforts
- Valuable traditional knowledge about local ecosystems can complement scientific understanding and inform effective management practices
- Empowers communities
- Promotes sustainable habitat management

Above: Blue House Farm Wetland development © Essex Wildlife Trust

Far left: Male smew © Essex Wildlife Trust

Left: Brent Goose © Jon Hawkins

Left below: Common Lizard © Essex Wildlife Trust

9. Investigate sites for potential large-scale wetland creation

Assess existing, adjoining sites that could be potential opportunities for wetland habitat creation such as brownfield sites, local authority owned land, NHS land, new development sites, mineral extraction sites and other publicly owned land.

Scale of action

Regional

Nature recovery benefits

Large-scale wetlands:

- provide habitats for diverse plant and animal species
- are among the most biologically diverse ecosystems
- restore degraded ecosystems and enhance connectivity between fragmented habitats

Wider benefits

- Can offer opportunities for outdoor recreation such as birdwatching, fishing and kayaking, attracting tourists and benefiting local economies
- Can act as natural buffers against floods by absorbing and storing excess water, reducing the risk of flooding in downstream areas
- Filters pollutants and improves water quality
- Helps mitigate climate change

10. Support citizen science by local communities to gather data on freshwater, wetlands and pollution

Support citizen science, community or partner projects to gather more detailed and consistent information on local sources of pollution and information about where action is needed most urgently.

Scale of action

District / Borough / City

Nature recovery benefits

- Can contribute to large-scale data collection efforts, gathering valuable information on biodiversity, habitat conditions and environmental changes.
- This data can help researchers and conservationists better understand ecosystems
- Monitoring efforts can cover larger geographic areas and extend over longer periods of time than would be possible with traditional scientific methods alone
- Fosters a sense of connection to the environment and encourages stewardship behaviours

Wider benefits

- Increases knowledge of green and blue spaces around us
- Empowers community to take ownership of the spaces around them
- Creates opportunities for people to connect with nature and wetlands
- Raises awareness of the detrimental effects of pollution on water quality and biodiversity
- Can improve mental and physical wellbeing

Above: Volunteer river survey at Roman river © Essex Wildlife Trust

11. Raise awareness about local water quality issues

Organise workshops, seminars and public forums to educate community members about local water quality and quantity issues, including sources of pollution, potential health risks and ways to protect water resources.

Use social media, websites and online forums to share information about local water quality issues, share updates on water quality monitoring efforts and provide resources for community members to get involved in conservation activities.

Use the 'Essex Action for Water' information tool in the Essex Water Strategy.

Scale of action

Regional

Nature recovery benefits

- Can promote conservation efforts aimed at preserving water quality and restoring degraded waterways

Wider benefits

- Raises awareness around local water quality issues and water improvement funding available, to reduce ecological impact of agricultural runoff on water bodies
- Encourages responsible water use and conservation practices, such as reducing water consumption, preventing pollution and implementing water-saving technologies
- Can help safeguard local economies that rely on clean water for livelihoods and economic growth
- Enables users to explore actions they can take to improve water quality

Above: Redshank © Jim Higham

12. Utilise water improvement funds

Use water improvement funds, such as Water Industry Nature and Environment Programmes (WINEP), to deliver nature-based solutions to work towards eliminating all adverse ecological impact from pollution sources and water abstraction.

Scale of action

District / Borough / City

Nature recovery benefits

- Promotes environmental conservation and climate resilience
- Nature-based solutions create and restore habitats for a diverse range of plant and animal species, including aquatic organisms, birds and insects

Wider benefits

- Can support community livelihoods and economic growth
- Cleans water
- Protects health
- Naturally filters pollutants, nutrients and sediments from water bodies
- Can help mitigate the impacts of flooding by absorbing and storing excess water

13. Manage rivers and estuaries with a catchment based approach

Support local catchment based partnerships, that plan and implement coordinated action to improve rivers and estuaries, working with landowners and industry[37].

Contact the **Essex Rivers Hub partnership**.

Scale of action

Regional

Nature recovery benefits

- Enhances biodiversity

Wider benefits

- Increases stakeholder engagement
- Enhances success through integrated planning
- Improves water quality
- Reduces flood risk
- Optimises ecosystem services
- This holistic approach considers the interconnectedness of different parts of the waterways and facilitates coordinated management action
- Enables targeted measures to improve water quality by addressing pollution sources such as agricultural runoff, urban stormwater and industrial discharges
- Promotes sustainable water use and allocation
- Supports long-term water security and resilience
- Encourages collaboration and engagement among diverse stakeholders, including government agencies, local communities, industry, agriculture and conservation groups

6.8 Coastal and Marine

Foreword by RSPB

The Essex coast is a big, dynamic, and complex landscape that is globally important for nature and a candidate World Heritage site. Starting near London, the Inner-Thames is the narrowest part of the Estuary and wildlife coexists alongside one the UK's most important economic growth regions, an area dominated by ports and industry.

Moving East, the coast soon gives way to wilder marshes, wide mudflats, open sea and the North Sea. Running throughout this coastline is a characteristic range of habitats, divided almost entirely along its length by coastal sea defences; mudflats, saltmarsh, seagrass beds and beaches, alongside grazing marsh, saline lagoons and scrub-mosaics on the landward side.

The invertebrate-rich tidal mudflats act as a giant feeding station for the thousands of waders, ducks and geese using the East Atlantic Flyway. Both saltmarsh and seagrass beds can sequester and store carbon, provide a natural defence against coastal erosion and act as nursery grounds for fish populations. Shingle and sand beaches provide breeding habitat for vulnerable species such as Little Tern and Ringed Plover.

Under the waves, the marine landscape connects the Essex coast to the North Sea and reveals subtidal habitats including sandbanks, mud and mixed sediments. These help to support a wealth of biodiversity, including the ecologically important native oyster, common seals, and a multitude of shellfish and finfish species including European Bass.

Native oysters are a culturally important marine species, whose restoration will support a range of ecosystem services, as well as increased biodiversity[38]. On the landward side of the sea wall, grazing marsh provides habitat for one of the UK's most important populations of breeding lapwing and redshank, scarce invertebrates and water voles, and as a farmed environment contributes to food production.

The Essex coast will be significantly impacted by climate change, with rising sea levels resulting in the 'coastal squeeze' of intertidal habitats and dry summers diminishing freshwater wetlands. Thankfully there are a range of actions we can take to not only mitigate these impacts but potentially improve the landscape and seascape as a whole.

By adapting the coastline, we can create new saltmarsh habitat and saline lagoons. By using dredged material more beneficially we can restore saltmarsh and create new breeding islands for seabirds.

We can also:

- continue to trial techniques to restore existing and create new seagrass beds
- restore and create new areas of grazing marsh using tried and tested techniques
- manage sea walls more sensitively to benefit bumblebees
- create new areas of scrub using Biodiversity Net Gain
- restore existing habitat by working with local community groups
- take a holistic and connected approach, reducing the pressures on the marine and coastal environment to support its recovery

All of this needs a vision and a plan. The RSPB hopes that the Essex Local Nature Recovery Strategy will be the right framework at the right time to ensure that this vitally important landscape is not only saved but becomes one of the best coastal and marine wetlands in Europe.

Biodiversity priorities

BIGGER HABITAT PRIORITY:
To create 4,000 hectares of new coastal habitat, and 1,000 hectares of new marine habitat to support the creation of a dynamic, resilient ecosystem.

BETTER HABITAT PRIORITY:
Restoration of existing coastal and marine habitats by a combination of active restoration and pressure reduction or removal measures.

MORE CONNECTED HABITAT PRIORITY:
The creation of an adaptive, resilient network of coastal and marine habitats across the landscape that acknowledges the connection between marine, coastal, freshwater and terrestrial ecosystems.

Coastal and marine - actions

1. Create and restore coastal grazing marsh

Replicate natural tidal flooding patterns and support diverse wetland vegetation in suitable coastal areas.

Employ hydrological management techniques such as sluices and tidal gates.

Use grazing and habitat restoration to introduce or encourage salt-tolerant grasses and sedges to grow.

Monitor regularly and manage adaptively.

Restoration of existing grazing marsh, including the use of pumps, sluices and bunds to improve hydrology, fencing and corrals to improve grazing management and harrowing to restore rills.

Predator management, by installing barrier fencing.

Scale of action

Regional

Nature recovery benefits

- Grazing with livestock helps maintain vegetation structure and diversity
- Enhances coastal resilience while providing ecological benefits
- Diversifies habitat for wildlife
- Provides habitat for rare, threatened and migratory species
- Additional breeding habitat

Wider benefits

- Reduces the risk of flooding by absorbing and storing floodwaters during high tides and storm events
- Mimics tidal influences
- Helps to stabilise coastal sediments and prevent erosion along shorelines
- Sequesters carbon dioxide from the atmosphere
- Filters and purifies water by trapping sediment, nutrients and pollutants before they enter coastal waters
- Enhances the resilience of coastal ecosystems and communities to climate change impacts
- Preserves landscape and cultural heritage
- Maintains food security and rural jobs by maintaining livestock farming

2. Create and restore saltmarsh

Consider managed realignment strategies to allow coastal ecosystems to migrate inland in response to sea-level rise and coastal erosion.

Consider removal of sections of coastal defences and/or move them further inland, replacing hard coastal defence measures with soft coastal landforms.

Scale of action

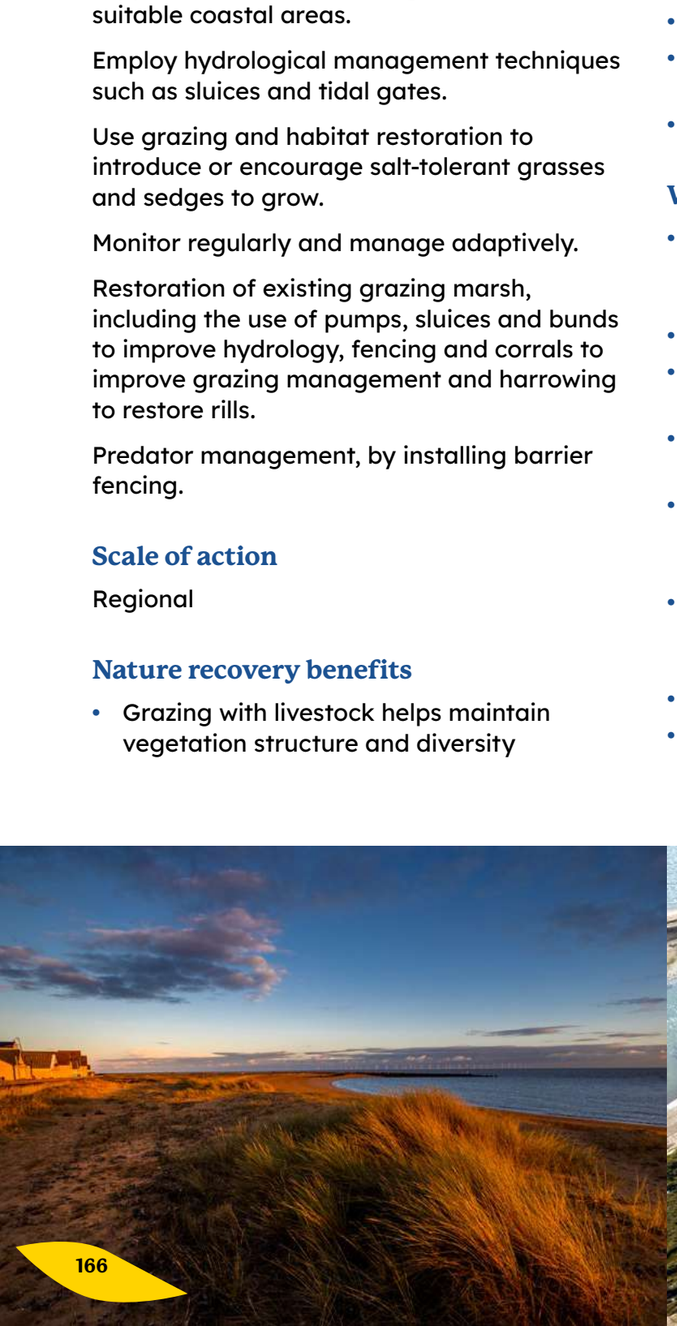
Regional

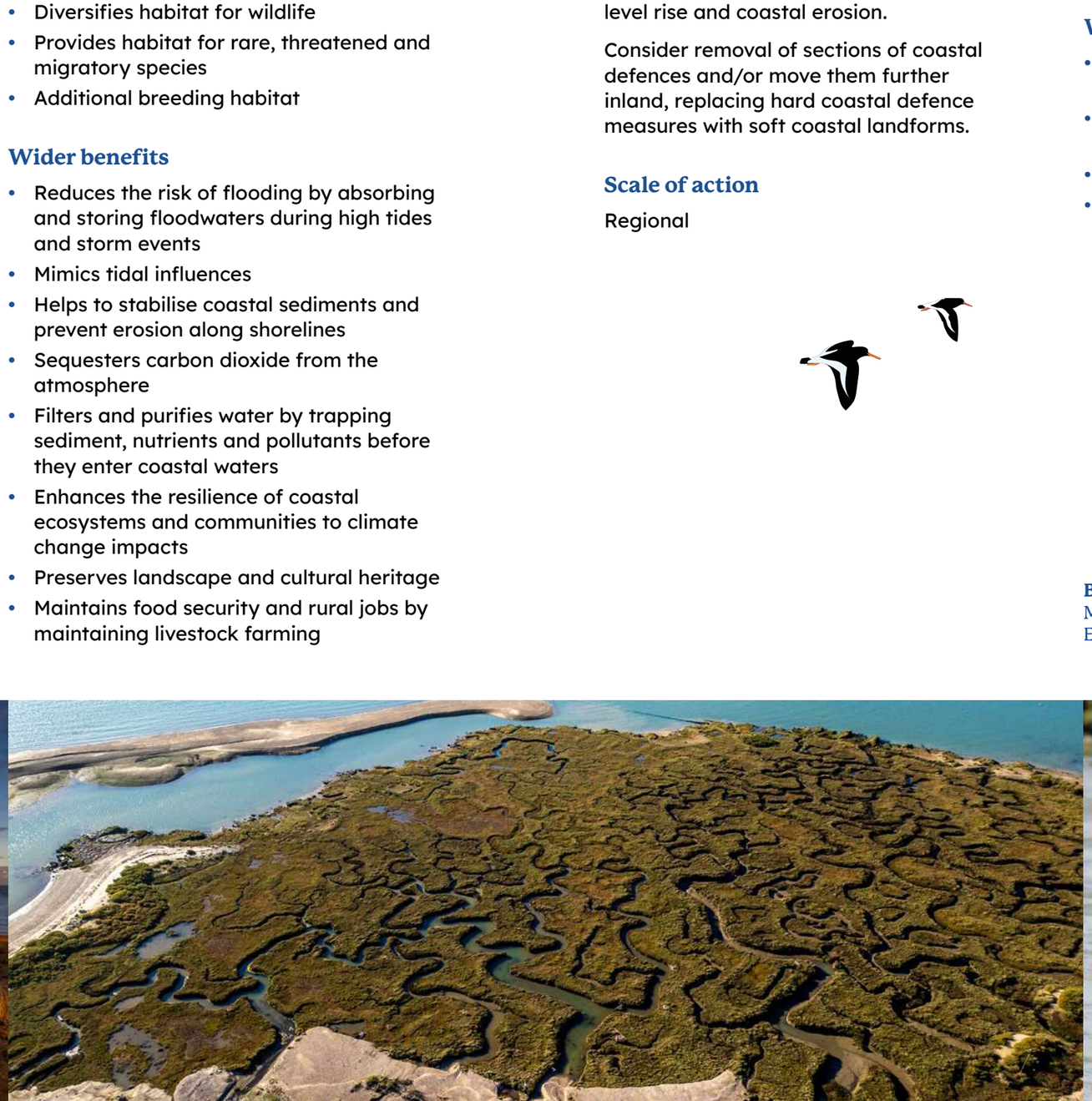
Nature recovery benefits

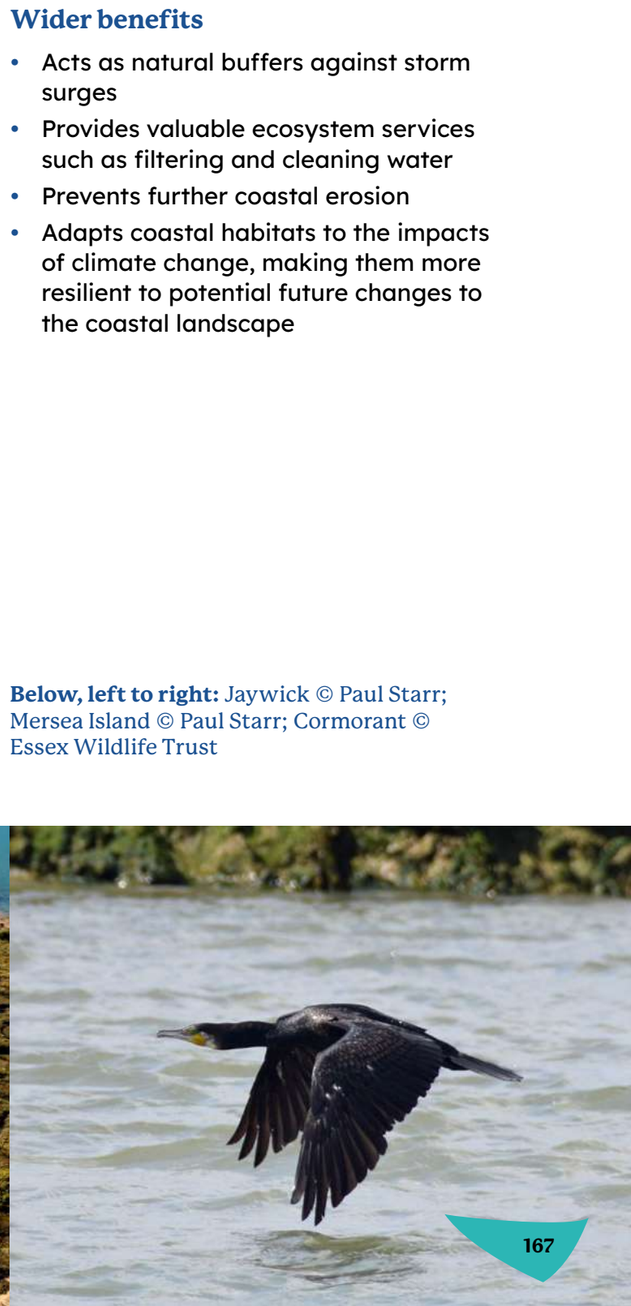
- Provides valuable habitats for wildlife

Wider benefits

- Acts as natural buffers against storm surges
- Provides valuable ecosystem services such as filtering and cleaning water
- Prevents further coastal erosion
- Adapts coastal habitats to the impacts of climate change, making them more resilient to potential future changes to the coastal landscape







Below, left to right: Jaywick © Paul Starr; Mersea Island © Paul Starr; Cormorant © Essex Wildlife Trust

3. Use beneficially dredged material (BUDS) to create beach-nesting bird islands and ‘coir rolls’ to restore saltmarsh

Encourage sedimentation on existing marshes and mudflats, creating new intertidal areas landward of existing defence lines or enhance estuary edges in urban areas.

Areas close to existing saltmarshes will have vegetation that will develop naturally into saltmarsh within a few years.

Create new beach nesting bird islands by using dredged sand and shingle material placed in the intertidal area.

Scale of action

Regional

Nature recovery benefits

- Improves biodiversity
- Provides food for birds
- Additional breeding habitat for birds reliant on disturbance free beaches
- Provides extra roosting areas for internationally important populations of wintering wildfowl and waders

Wider benefits

- Offers recreation and wellbeing benefits
- Offers economic benefits
- Enhances flood and coastal defences
- Improves water quality
- Increases climate change resilience
- Sequesters carbon
- Enhances flood and coastal defences by reducing direct wave action on vulnerable seawalls

4. Create saline lagoons

Use man-made structures such as embankments, weirs and sluices to control water levels and salinity.

Introduce or encourage native aquatic plants to establish.

Carefully monitor and manage, making periodic adjustments to maintain optimal environmental conditions for aquatic life.

Scale of action

Local

Nature recovery benefits

- Mimics the fluctuating conditions of natural lagoons
- Supports a diverse array of plant and animal species adapted to brackish water conditions
- May serve as vital stopover sites for migratory birds and provide vital feeding, resting and breeding grounds for coastal birds
- Offers important nursery areas for juvenile fish, providing shelter, food and suitable water conditions for their growth and development
- Contributes to habitat diversity and complexity in coastal landscapes

Wider benefits

- Improves water quality by filtering pollutants, sediment and excess nutrients from runoff and tidal inflows
- Sequesters carbon dioxide from the atmosphere
- Acts as natural buffers against storm surges, coastal erosion and sea-level rise

Below: Maldon © Paul Starr

5. Minimise disturbance to coastal and marine areas

Reduce pressures on sensitive coastal and marine habitats by:

- zoning prohibited areas
- restricting times of public access to the coast
- using boats and jet skis responsibly

Follow the **Marine and Coastal Wildlife Code**, and use resources for advice on how to behave around seals, birds and dolphins.

Follow advice by **Bird Aware Essex Coast**, to learn more about the impact of bird disturbance along the coast, and how you can reduce your impact.

Scale of action

Regional

Nature recovery benefits

- Allows ecosystem recovery
- Supports increase in rare bird populations via undisturbed breeding season
- Helps preserve fragile coastal and marine habitats
- Protects species from harm and disruption

Wider benefits

- Helps manage coastal and marine tourism sustainably and responsibly
- Supports sustainable fisheries management by preserving marine habitats, protecting spawning grounds and maintaining fish stocks

Below, left to right: Little tern; Lapwing © Essex Wildlife Trust; East Mersea © Paul Starr

6. Use fencing, wardening and engagement to protect beach-nesting bird colonies

Fence off nesting areas.

Use trained wardens to monitor nesting activity, enforce protective measures and educate beach visitors about the importance of respecting nesting areas and keeping a safe distance from birds.

Engage with local communities, beach users and stakeholders.

Scale of action

Regional

Nature recovery benefits

- Safeguards nesting sites
- Minimises disturbances
- Raises awareness about the presence of nesting birds
- Mitigates threats to beach nesting bird colonies, ensuring their long-term survival
- Contributes to the conservation of coastal biodiversity

Wider benefits

- Prevents human and animal intrusion
- Promotes responsible behaviour
- Garners support for conservation efforts

7. Recover Native Oyster beds

Support restoration/creation of native oyster beds in the MCZ, and expansion into additional sites.

Scale of action

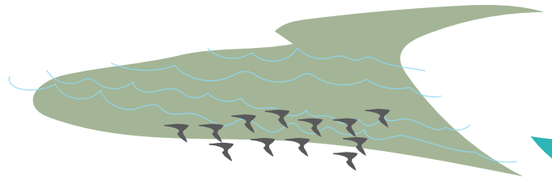
Regional

Nature recovery benefits

- Increases biodiversity levels
- Provides a nursery habitat for fish

Wider benefits

- Improves ecosystem services of the marine environment
- Improves water quality
- Creates buffer habitats against rising sea tides and storms by forming natural breakwaters that help protect shorelines from erosion
- Filters and clean surrounding waters



8. Enhance existing seagrass beds

Support active restoration trials at existing seagrass beds, such as those being conducted by **Project Seagrass**.

Monitor natural spread of seagrass around coastal sites.

Scale of action

District / Borough / City

Nature recovery benefits

- Provides habitat and nursery grounds for a diverse range of marine organisms, including fish, invertebrates and juvenile species
- Provides food and energy for a wide variety of marine organisms
- Supports high levels of biodiversity

Wider benefits

- Supports fisheries
- Encourages recreation and tourism
- Offers economic benefits
- Stabilises ocean sediment, improving water quality and reducing coastal erosion
- Stores carbon
- Improves water quality
- Protects the coast

9. Transplant seagrass

Carefully select healthy seagrass specimens from donor sites and relocate them to degraded or barren areas.

Monitor and manage adaptively to ensure the success of transplantation.

Scale of action

Regional

Nature recovery benefits

- Enhances habitat quality
- Promotes seagrass recovery
- Mitigates physical damage to seagrass beds
- Minimises the disruption of sensitive marine habitats
- Raises awareness among recreational users about the importance of minimising impact on seagrass ecosystems
- Fosters biodiversity

Wider benefits

- Supports ecological resilience of coastal marine environments
- Helps restore degraded coastal habitats, enhancing biodiversity and providing essential habitat for marine species
- Improves water quality

Above: Bradwell Shell Bank © Essex Wildlife Trust

Left: Common seal © Essex Wildlife Trust

Coastal and marine - supporting actions

10. Utilise hydrological grazing and manage predators on grazing marsh

Regulate water levels by mimicking natural flooding and drainage cycles characteristic of grazing marsh ecosystems.

Concurrently introduce sustainable grazing practices and strategically rotate livestock to maintain vegetation structure and prevent overgrazing.

Install fencing or predator deterrents.

Continuously monitor and manage adaptively to assess effectiveness, and adjust as necessary.

Collaborate with stakeholders.

Scale of action

District / Borough / City

Nature recovery benefits

- Ensures optimal conditions for wetland vegetation growth and wildlife habitat creation
- Mitigates the impact of predators on vulnerable species
- Supports the long-term conservation and management of grazing marsh habitats

Wider benefits

- Fosters successful implementation and stewardship of these habitat improvements
- Can support sustainable agricultural practices, such as livestock grazing, which contribute to rural livelihoods and food production

11. Mitigate pollutant threats to the coastal and marine environment

Use education and behaviour change to reduce harmful pollutants, including nutrients and plastic, making their way into the marine and coastal environment.

Working with water companies, improve waste management systems to prevent litter, plastic debris and other solid waste from entering waterways and coastal areas.

Promote the use of sustainable practices in aquaculture and fisheries to minimise nutrient runoff, sedimentation and chemical contamination from fish farms and fishing activities.

Undertake nature-based solutions projects on land that reduce pollutants into the system.

Scale of action

Regional

Left: Brightlingsea © Paul Starr; Avocet © Essex Wildlife Trust **Above:** East Mersea © Paul Starr

Nature recovery benefits

- Preserves marine ecosystems
- Supports diverse marine life
- Safeguards endangered species
- Sustains fish populations
- Improves water quality

Wider benefits

- Supports sustainable fisheries, ensuring a vital food source for coastal communities
- Reduces the risk of contamination in seafood, safeguarding human health and preventing illnesses related to seafood consumption
- Creates healthier marine environments for recreational activities
- Boosts tourism and coastal property values, contributing to local economies and livelihoods
- Can help mitigate ocean acidification, preserving marine ecosystems' ability to sequester carbon

12. Check, Clean, Dry: Ensuring biosecurity

For watercraft users and recreationalists:

1. Thoroughly “check” equipment and vessels for any signs of invasive species, such as clinging organisms or debris.
2. Subsequently, ‘clean’ meticulously to remove any potential hitchhikers or contaminants from the equipment, utilising appropriate cleaning agents or methods.
3. Ensure that all equipment is completely “dry” before entering new water bodies.

Scale of action

Regional

Nature recovery benefits

- Combats the spread of invasive coastal and marine species
- Safeguards coastal and marine ecosystems
- Preserves native biodiversity

Wider benefits

- Reduces costs - invasive species can have significant economic costs, including damage to agriculture, fisheries, infrastructure and recreational activities
- Protects human health
- Supports sustainable tourism and outdoor recreation
- Promotes environmental stewardship and responsible behaviour

13. Create a network of coastal lagoons that provide safe roosting, feeding and breeding habitat

Strategically place man-made structures, such as weirs and channels, to help regulate water flow and salinity levels, creating conditions conducive to lagoon formation and connectivity.

Introduce or encourage native vegetation and aquatic species to colonize the newly created habitats.

Collaborate with local communities, stakeholders and conservation organisations to secure support, resources and long-term management commitment.

Scale of action

Regional

Nature recovery benefits

- Supports a diverse array of plant and animal species, including birds, fish, invertebrates and aquatic plants
- Serves as vital habitat for birds
- Enhances habitat connectivity, allowing birds to move between sites and access resources throughout their life cycles
- Provides important stopover sites for migratory birds

Wider benefits

- Enhances ecosystem resilience by providing connectivity among habitats
- Offers opportunities to study coastal processes, ecosystem dynamics and the impacts of human activities on coastal habitats and species
- Helps stabilise coastlines and protect vulnerable coastal communities and infrastructure

Below, left to right: Southend © Paul Starr; Oystercatchers © Essex Wildlife Trust

14. Create a network of safe beach-nesting bird (BNB) islands

Establish islands or protected areas, either naturally or through artificial means, to provide safe breeding grounds for beach nesting birds, which are interconnected through habitat corridors or protected zones.

Monitor and manage to ensure the integrity of nesting habitats and minimise disturbances.

Collaborate with stakeholders.

Scale of action

Regional

Nature recovery benefits

- Facilitates movement and dispersal of bird populations
- Contributes to the conservation of beach nesting bird populations and their coastal ecosystems

Wider benefits

- Helps to secure support, funding, and effective management of the network

Right: Sunset at Gunners Park
© Andrew Armstrong

6.9 Geology & Soils

Foreword by Geo Essex

Natural soil is the planet's thin, vital layer where geology and biology combine to recycle dead matter back into life. This means that nature recovery vitally depends upon the geology – the rocks and sediments beneath the land surface. Soil is made during an amazing exchange process involving fungi, microbes and small animals, notably earthworms. Rock particles are dissolved and their chemical building-blocks transferred into plant roots along millions of threads of fungus; in exchange, the fungus gains energy from 'sugar chains' produced by the plant out of sunlight shining on their leaves.

Different surface rocks give rise to differing soils and thus to different plant and animal communities. Most of the soils in Essex have been worked by humans since the farming revolution around 7,000 years ago.

Essex has an underlying geology of chalk, clay, sands and crag exposed along the eroding coast, and revealed in quarries and pits, overlain by river and glacial deposits left behind during the last ice age.

GeoEssex
Promoting the geology and landscape of Essex

Biodiversity priorities

BIGGER HABITAT PRIORITY:
When creating new habitat, consider both the ecological and geological features of a site, to ensure the habitat being created aligns with the appropriate conditions under the ground, enabling habitat expansion alongside safeguarding of soil health and geodiversity.

BETTER HABITAT PRIORITY:
Improve the quality of our soil and local geological sites through erosion control measures, such as minimum tillage and no-till farming, reducing pollution in our soils and reducing compaction of our soils.

MORE CONNECTED HABITAT PRIORITY:
Incorporate green infrastructure elements such as vegetated buffer zones and permeable surfaces into development projects to mitigate soil erosion, enhance soil permeability, and preserve geological features of a site.

Geology and soils - actions

1. Control soil erosion

Plant vegetation such as grass, trees or shrubs (preferably native species); mulch the soil; instal silt fencing and physical structures such as gabions and large stones.

Reduce tillage, practise cover cropping and organic farming methods.

Scale of action

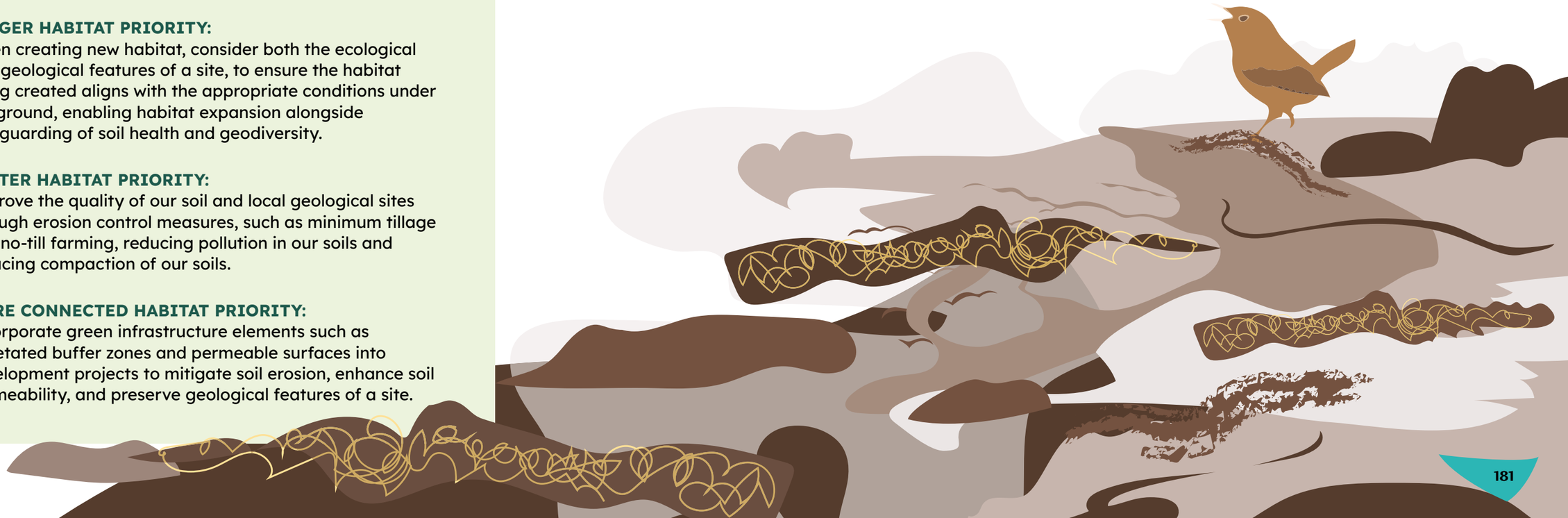
Regional

Nature recovery benefits

- Prevents habitat degradation
- Maintains soil structure
- Prevents erosion
- Minimises soil compaction
- Help preserve habitat integrity, maintain ecosystem connectivity and support diverse plant and animal communities

Wider benefits

- Reduces sediment runoff, improving water clarity, and reducing the negative impacts on aquatic ecosystems
- Supports the long-term viability of farming operations and food security
- Reduces the costs associated with soil loss, land degradation and environmental damage



Geology and soils - supporting actions

2. Safeguard soil quality and geodiversity when planning for landscape changes

Develop landscape plans that consider both ecological and geological features, identifying areas suitable for habitat expansion.

Safeguard areas with unique geology that supports rare habitat.

Scale of action

Regional

Nature recovery benefits

- Safeguards soil health
- Protects geological diversity
- Maintains biodiversity by preserving habitats for soil-dwelling organisms and supporting the food web

Wider benefits

- Supports diverse ecosystems by providing essential nutrients, habitat for microorganisms and stability for plant growth
- Stores carbon
- Improves water quality
- Maintains nutrient cycling
- Sustains crop yields and ensure the availability of nutritious food for human populations
- Preserves important sites for scientific research, education and cultural heritage

Below: Tilled field © Paul Starr

3. Utilise the Local Sites Partnership in Essex to support the monitoring and assessment of local geological sites

Regular monitoring and assessment of geological sites to identify potential threats and areas for improvement.

Scale of action

Regional

Nature recovery benefits

- Allows for early detection of environmental changes, such as erosion, pollution or habitat degradation

Wider benefits

- Helps identify areas suitable for development, conservation, agriculture, recreation and other purposes
- Helps identify suitable locations for construction projects and assesses risks associated with ground stability and geological hazards

4. Safeguard vulnerable geological sites and their unique features

Manage visitors, enhance habitat of the surrounding area, monitor and conduct risk management.

Scale of action

Regional

Nature recovery benefits

- Protects and conserves geological sites within larger habitat restoration projects
- Preserves and enhances geological features
- Helps conserve biodiversity and maintains ecological balance
- Rare geological features can provide environmental niches for unique and vulnerable species

Wider benefits

- Ensures that future generations can continue to study and appreciate this natural heritage
- Provides valuable opportunities for scientific research, allowing scientists to study past geological events, climate change and evolutionary processes
- Provides valuable educational resources for students, teachers and the general public

5. Educate

Foster partnerships between academic institutions, government agencies, NGOs and industry stakeholders to facilitate collaborative research projects and knowledge-sharing initiatives.

Raise awareness about the importance of soil and geology through educational campaigns, outreach programmes, public lectures and media initiatives to engage the general public and policymakers.

Increase public awareness of the importance of soil health to food webs, and thus the wider ecosystem.

Scale of action

Regional

Nature recovery benefits

- Addresses environmental challenges such as pollution and soil degradation

Wider benefits

- Helps identify natural resources such as minerals
- Enhances sustainability practices in construction and land use
- Fosters appreciation and stewardship of natural landscapes

6. Collaborate and partnership led action

Collaborate with governmental agencies, conservation organisations and relevant local experts to develop and implement tailored nature recovery site plans that consider the importance of soil health and geodiversity on a local scale.

Scale of action

Regional

Nature recovery benefits

- Supports integrated habitat creation and conservation initiatives

Wider benefits

- Fosters partnerships
- Leverages expertise, resources and support
- Brings together diverse stakeholders, including government agencies, local communities, farmers, conservation organisations and researchers, enabling a holistic approach to soil erosion control
- Fosters innovation by encouraging the development and adoption of new technologies and practices, leading to more sustainable and cost-effective solutions

Right: Thameside Nature Discovery Park © Paul Starr

Above: Native oysters

7. Species priorities

Species abundance and diversity serve as crucial indicators of the health of natural environments. The potential measures described in Section 6 of this LNRS will benefit many species in Essex, but some require targeted habitat management or improvements in environmental quality beyond this.

These species are identified on the LNRS Priority Species Shortlist and described below, along with the specific habitat interventions that they need. They are presented in order of degree to which they are endangered, from most to least threatened. Please see appendix 4, for more detail on how the LNRS Priority Species Shortlist was formed.

Two sources have been used to establish the degree of threat: the **Joint Nature Conservation Committee (JNCC)** and the **International Union for Conservation of Nature (IUCN) red list**. The JNCC is the public body that advises UK government on UK conservation. Its data cover species found in the UK and take account of multiple UK designations. The IUCN red list of threatened species is a comprehensive source of information on the global extinction risk status of species. It divides species into nine categories: not evaluated, data deficient, least concern, near threatened, vulnerable, endangered, critically endangered, extinct in the wild, and extinct.

Priority Species	Habitat	Potential Actions
JNCC status: Critically Endangered		
Distinguished Jumping spider **(Nationally Rare)**	• Brownfield sites	• Establish a management plan for habitats for invertebrate species on brownfield sites where long term management has been secured
Turtle Dove	• Woodland edges • Dense scrub or hedgerows • Farmland • Open land with scattered bushes	• Establish feeding habitat including low plants and patches of open ground • Allow plants to regenerate naturally to provide natural seeds as a source of food • Plant a bespoke seed mix if natural regeneration of seeds is not suitable for the site • Establish nesting habitats by planting up hedgerows or scrub habitat by encouraging thorny species such as Bramble, Hawthorn and Blackthorn • To maintain dense scrubby habitats, cut areas on a long term rotational basis • Create suitable habitats for turtle doves in gardens and green spaces near an existing turtle dove site • Reduce herbicide use to allow native arable plant regeneration as a seed food source for mating pairs
IUCN Red List: Endangered		

Native Oyster
(Priority species in the UK)
	• Seabed in shallow coastal waters and estuaries	• Essex Native Oyster Restoration initiative (ENORI) works to restore native oysters back to the seabed. The initiative actions include:
		  • Put back old shells and gravels onto the sea bed for oysters to settle on and grow
		  • Translocate mature oysters to other sites to improve reproductive success

Priority Species	Habitat	Potential Actions
JNCC status: Endangered		
Crested cow wheat	• Grasslands • Coppiced woodland	• Protect, expand and enhance grasslands with existing populations of crested cow wheat • Carefully plan coppiced woodland management, to incorporate rides and glades
Heath Fritillary Butterfly	• Coppiced woodland • Sheltered woodland or vegetation • Woodland that has abundant levels of common cow wheat	• Carefully plan coppiced woodland management, to incorporate rides and glades • Tailor woodland management to encourage presence of common cow wheat
Least Lettuce	• Meadows • Fields • Roadsides • Waste places	• Protect least lettuce habitat by establishing buffer zones around existing locations, to protect it from surrounding land uses and activities
Swift	• Buildings and urban areas • Roofs of old buildings such as churches or houses	• Garden for wildlife to provide food sources and places for roosting and nesting • Preserve existing nesting sites • Create new nest sites, by installing a nesting box on your house • Increase insect numbers as a food resource, by growing wildflowers, creating a wildlife pond or allowing grass to grow longer • Avoid use of pesticide to allow insect population numbers to increase • Incorporate swift bricks into new developments
Water Vole	• Rivers, streams, ditches • Ponds, lakes • Marshes, reedbeds	• Eradicate mink and monitor • For landowners, consider opening up sections of the river bank to expose areas to the sun by coppicing trees in densely shaded areas • Create reedbeds and ponds, which can provide refuge for water voles • Establish wet ditch networks in wetlands and floodplains

Priority Species	Habitat	Potential Actions
UK status: Rare		
Stag Beetle	• Woodland • Hedgerows • Urban areas, parks and gardens – where there is a lot of dead wood habitat • Traditional orchards	• Create dead wood habitat in woodlands and urban areas • Keep tree stumps in place when trees and woody shrub are cut down
JNCC status: Vulnerable		
Barbastelle Bat	• Deciduous woodland • Wet meadows • Woodland streams and ponds	• Reduce or cease use of artificial fertiliser and pesticides • Use woodland management practices which enhance wet woodland areas such as streams and ponds • Connect key woodlands with foraging sites to other woodlands • Keep deadwood in-situ
Fancy Legged Fly	• Saltmarshes • Wet mud on the edges of pools in the zone between saltwater and freshwater • Saline habitats • Borrowdykes	• Reduce levels of disturbance to saltmarsh habitats • Conserve and protect freshwater streams onto saltmarshes • Reduce disturbance to saline pools and lagoons

Right, left to right: Water vole © Essex Wildlife Trust; Stag beetle © Essex Wildlife Trust; Heath Fritillary Butterfly; Swift © Jon Hawkins

Priority Species	Habitat	Potential Actions
Grizzled Skipper Butterfly	• Woodland rides • Glades and clearings • Chalk grassland • Unimproved grassland • Abandoned industrial sites as well as railway lines	• Maintain open habitats such as rides, glades or clearings, particularly in sunny conditions • Coppice and manage rides to create open spaces in woodlands • Practise conservation grazing by livestock to create patches of bare ground • Manage scrub habitat to retain patches of new and old growth vegetation
Hazel Dormouse	• New growth of woody vegetation • Coppiced woodland • Scrubland • Hedgerows	• Conduct reintroduction programmes • Plant new woodlands • Manage and maintain hedgerows
Hedgehog	• Urban areas • Gardens • Grassland • Arable • Woodland edges • Hedgerows	• Create opportunities for access between gardens by creating small access points at the bottom of fences and gates – also known as “hedgehog highways” • Create areas of undergrowth in gardens, by planting shrubs and hedges which ideally should be placed next to the hedgehog hole in the fence • Practise wildlife friendly gardening by encouraging insects with wildflowers and scrub habitat • Reduce or cease use of artificial fertiliser and pesticides • Create or allow to develop dense vegetation areas through compost, log and leaf piles in your garden • Introduce hedgehog house in your garden - which can be created yourself or purchased

Priority Species	Habitat	Potential Actions
Lapwing	• Wet grassland • Farmland • Open landscapes	• Practise spring cropping and maintenance of short swards on wet pastures • Ensure farming field operations do not destroy / remove nests • Create spaces of bare ground scattered across landscape during autumn and winter – as Lapwings may nest and feed in these areas • Minimise or avoid cattle grazing between mid March and May to avoid cattle trampling nests • Manage sward heights through grazing in the autumn and early winter to create the ideal short sward for March and reduce grazing over the breeding season
Nightingale	• Closed canopy scrub or young woodland • Coppiced woodland • Areas of low thick vegetation such as bushes and scrub • Structurally diverse woodlands • Scrub mosaics	• Management of scrub habitat that maximises scrub at thicket stage. • Cut reasonable blocks of scrub, rather than many very small and widely dispersed patches of different growth stages • Coppice woodland • Control deer populations to promote diverse vegetation structure

Right, left to right: Hedgehog; Grizzled Skipper Butterfly; Nightingale; Lapwing © Essex Wildlife Trust; Hazel Dormouse

Priority Species	Habitat	Potential Actions
JNCC status: Near Threatened		
Adder	• Heathland • Woodland edges • Moorland	• Create adder hibernaculum within associated habitats of adder, such as woodland edge, areas of long grass, or hedge line that has some sun and some shade • Create hibernaculum for adders, next to scrub or bracken, which can include large stones, timber or organic material, with entrances available and some areas exposed to direct sunlight • Reduce recreational disturbance in key locations and increase public awareness
Eelgrass	• Seafloor • Marine • Shallow seas	• Collect eelgrass seeds from healthy populations (ensure appropriate permits and permissions are obtained for seed collection). Follow by seed preparation and propagation. • Plant eelgrass seeds directly into the restoration site using appropriate methods. • Monitor and maintain planted populations • Reduce sedimentation in eelgrass habitats • Reduce human disturbance to eelgrass habitats
Fishers Estuarine Moth	• Hogs Fennel, which grows in coastal areas, is its only food source • A combination of hogs fennel and long coarse grasses • Coastal grassland and sea walls	• Create a landscape scale network of suitable sites for the moth, that are resistant to the threats of flooding • Create suitable habitat, including hogs fennel • Control scrub to maintain open grassland habitat on existing sites
Green Winged Orchid	• Unimproved grasslands	• Control invasive species • Manage grazing, with reduced grazing during key periods such as flowering • Cut and collect to keep soil fertility low
Marsh Tit	• Broadleaved woodland • Large, mature, deciduous woodland with a dense and diverse understorey • Parks • Gardens	• Control deer populations which may be impacting on the coverage of the understorey vegetation • Practise landscape scale management to restore connectivity between woodlands • Create and manage rides and glades with shrubby edges • Conduct rotational cutting of the understorey • Retain deadwood in-situ
Ringed Plover	• Marine and intertidal • Wetland • Grassland	• Reduce human recreational disturbance at selected sites along the coast • Prevent nest loss through human activity (e.g. instal fencing around nests)
JNCC UK Status: Nationally Scarce		
Lesser Calamint	• Grasslands • Meadows • Roadsides and hedgerows • Woodland edges	• Control invasive non native plant species to reduce competition • Avoid excessive disturbance where it already exists, to encourage natural regeneration

Below, left to right: Eelgrass; Adder © Emily McParland; Green Winged Orchid; Fishers Estuarine Moth; Marsh Tit; Lesser Calamint; Ringed Plover

Priority Species	Habitat	Potential Actions
JNCC UK Status: Nationally rare		
Sulphur Clover	• Grasslands • Meadows • Woodland edges and clearings	• Manage grazing pressures to prevent overgrazing in meadow habitats • Support populations of pollinators by providing nesting sites, reducing pesticide use and planting native flowering plants
Rare and scarce species (not based on IUCN criteria)		
Shrill Carder Bee	• Dry grasslands • Coastal sea walls • Brownfield sites • Open, extensive flower rich habitats, close to undisturbed nesting habitat • Field edges • Hedgerow margins	• Maintain and manage flower-rich habitat until late September • Leave wide uncut buffer zones at the edge of fields • Ensure some areas of hedges, ditches and banks are cut later on in the year, rotate cutting regimes • Create new wildflower grasslands • Create tussocky grass areas for nesting, leaving them undisturbed between March and October • Manage and protect brownfield sites, and maintain mosaic of habitats within them by rotational clearance of vegetation

Priority Species	Habitat	Potential Actions
Other		
Four Banded Weevil Wasp	• Bare sand • Light sandy soils • Sand-clay habitats exposed to the sun	• Create bare ground sand habitats on natural banks and slopes, edges of woods, sides of sand pits and quarries, or flatter ground in grassland and heathland • Create new bare ground habitats next to pollen and nectar sources such as flower rich margins or meadows • Ideally create several patches of bare ground in a variety of shapes, and in different areas on one piece of land. Ensure that there is no vegetation shading the bare ground patches. Bare ground habitat can be created with machinery or hand with a space • Use livestock to create areas of bare ground • Create this habitat during autumn and winter, when invertebrates won't be nesting
Glow Worm	• Grassland • Hedgerows • Woodland edges • Railway embankments	• Reduce light pollution in and around glow worm habitats, as excessive light can interfere with their mating behaviours
Yellow Loosestrife Bee	• Wetlands • Alongside rivers and canals • The bees rely on the yellow loosestrife plant, which thrives in wet soils next to rivers.	• Restore or enhance wetland habitats where yellow loosestrife is present • Establish plantings of yellow loosestrife in or near wetland habitats • Reduce or eliminate use of pesticides in or around wetland habitats • Use rotational management to create diverse vegetation of young and new growth on wet soil/ scrub habitat • Cut back scrub alongside rivers or canals to restore the scrub habitat and create diversity in the vegetation

Left, clockwise from top left:
Sulphur Clover; Yellow Loosestrife Bee; Shrill Carder Bee; Glow worm
© Alan White

PART C

8. The state of nature today

Essex's landscape is rich and diverse, from 350 miles of coastline to large stretches of farmland, from ancient woodlands and coastal grazing marshes to cities and towns. This landscape hosts a range of important habitats, about one-seventh of which (13.4%[39]) receive some level of protection through national and international designations.

Besides the urban areas, the county – still governed by its geological history – can be divided into the largely agricultural interior with its river valleys, meadows, and scattered woodlands and the coastal strip – all those habitats influenced by the sea now or in the past.

Essex is estimated to be home to over 5 million **trees**[40]. It is estimated that the woodland cover of Greater Essex is 7% (24,502 ha) of which 2.4% is defined as ancient woodlands[41].

The area of **meadow** in Essex has probably declined by more than any other habitat type in the last 100 years. Outside of nature reserves, there are very few meadows in good ecological condition, which means that the distribution of many, more notable meadow plants is now severely restricted, and fragmented.

There is a diverse array of **scrub** and **mosaic** habitats in the county. Scrub habitat refers to a type of vegetation community characterised by low-growing, often woody plants, frequently dominated by shrubs and small trees rather than taller forest trees. When patches of scrub grow amidst habitats like farmland, grassland, meadows, or wetlands, they form what is known as a mosaic. Well-developed scrub habitats are crucial for the survival of many species, particularly those that thrive in transitional environments for breeding, feeding, and hibernating, such as the Turtle Dove, Yellowhammer and Corn Bunting.

Biodiversity in **hedgerows** is rich and varied. They provide shelter, nesting sites, and foraging opportunities for numerous species of birds, insects and small mammals. The dense vegetation offers protection from predators and harsh weather conditions, contributing to the survival of both common and rare species. Hedgerows serve as corridors for wildlife movement, enabling species to traverse through the landscape, access essential resources, and maintain gene flow between populations.

Essex is estimated to be home to over

5 million trees

Left: Hatfield © Paul Starr

Around two-thirds (61%) of Essex today is **farmland**[42]. The balance between the agricultural industry and the environment is fundamental to the health of our ecosystems, the resilience of our food systems and the sustainability of our planet as a whole. The yield and quality of food production is dependent upon pollination by invertebrates, such as bees, wasps, flies, butterflies, moths, and beetles, which are also essential for biodiversity and wider environmental benefits. The combination of practices such as building soil health, crop rotation, organic farming, wildflower areas, agroforestry, uncropped areas, scrub habitats and hedgerows allows pollinator numbers to recover and thrive across the farmed landscape. Embracing such regenerative farming practices – 'putting nature back into the farm' – will enable land to remain productive for agriculture whilst also driving the recovery of wildlife.

Urban areas account for about 18% of Greater Essex[43]. Here, green infrastructure – that is, green spaces, including verges, street trees, rain gardens, parks, church yards, green roofs and walls – and 'blue infrastructure' – water features of various types – all have huge potential to conserve and support wildlife[44]. Urban areas and the nature within these areas are extremely important not only for biodiversity, but for human health and wellbeing too. As the human population in Greater Essex increased from 1.9 million[45] to over 2 million by 2024[46], and continues this upward trajectory, it is crucial that nature is considered across our urban landscape.

Essex has a range of **freshwater and wetland** habitats such as streams, ditches, ponds, rivers, canals, lakes and reservoirs. Rivers in Essex are an essential part of the ecosystem, and support many different species, connect local communities, and provide the link between freshwater habitats and coastal and marine ecosystems. However, in Essex, only 5 out of 91 (5%) water bodies achieve a good ecological classification status, and 18 out of 91 (20%) are poor status[47].

The Essex coast – the second longest coastline in England – stretches from the Thames Estuary in the south to the port of Harwich in the north. The network of **coastal and marine** habitats in Essex are an extremely important habitat for wetland birds and form a key migration route used by millions of birds each year. However, over the last 400 years, the Essex coast has lost 91% of its intertidal saltmarsh[48].

Geology and soils vary widely. The characteristic intertidal habitats of Essex are mudflats and saltmarsh. Dynamic coastal habitats of sand, shingle and shell are present in several, more exposed parts of the coast, while the high ground in the northwest corner of the county, around Saffron Walden, holds the most significant natural chalk outcrops as well as boulder clays deposited by glaciers. The land to the south and east is characterised by a combination of chalk and London clay. Active processes still modify the Essex landscape for example erosion along the coast.

More detail on some of these habitats is provided over the following pages.

8.1 Trees and woodlands

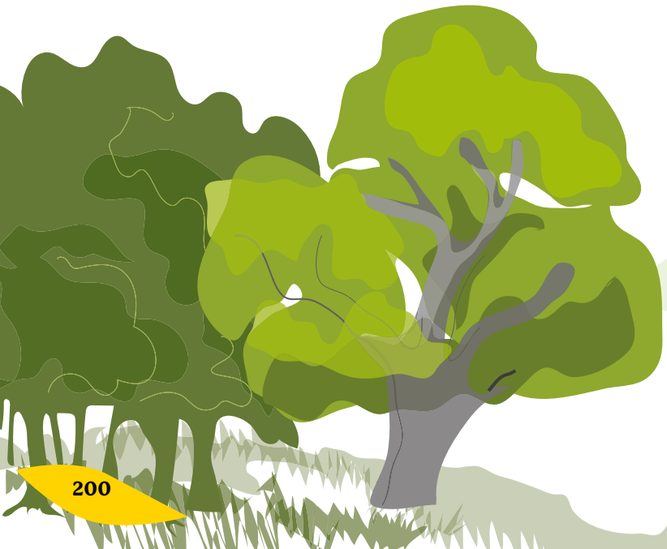
Old and Ancient woodland in Essex is varied, as it has without exception been subject to human management and modification over thousands of years, but it falls into two main types which are characteristic within the Essex landscape.

On the free-draining sands and gravels, there is dry Oak woodland, characterised by the dominance of Oak in the canopy with some Silver Birch and Rowan, and Holly often prominent in the understorey. The ground flora in this woodland type is generally less diverse, but is often characterised by an abundance of Bluebell, together with the presence of Bracken.

Most Essex woodland is of a type known as Ash-maple, which is characterised by variable proportions of Ash and Pedunculate Oak in the canopy together with the presence of Field Maple. Alongside Hazel, the understorey is usually dominated by Hawthorn and Midland Hawthorn. The ground flora in these woodlands can be very diverse, especially so on the chalky boulder clay soils in the north and west of the county. Characteristic species include Dog's Mercury, Bluebell, Wood Anemone and Yellow Archangel.

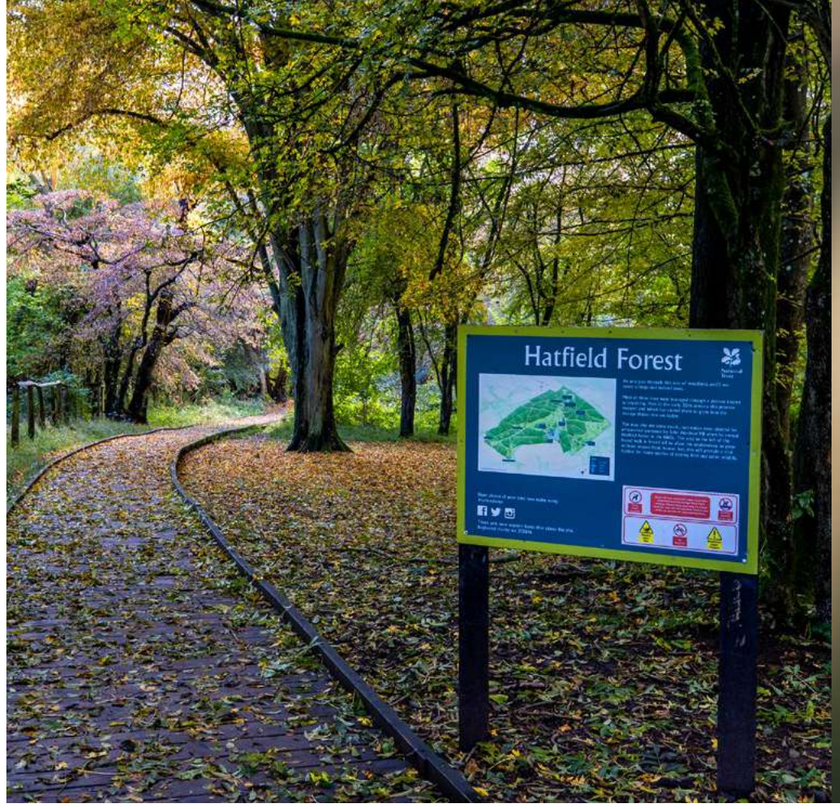
The chalky claylands in the north and west of the county are characterised by old hedges, parkland, and small woodlands in a gently undulating landscape of plateaux cut by small river valleys which are often planted with cricket bat Willows. These are the typical woods of the area; old coppiced Hornbeams, Oaks and small-leaved Limes, with a rich understorey and ground flora and productive stands of Ash and Maple.

To the south and east, where the boulder clays give way to sand and gravel on the higher ground with London clay in the slopes and valleys, the magnificent veteran Beech trees and ancient wood pasture, once the hunting grounds for London nobility, can be found. Here too there are many ancient Hornbeam, Oak and Hazel coppice woodlands and former heathlands of secondary woods.



Some of the trees at Hatfield Forest are

over 1,000 years old



Above, left to right: Hatfield Forest, a key ancient woodland site in Essex © Paul Starr; Great Spotted Woodpecker © Jon Hawkins

Key woodland sites in Essex include Hatfield Forest and Epping Forest. Hatfield Forest, National Nature Reserve and Ancient woodland, in Uttlesford, provides habitat for a whole range wildlife, with some of the trees at Hatfield Forest being over 1,000 years old; this ancient woodland is an example of the important biodiversity that Essex is home to. Epping Forest is a haven for people and wildlife, with much of the forest being of national and international conservation importance with two-thirds of the site being designated as a Site of Special Scientific Interest (SSSI).

There have also been large areas of woodland planted around the county more recently, most notably in the Thames Chase Community Forest, where 160 hectares of woodland and scrub have been planted since 1990.

Of perhaps international significance are the many documented veteran trees across the county, where management has in places continued uninterrupted for centuries and where much of our knowledge of the importance of these habitats arises. These trees are highly significant for dead wood invertebrates, bats, and hole nesting birds, but also for their cultural significance, withstanding wholesale changes in our social and environmental landscape.

The populations of the less common woodland birds have suffered in Essex in recent years, but the larger remaining woodlands are important for populations of species such as Marsh Tit, Lesser Spotted Woodpecker and Nuthatch.

8.2 Grassland and meadows

Essex contains a wide variety of grassland and meadow types, dependent on underlying soil and geology, and each of these supports particular species, as indicated in the table below.

Habitat	Species
Chalk grasslands	Upright Brome, Greater Knapweed, Stemless Thistle, Clustered Bellflower, Marjoram, Crosswort and Knapweed Broomrape
Chalky boulder clay grassland	Crested Cow-wheat and Sulphur Clover
Chalk quarry	Man Orchid
Acid grassland	Common Bent, Red Fescue, Sweet Vernal-grass, Sheep's Sorrel, Harebell and Tormentil
Neutral Grassland	Common Knapweed, Crested Dog's-tail, Field Scabious, Meadow Vetchling, Agrimony, Lady's Bedstraw and Common Birdsfoot-trefoil
Lowland Meadow grassland	Adder's-tongue, Green-winged Orchid, Pepper Saxifrage and Sneezewort
Permanent pasture along river valleys	Cuckoo-flower and Ragged Robin
Thames Terrace grasslands	Autumn Squill, Clustered Clover, Suffocated Clover and Perennial Flax
Clay slope grasslands	Deptford Pink, Hartwort, Hairy Vetchling, Field Garlic, Bithynian Vetch

Chalk grasslands are mainly found around Saffron Walden, mostly on road verges. Good chalk boulder clay grassland sites, also mostly on road verges but also on the large village greens, are found across Uttlesford District in particular.

Grays Chalk Quarry in Thurrock, where the underlying chalk has been exposed by quarrying, represents a site supporting species of national significance.

Flower-rich grassland is often an important component of open mosaic habitats, such as those found on aggregates sites and previously developed land (brownfield).

Acid grassland habitat is restricted to the areas of more recent sands and gravel surface geology, predominantly in the southern half of the county and is also found in a mosaic with the few areas of heather heath that are now found in the county, the most notable being Tiptree Heath, Epping Forest, Millgreen Common, Galleywood Common and several locations on the Danbury Ridge.

Grassland in Essex is generally neutral (neither acid nor alkaline). This includes the classic Lowland Meadow grassland habitat and nationally more significant species of meadows.

Permanent pasture along the river valley floodplains is generally of low diversity, dominated by palatable grasses and subject to nutrient enrichment from floodwaters.

Thames Terrace grasslands are found on the south facing slopes that run through Thurrock and Basildon Borough. These are free-draining sites, exposed to the south and so are prone to drought in the summer months, which promotes floristic abundance and slows the speed of scrub growth.

Clay slope grasslands, which are more productive and therefore vulnerable to scrub encroachment, are found on the lower slopes of the Thames valley, often called the Thames Foothills.

These last two grassland types are distinct to Essex.

Thames Terrace grasslands and clay slope grasslands are distinct to Essex

Below, left to right: Barn owl © Jon Hawkins; Great Green Bush Cricket; Grass Emerald Moth

8.3 Freshwater and wetlands

From ponds in our gardens to rivers flowing through our local neighbourhoods, waterbodies are an important habitat for wildlife. Clean river gravels are essential to freshwater aquatic insects, such as dragonflies and river-flies, and also provide spawning grounds for fish.

Links between land and water are vital in a drained landscape like Essex. Many aquatic species are directly associated with wood, such as fallen branches, and woody debris also provides fish with essential protection from predators. Wet woodland is not a common habitat in Essex, but small blocks and linear forms can be found along all our main river catchments, featuring Alder and combinations of Willow species. Typically occurring as small pockets, wet woodlands can also be found along streams, on floodplains and at the edges of bogs and mires. In the warmer weather, wet woodlands can soon be bursting with life, including Great Crested Newts, dragonflies, damselflies and water beetles.

Most Essex rivers flow from the higher ground in the northwest of the county. The Colne, Blackwater and Chelmer flow southeast to the coast where they form significant estuaries and these rivers represent a key focus for recovery work. Rivers such as the Lee and Roding head south to join the Thames before making their way to the coast. The River Cam and its tributaries flow towards the North of the County.

Below, clockwise from left: Brown trout; Scarce Emerald Damselfly; Bullhead

In the south east of the county, rivers such as the Crouch and the Roach, as well as some of the smaller brooks that flow into Southend, represent important wetland habitats. The valley of the Mardyke forms a highly significant corridor of semi-naturals habitats in an otherwise urban setting. The River Cam and The River Stort systems form almost the entire western boundary of Essex, and are priority habitats for chalk streams. Essex Chalk streams are one of the nationally rare and fragile ecosystems in Essex.

Essex rivers do not demonstrate any distinctive plant communities, probably due to their history of modification and the influence of agriculture run-off and other sources of pollution. However, there are many sections that support a diverse marginal and aquatic flora, with characteristic species such as Purple Loosestrife, Reed Sweet-grass, Water Dock, Branched Bur-reed, reedmace and Common Reed.

Common Reed is also a common component of the Lowland Fen type vegetation found along the floodplains of our rivers, often in association with willow plantations. These are generally composed of a mosaic of tall herbaceous species such as Hemp Agrimony and Great Willowherb, alongside sedge beds, Reed Canary-grass and marshy grassland. The best examples include species such as Small Teasel, Greater Tussock Sedge.

Although there are no large, natural bodies of standing water in Essex, there are man-made reservoirs at Abberton and Hanningfield, both of which are designated as SSSIs due to their importance for breeding and wintering bird populations.

Essex is home to a handful of deep peat sites. These areas serve as invaluable carbon sinks and are a unique habitat for a variety of plant and animal species, many of which are specially adapted to the acidic, waterlogged conditions of peatlands. Safeguarding these sites is essential not only for preserving their unique biodiversity but also for maintaining their role in carbon sequestration and water regulation.

8.4 Coastal and marine

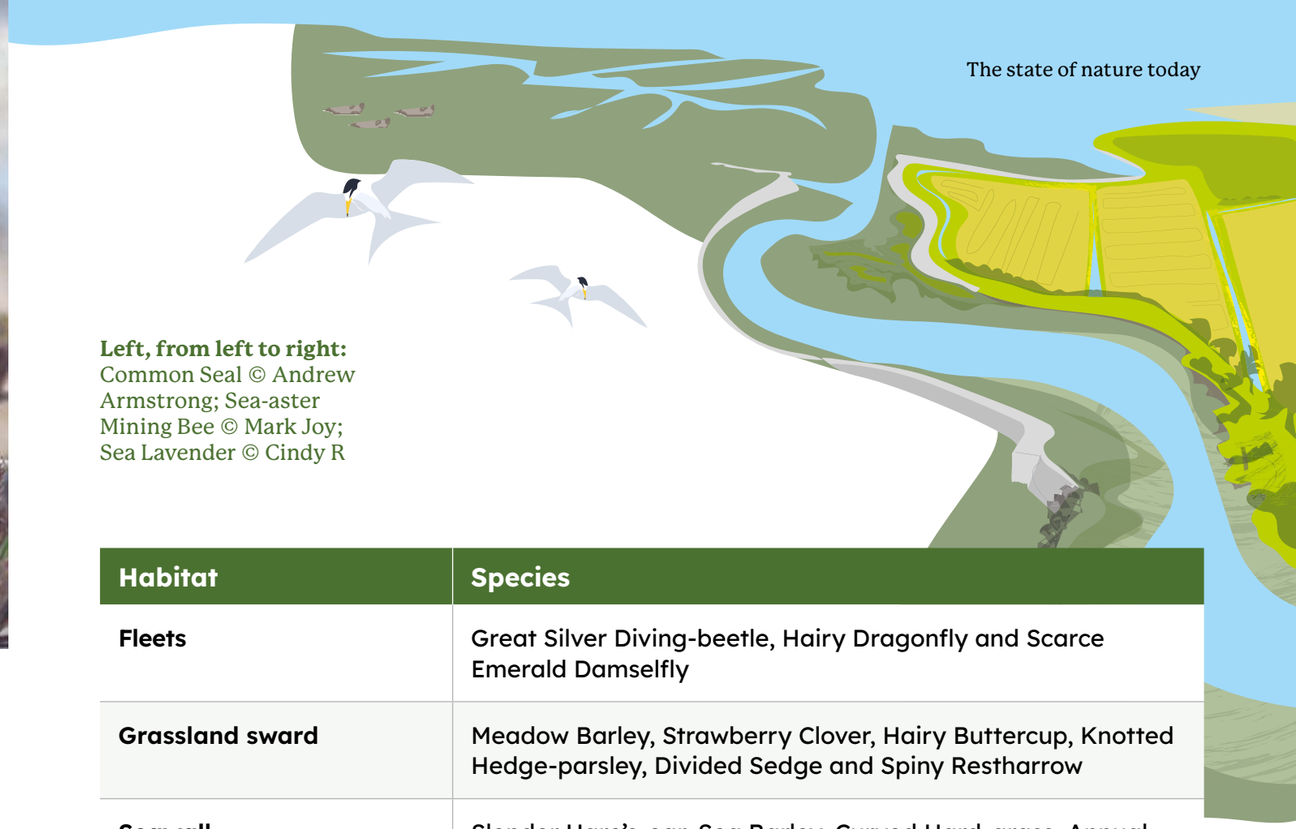
Most of the Essex coast is protected under designations such as Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar Sites[49], as well as SSSIs and a Marine Conservation Zone (MCZ).

There are multiple nature reserves along the Essex Coast, such as Old Hall Marshes, Tollesbury Wick, Colne Point and Wallasea Island nature reserve, which are home to some of the most threatened beach-nesting birds.

Coastal grazing marsh is a habitat for which Essex is nationally important and it consists of land reclaimed from saltmarsh over the last 1,000 years. The water-courses, or fleets, often show a gradient from freshwater to brackish, with an associated diverse plant community that in turn supports a significant variety of invertebrates.

Habitats such as mudflats and saltmarsh can act as natural flood defences as well as benefiting a wide range of birds, plants, mammals, and humans. Intertidal habitats also help to mitigate the effects of climate change, as they act as important carbon stores. The major estuaries in Essex, such as the Colne, Blackwater, Crouch and Roach rivers form an extensive area of estuarine habitat, including open coastal mudflats and sandbanks.

Essex seawall grasslands have a distinctive character that reflects their historic connection with coastal grazing marshes as well as climatic influences and many species of national significance are found in the county's older saltmarsh – see table opposite.



Left, from left to right:
Common Seal © Andrew Armstrong; Sea-aster Mining Bee © Mark Joy; Sea Lavender © Cindy R

Habitat	Species
Fleets	Great Silver Diving-beetle, Hairy Dragonfly and Scarce Emerald Damselfly
Grassland sward	Meadow Barley, Strawberry Clover, Hairy Buttercup, Knotted Hedge-parsley, Divided Sedge and Spiny Restharrow
Seawall	Slender Hare's-ear, Sea Barley, Curved Hard-grass, Annual Beard-grass, and Least Lettuce
Older saltmarsh	Sea Purslane, Seagrass Saltmarsh, Sea Lavender, Small Cord-grass, Sea Aster, Samphire, Perennial Glasswort, Sea Couch-grass, Golden Samphire and Shrubby Seablight
Coastal sand and shingle	Oystercatcher, Little Tern and Ringed Plover, Sea Holly, Sea Kale, Sea Spurge, Sea Bindweed, Marram, Grey Bush Cricket
Transition from saltmarsh to stabilised shingle	Rock Sea Lavender, Sea Heath and Shrubby Sea-blite

Our coastal sand and shingle support many of the key plant and invertebrate species adapted to exploit the harsh environmental conditions, as well as important populations of ground nesting birds – see table.

The marine environment is similarly home to a wide variety of habitats, such as intertidal seagrass meadows, shellfish reefs and subtidal mud and sandbanks. Seagrass can act as natural flood defences, native oysters can improve water quality, and saltmarshes can store carbon and support commercially important fish species.

Essex is also home to a variety of marine species, such as the common seal, harbour porpoise, native oyster, and eelgrass.

8.5 Geology and soils

Geology and active processes influence habitats like wetlands, forests, and grasslands, creating diverse landscapes that support biodiversity.

For example, exposed rock can support species of lichens, as well as bare ground surfaces providing habitat for a range of invertebrates and nesting sites for birds, while disused quarries offer refuge for a range of species.

Essex is home to a number of geological sites, including Chafford Gorges Nature Park, Thurrock, which consists of seven geological sites. Spectacular chalk cliffs can be seen here, the chalk being overlain by Thanet sand and gravels from former routes of the Thames during the ice age. Another example is the geological site at Walton on the Naze, Tendring, home to a classic cliff selection in London clay, red crag, brickearth and Thames Gravel[50].

More than half of the world's species live in soil[51], making it one of the world's most diverse habitats, and it is also important as a store for carbon. Soil is a home for tiny creatures such as bacteria, fungi, insects, worms, and small animals like moles. These organisms play important roles in soil health by breaking down organic matter, recycling nutrients and improving soil structure.

Chalk lands fringe the Essex area. These have dry valleys and shallow, stony, free-draining alkaline soils. Adjacent to the chalk in both the north and the south are sands and gravels which produce dry, less fertile soils. Sandy, free-draining soils top the higher hills of south Essex. Through the centre of Essex, soils on the London Clay are very heavy – these soils expand with winter rains and contract markedly in dry weather.

Glacial till, dumped by the huge Anglian ice sheet that reached Essex from the north, covers much of north west Essex, overlying some of the chalk and much of the younger rock layers. The till is composed of a 'rock-flour' of Jurassic clays and other sediments brought along in the ice. It contains up to 30% chalk fragments together with flint and other rocks[52]. This produces a fertile, clay rich, alkaline soil.

Sand and gravel, deposited by the ancestral Thames flowing from the west, lies beneath the glacial till in north and central Essex. Gravel is found in the sides of valleys where rivers have cut down through the till; here the soil is free draining. In south Essex, spreads of gravel left by the ancient Thames and other rivers produce infertile, dry heathland soils.

In the southeast around Southend and in northeast Essex, windblown deposits from ice-age dust storms produce fertile 'brickearth' and silt. Brickearth, spread by water across gravel terraces, has been extensively quarried for brickmaking despite its fertility. The sides of many river valleys across Essex have been covered by landslip soils, produced during years of freezing and thawing of permafrost. River alluvium and coastal marshland make very fertile soils with high organic and clay-mineral content.

Below, from left to right: Clacton © Paul Starr; Cudmore Grove Erosion © Essex County Council; Essex soil © Paul Starr

9. Actions

This LNRS identifies the areas in Essex where steps – both small and large – can be taken to improve habitat and therefore create better conditions for plants and wildlife. Everyone has a part to play.

We encourage you to use the maps and the tables of potential measures to consider what you can do to help reverse the loss of biodiversity that has occurred over the last 50 years.

Besides the specific actions described in Section 6, we suggest below general approaches that different parts of the community could take to help restore nature in Essex.

Landowners/farmers:

- The National Character Area and Landscape Character Assessments and AONB Management Plan applicable to your landholding will help you to identify the key characteristics of the landscape to strengthen[53].
- Consider the LNRS Priority species, and whether you can take action to support them.
- If you are in an opportunity area for a priority habitat, consider whether you can take action to support recovery in that habitat.
- Consider your connectivity to freshwater habitats and the water journey through your land and explore opportunities to reduce risks to raw water quality from surface water runoff and soil loss.
- Participate in or initiate local farm clusters to collaborate on local nature recovery and nature-friendly farm practices.
- Implement adaptive land management practices that consider local ecological conditions, **climate change impacts**[54], and biodiversity priorities, and adjust farming practices accordingly to support nature recovery.
- Participate in or investigate potential agri-environment payment schemes, that may be suitable for habitat creation or restoration on your land.
- Engage with local communities, environmental organisations, government agencies and other stakeholders to exchange knowledge, collaborate on environmental projects, and contribute to broader nature recovery initiatives in the region.

Left: Bioblitz © Essex Wildlife Trust

PART D

Local authorities:

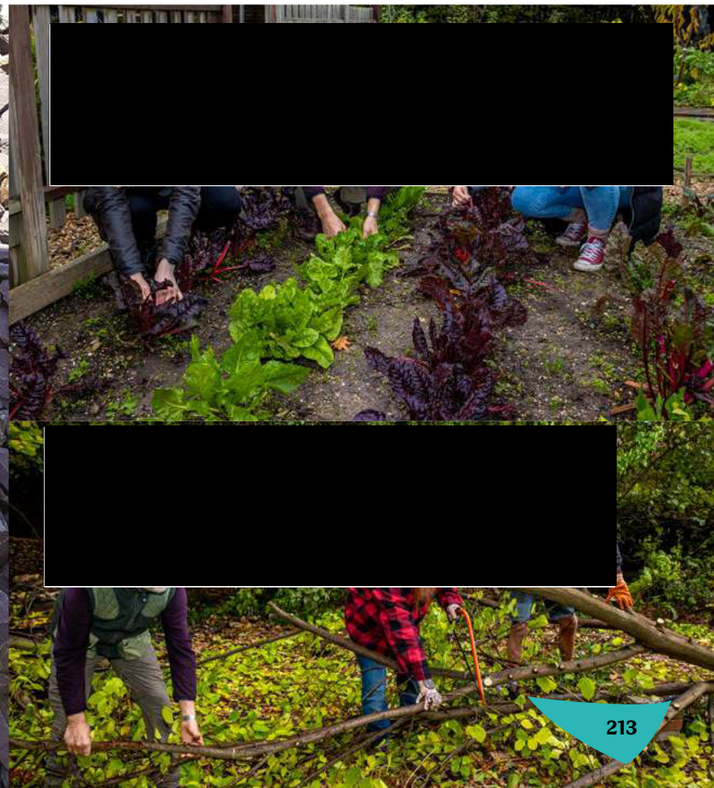
- Prioritise sites identified in opportunity maps for green space delivery and Biodiversity Net Gain (BNG) off-site delivery.
- Embed the goals and objectives of the LNRS into planning policies and guidance documents, including local plans and action plans, to ensure that development decisions prioritise biodiversity, habitat restoration and green space provision.
- Promote the use of nature-based solutions, such as green roofs, urban greening, green corridors, and sustainable urban drainage systems in new development projects, to enhance biodiversity, mitigate climate change impacts and improve quality of life for residents.
- Collaborate with developers, landowners, community groups, environmental organisations and other stakeholders to raise awareness about the importance of biodiversity, facilitate dialogue on nature recovery priorities, and encourage participation in nature recovery initiatives.
- Identify council-owned land highlighted in the strategy for conversion into nature recovery locations/habitat creation or enhancement.
- Establish mechanisms for monitoring and reporting on the implementation and effectiveness of nature recovery actions outlined in the strategy, tracking progress towards biodiversity targets.
- Ensure large scale developments, such as NSIPS comply with LNRS guidance.

Individuals:

- Get involved in local conservation projects and initiatives identified in the nature recovery strategy, such as habitat restoration, tree planting, wildlife monitoring and invasive species control, through volunteering, citizen science programmes or community-led conservation groups.
- Research the various volunteering and community led environmental groups in your area to see what a good fit for you might be.
- Spend time outdoors, at your local nature reserve, the coastal seafront, or in your local park and reap the health benefits of engaging with and spending time in nature.
- Take small steps to benefit nature in your own space or local areas visited.
- Consider setting up your own local group to support wildlife in your local area.
- Collaborate with local planning authorities, town and parish councils, environmental organisations and other community groups to provide input on nature recovery priorities, share local knowledge and expertise, and contribute to the development and implementation of nature-based solutions within the community.
- Participate in biodiversity monitoring programmes, such as citizen science surveys or bioblitz events, to collect data on local species and habitats.

Local Communities:

- Initiate community-led projects and events focused on biodiversity and nature appreciation, such as guided nature walks, wildlife gardening workshops, habitat restoration days, and community science projects to monitor local biodiversity.
- Help set up a local community nature recovery group in your area if there is not one already.
- If a community group in your area exists, consider what can be done to support delivery of the LNRS locally.
- Add your group to the Essex Local Nature Partnership's online community map to connect and collaborate with other local community groups working to protect and restore nature.
- Assist with the formation of other local nature recovery groups in your region.
- Develop nature plans for your local parish council in line with the Climate Commission target.
- Assist in the formation of tree councils and warden networks, encouraging a community forestry approach.



Below, left to right: Bee bath © Essex Wildlife Trust; Trust Links Volunteers in Southend, Essex © Paul Starr

Developers:

- Engage with local authorities to understand how your project can contribute to broader nature recovery efforts via biodiversity net gain (BNG) agreements.
- Use environmental assessments to identify potential impacts of development projects on local biodiversity, and consider and review this LNRS to explore BNG.
- Consider the extent to which you and your project can help support delivery of nature recovery in rural and urban areas, referring to the opportunity maps and the measures linking infrastructure and development to nature recovery.
- Achieve BNG through the potential measures and priorities highlighted in this LNRS.
- Collaborate with environmental organisations and local community groups to implement nature based solutions at development sites, to align with the objectives of the LNRS, creating nature-rich, healthy environments for residents to live.
- Strive for continuous improvement in your approach to nature recovery – considering the impacts to nature of development projects.

Environmental organisations and charities:

- Raise awareness of the importance of the LNRS among local communities, policy makers, businesses, landowners and other stakeholders.
- Advocate for adoption of the LNRS.
- Engage with local communities and environmental groups to empower them to take action for nature recovery and participate in delivery projects.
- Directly participate in and organise on-the-ground projects to deliver the LNRS practically, taking forward the measures and priorities highlighted in this strategy.
- Consider potential habitat restoration and creation projects that are aligned with this LNRS and its biodiversity priorities.
- Help to facilitate partnerships between different stakeholders, including government agencies, businesses, landowners and community groups to join forces on nature recovery initiatives.

Left, clockwise from bottom left: Father and daughter © Jon Hawkins; Forest Pod, Anglia Ruskin University © Paul Starr; Nightingale ringing - Fingringhoe Wick © Emily McParland; Bug hotel, Anglia Ruskin University © Paul Starr

Ecologists, geologists and other specialists:

- Provide scientific knowledge and experience to inform the practical implementation of the LNRS.
- Consider the LNRS when working on habitat design and implementation projects, to align local objectives with the wider nature recovery network that the LNRS provides.
- Where appropriate, conduct ecological assessments to evaluate or advise on the potential impacts of development projects, land use changes, and other human activities, to minimise negative impacts of disturbance to nature.
- Raise awareness of this LNRS and the importance of the LNRS opportunity maps in implementing habitat connectivity.

Businesses:

- Align operations with nature recovery priorities where possible.
- Enhance or maintain habitats on their own land, supporting habitat restoration and enhancement projects.
- Participate and support local nature recovery efforts in the local area.
- Implement sustainable practices within business operations, to minimise impact and disturbance to local habitats and ecosystems.
- Where possible, minimise pollution in the environment, conserve water, and adopt nature-friendly packaging and production methods.
- Collaborate with local nature organisations and groups involved in the implementation of the LNRS, to provide support either financially, or by providing expertise and resources for local projects.
- Invest in green and blue infrastructure in the local area.
- Advocate for local policies that support nature recovery.

Below, left to right: Barn owl ringing - Blue House Farm © Essex Wildlife Trust; Essex Forest Initiative (EFI) Volunteers Tree Planting in Essex © Essex Forest Initiative

Our partners

The Essex Local Nature Recovery Strategy (LNRS) has been crafted through collaborative efforts and partnerships. The following partners have made significant contributions to the development of the Essex LNRS:

- Anglian Water
- Basildon Council
- Bird Aware Essex
- Blackwater Partnership
- Braintree District Council
- Braxted Park Estate
- Brentwood Borough Council
- Brightlingsea Nature Network
- Buglife
- Bumblebee Conservation Trust
- Butterfly Conservation
- Castle Point Borough Council
- Chelmsford City Council
- City of London, Epping Forest
- Colchester City Council
- Country Land and Business Association (CLA)
- Dedham Vale National Landscapes
- Environment Agency
- Epping Forest District Council
- Essex and Suffolk Rivers Trust
- Essex and Suffolk Water
- Essex Association of Local Councils
- Essex Climate Action Commission
- Essex Coastal Organisation
- Essex County Council
- Essex County Recorders
- Essex Cultural Diversity Project
- Essex Developers Group
- Essex Field Club
- Essex Forest Initiative
- Essex Highways
- Essex Local Nature Partnership
- Essex Rural Partnership
- Essex Wildlife Trust
- Forestry Commission
- Forestry England
- GeoEssex
- Ground Control
- Harlow Council
- Maldon District Council
- National Farmers Union
- National Trust
- Natural England
- North Essex Farm Cluster
- Northumbrian Water
- Place Services
- Plantlife
- Rochford District Council
- Roding Farm Cluster
- RSPB
- Rural Community Council of Essex
- Southend on Sea City Council
- Spains Hall Estate
- Suffolk and Essex Coast and Heaths National Landscape
- Tendring District Council
- Tendring Farm Cluster
- Thames Chase Community Forest
- Thurrock Council
- Trust Links
- Uttlesford District Council
- Whirledge and Nott
- Wilderness Foundation
- Wildfowl and Wetlands Trust (WWT)
- Woodland Trust
- Young Essex Assembly

Right: Little Owls © Russell Savory

Appendices

1. LNRS Policy Context

Levelling Up and Regeneration Act (LURA)

Section 245[55] (Protected Landscapes) of the Levelling Up and Regeneration Act 2023 places a duty on relevant authorities in exercising or performing any functions in relation to, or so as to affect, an Area of Outstanding Natural Beauty (AONB) in England, to seek to further the statutory purposes of the area. Within Essex LNRS projects within Dedham Vale National Landscape and Suffolk and Essex Coast and Heaths National Landscape should seek to align to statutory AONB management plan aims and objectives in their design and delivery. It will also be important within the National Landscape and its setting that the design and spatial arrangement of the LNRs is in keeping with the special qualities of the National Landscape, and opportunities to enhance special qualities plan are seized.

25 Year Environment Plan

The 25 Year Environment Plan (25YEP) provides a national framework and vision for improving the environment over a 25-year period. It sets out long-term goals and targets for various aspects of environmental conservation, including biodiversity, air and water quality, and climate change mitigation.

Local Nature Recovery Strategies (LNRSs) are aligned with and support the objectives of the 25YEP at a local level. They translate the overarching goals and principles of the 25YEP into actionable plans and initiatives tailored to specific regions or localities. By addressing local environmental challenges and opportunities, LNRSs help advance the broader aims of the 25YEP, such as enhancing biodiversity, improving ecosystem resilience and promoting sustainable land management practices.

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. One of the main goals of the EIP is to "enhance beauty, heritage, and engagement with the natural environment". 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

Both the EIP and LNRSs share the overarching goal of improving the environment, albeit with different scopes. While the EIP may encompass a broader range of environmental issues, such as air quality, waste management and sustainable development, LNRSs specifically target nature recovery and biodiversity conservation.

One of the main commitments made in the EIP 2023 is that the Government has stated it will: “protect 30% of our land and sea for nature through the Nature Recovery Network (NRN)”. The LNRSs underpin the foundation of the nationwide nature recovery network, and therefore play a crucial role in achieving the aspirations set out by the NRN and 30% protection by 2030.

Environment Act 2021

The Environment Act (EA) 2021 is an act to make provision about targets, plans and policies for improving the natural environment in the United Kingdom. LNRSs are introduced in the Environment Act 2021. They are introduced as spatial strategies, to map out the action needed to restore, enhance, and create spaces for nature.

EA 2021 requires local authorities to prepare and implement LNRSs as part of their environmental planning responsibilities. This statutory requirement ensures that LNRSs are embedded within the planning framework and given due consideration in local decision-making processes. The EA 2021 emphasises the integration of LNRSs with existing planning systems, including local plans and spatial strategies. By mainstreaming nature recovery considerations into planning processes, the Act seeks to ensure that LNRSs are effectively implemented and integrated into broader land use planning and development decisions.

Biodiversity Duty

EA 2021 establishes mechanisms including a strengthened biodiversity duty on public authorities. The strengthened biodiversity duty states that public authorities who operate in England must consider what they can do to conserve and enhance biodiversity in England. This means that public authorities must: consider what they can do to conserve and enhance biodiversity, agree policies and specific objectives based on their considerations, and act to deliver policies and achieve objectives. Local Authorities are to consider how their organisation complies with LNRSs under their biodiversity duty.

LNRS guidance, released by DEFRA March 2023, states that all public authorities should have regard to relevant LNRSs under the strengthened biodiversity duty.

Local Plans

A local plan, also known as a Local Development Plan (LDP) or a Local Planning Policy Framework, is a document prepared by a local planning authority that sets out land use policies and proposals for guiding development and managing growth within a specific area or local authority jurisdiction. Local plans are statutory documents that provide a framework for making planning decisions and determining planning applications.

Local plans and Local Nature Recovery Strategies (LNRS) must work together in a coordinated and complementary manner to achieve shared objectives for biodiversity enhancement, habitat creation and sustainable development. Local Planning Authorities, as per the LNRS regulations, must “take account” of their Local Nature Recovery Strategies in planning matters.

Local plans should align their objectives and policies with the goals and priorities outlined in the LNRS. This ensures that nature recovery considerations are integrated into land use planning decisions and that development activities support them. Local plans should incorporate specific actions and recommendations from the LNRS into their policies and proposals. This may include designating areas for habitat creation, restoration and enhancement, as identified in the LNRS, and integrating green infrastructure into development plans to support nature recovery.

Local plans should integrate spatial planning considerations from the LNRS into their land use allocations and zoning decisions. This involves identifying and protecting key wildlife habitats, ecological corridors and biodiversity hotspots identified in the LNRS.

Local Plans should have regard to the strategic opportunity sites identified in the LNRS as potential biodiversity net gain (BNG) off-site delivery locations. Where onsite delivery of BNG is not possible, LNRS can be used to target off-site BNG, through the ‘strategic significance’ score which provides additional unit value to habitats located in preferred locations (strategic opportunity maps) for biodiversity and other environmental objectives. This encourages BNG habitat to be delivered close to the development site as possible, and within the strategic locations, likely to be within the same authority boundary or national character area.

Local plans should involve stakeholders, including local communities, environmental groups and landowners, in the development and review process. This includes consulting with stakeholders on the content and implementation of the LNRS, ensuring that local plans reflect the priorities and aspirations of the community for nature recovery.

Neighbourhood plans

A neighbourhood plan is a community-led initiative that sets out policies and proposals for guiding development and shaping the future of a specific neighbourhood or area within a local authority’s jurisdiction. Neighbourhood plans are prepared by local communities, often with the support of local councils and planning authorities, and provide a framework for managing land use, development and environmental conservation at the local level.

Neighbourhood plans should align their objectives with the goals and priorities outlined in the LNRS. This ensures that local planning decisions at the neighbourhood level support broader efforts to protect and restore biodiversity, enhance ecosystem services and promote nature recovery.

Neighbourhood plans should incorporate specific recommendations and actions from the LNRS into their policies and proposals. This may include identifying and protecting local wildlife habitats, green spaces and ecological corridors

identified in the LNRS, and integrating nature-based solutions into neighbourhood development projects.

LNRS, in time, will support and facilitate neighbourhood-led initiatives for nature recovery. This may involve providing technical assistance and capacity-building support to help neighbourhoods implement their proposals and projects for biodiversity conservation and green space enhancement.

Neighbourhood planning groups should collaborate with local authorities and environmental organisations responsible for implementing the LNRS. This collaboration can facilitate coordination of efforts, sharing of resources, and joint initiatives to promote nature recovery at the neighbourhood level.

Local Authority Strategies

The Essex LNRS has considered and aims to align with the goals, priorities and objectives outlined in existing local authority strategies, such as sustainable development plans, biodiversity action plans, climate action plans and green infrastructure strategies. This ensures that nature recovery considerations are integrated into broader planning and policy frameworks at the local level.

Future local authority strategies should integrate spatial planning considerations from LNRS into their land use allocations, zoning decisions and development policies. This involves identifying and protecting areas for habitat creation, restoration and enhancement identified in LNRS, and ensuring that development activities are compatible with nature recovery objectives.

National Landscape Management Plans

These plans provide the agreed policy for an individual National Landscape (previously known as AONBs) for a five year period. It describes the National Landscape, sets out the statutory purpose of the designation and meets the duty on National Landscapes' local authorities to produce and review a Management Plan every five years. The document includes objectives and policies to support the delivery of the National Landscape's vision and statutory purpose.

The creation of the Essex LNRS had regard for the Dedham Vale National Landscape and the Suffolk & Essex Coast and Heaths National Landscape's Management Plans.

Essex Climate Action Commission

The Essex Climate Action Commission (ECAC) is an independent body set up by Essex County Council to advise on how best to tackle the climate challenge and become a net zero emissions county. In its report "Net Zero: Making Essex Carbon Neutral", there are a series of recommendations under "Land Use and Green Infrastructure", which include:

- 30% of all land in Essex will enhance biodiversity and the natural environment by creating natural green infrastructure. 25% to be achieved by 2030, and 30% to be achieved by 2040.
- 50% of all farmlands in Essex will adopt sustainable land stewardship practices by 2030, 75% by 2040 and 100% by 2050.
- To increase urban greening – 30% greening of our towns, villages and new developments by 2030.

This LNRS will help to guide the delivery of green and blue infrastructure and will support the creation of new spaces for nature, to enable delivery of ECAC's recommendations.

Essex Green Infrastructure Strategy 2020

The purpose of the Essex Green Infrastructure (GI) Strategy 2020 is to take a positive approach to enhance, protect and create an inclusive and integrated network of high-quality green infrastructure in Greater Essex.

This LNRS takes the mapping element of the GI Strategy a step further by examining where there are opportunities for habitat creation, enhancement and connection amongst existing green and blue spaces.

Essex Water Strategy 2024

The Essex Water Strategy addresses the issues surrounding water shortages, quality and consumption in Essex, and examines what steps should be taken to address the issues surrounding water.

The Essex Water Strategy recognises the importance of natural ecosystems in providing essential services such as water purification, flood regulation and habitat provision. This LNRS focuses on enhancing and restoring natural habitats to improve ecosystem resilience and support biodiversity, which contributes to the sustainable provision of ecosystem services, including water quality improvement and flood mitigation.

By integrating water management considerations into nature recovery planning and vice versa, the Essex Water Strategy and the Essex LNRS can promote holistic and sustainable approaches to water and environmental management that enhance ecosystem resilience, support biodiversity, and improve overall water quality and quantity in the region.

Essex Design Guide

The Essex Design Guide, established in 1973 by Essex County Council, is used as a reference guide to help create high quality places.

The Essex Design Guide and this LNRS can work together synergistically to promote sustainable and nature-friendly development that enhances both the built environment and the natural environment.

Essex Green Infrastructure Standards Technical (and Non-technical) Guidance

The Essex Green Infrastructure (GI) standards technical guidance provides support to professionals in the built environment, highways, health and environment to deliver better GI. Essex's nine GI standards are written as a form of assessment criteria to enable policy and development management to go beyond statutory requirements, to create great places for people and wildlife to thrive.

This LNRS identifies priority areas and opportunities for GI development and nature-based solutions to enhance biodiversity, improve ecosystem resilience and provide multiple benefits for communities. GI standards guidance can then use this information to inform the selection, design and implementation of GI projects that support LNRS objectives.

Essex Joint Health and Wellbeing Strategy 2022 - 2026

The overall aim of the Joint Health and Wellbeing Strategy (JHWB) is that Essex sees an improvement in health and wellbeing outcomes for people of all ages. Access to nature and greenspace has been proven to have significant benefits for mental and physical health, and this LNRS is therefore consistent with the JHWB.

Everyone's Essex 2021 - 2025

Everyone's Essex sets out Essex County Council's 20 commitments from 2021 – 2025, outlining the county's plan for levelling up. Five of the 20 commitments focus on the environment, one of which includes "levelling up the environment", stating that Essex County Council will "help all communities to enjoy a high-quality environment, by making them more resilient against flooding, heat stress and water shortages, by enhancing our county's green infrastructure and by reducing air pollution." This LNRS helps to achieve the environment commitments made in Everyone's Essex by setting out a visual spatial strategy as to where enhancements to the environment can be made, and therefore where the greatest benefits to nature and the wider environment can be achieved.

Minerals and waste planning

When identifying sites for mineral extraction or waste management facilities, minerals and waste planning authorities can consider the potential impacts on biodiversity and ecosystems. They can consult this LNRS to identify areas of ecological importance, priority habitats and protected species, ensuring that sensitive sites are safeguarded from development.

Minerals and waste planning authorities can align with the principles of Biodiversity Net Gain (BNG) to ensure that development projects deliver a measurable increase in biodiversity value. By incorporating BNG requirements into planning policies and development proposals, they can contribute to the objectives of this LNRS by enhancing biodiversity, restoring habitats and creating new wildlife corridors as part of development schemes.

Tree management plan 2023

This LNRS is consistent with the Essex Tree Management Plan, formulated to set the Vision for Essex's trees and woodlands.

Essex Coast Recreational Disturbance and Mitigation Strategy (RAMS)

This LNRS is consistent with the RAMS, which sets out a long-term strategic approach to lessen the impact of local housing development on protected birds along the Essex coast.

Local Sites Partnership

This LNRS is consistent with the Local Sites Partnership, formed under the Local Nature Partnership, which conducts the ratification of local sites reviews, including local wildlife sites and local geological sites, and seeks to ensure the continued success and maintenance of Local Wildlife Sites.

Thames Estuary 2100 Plan and Riverside Strategies

This LNRS has regard to the Thames Estuary 2100 Plan and local Riverside Strategies which outline how to manage risk from sea level rise. Developed by the Environment Agency and its partners, the Thames Estuary 2100 Plan sets out a vision for the estuary's future.

Nationally Significant Infrastructure Projects (NSIPs)

Impacts on the natural environment are to be considered through the development of Nationally Significant Infrastructure Projects (NSIPs). NSIP developers must monitor the environmental impacts of their projects and report on their compliance with biodiversity commitments. This monitoring is often coordinated with local authorities, where alignment with the LNRS should be considered.

By aligning NSIPs with LNRSs, large-scale infrastructure projects can contribute to meaningful biodiversity improvements and nature recovery. This integrated approach helps balance development needs with environmental sustainability.

2. Mapping Methodology

Areas of Particular Importance for Biodiversity (APIBs)

Within the APIB maps, National Conservation Sites include:

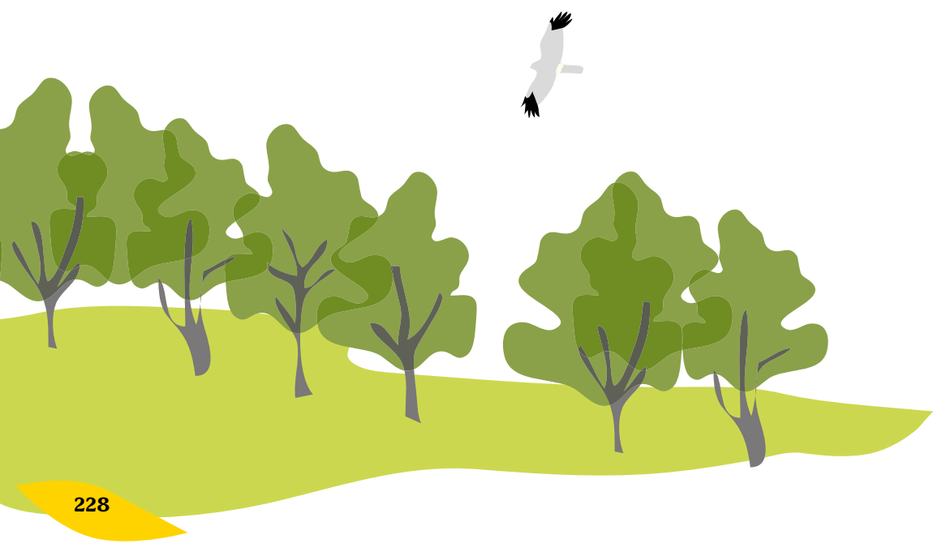
- Sites of Special Scientific Interest (SSSI)
- RAMSAR
- Marine Conservation Zone (MCZ)
- Special Areas of Conservation (SAC)
- Special Protection Areas (SPA)

Local Nature Reserves include:

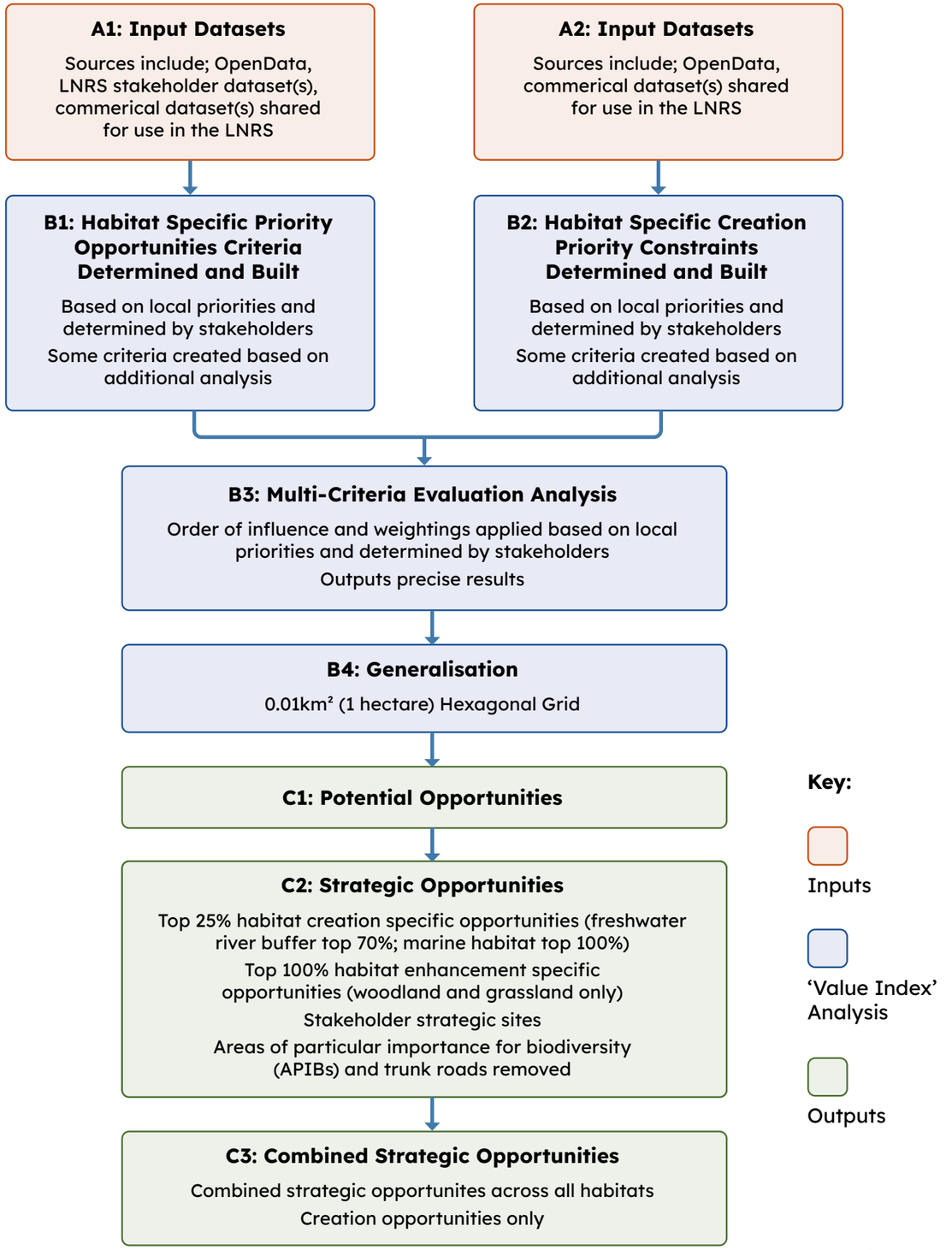
- Local Nature Reserves

Other areas of particular importance include:

- Local Wildlife Sites
- Ancient Woodland
- Ancient Trees and Veteran Trees
- Lowland Fens
- Coastal Saltmarsh



GIS Methdology: Areas that could become of particular importance - all habitats' opportunities



GIS Methodology: Areas that could become of particular importance – all habitats' creation and enhancement opportunities – flow chart accompaniment

This document is an additional information accompaniment to the **'GIS Methodology: Areas that could become of particular importance – all habitats' opportunities** flow chart.

Note each individual habitat type follows the same general approach, however each has its own specific inputs, analyses and outputs.

A: Inputs:

A1 and A2: Input datasets:

Whilst Greater Essex's local priorities were being determined, a full review of available datasets was conducted to ensure opportunities and constraints data for each local priority could be integrated into the overall analysis being designed, and the best options were used.

B: 'Value Index' Analysis:

The 'Value Index' analysis comprises a collection of analytical processes which ultimately identifies the best/priority areas across Greater Essex to be targeted for nature recovery (known as our opportunities) and consists of analyses specific to individual habitats. The final analysis took the form of a multi-criteria evaluation, where inputs and criteria were chosen, configured and weighted following both a review of available datasets and of Greater Essex' local priorities. Generalisation was then applied for ease of use and interpretation.

Final chosen individual inputs can be categorised into the following:

- **Interconnectivity:** improving overall interconnectivity across the landscape, both in terms of habitat focused connectivity as well as species focused connectivity.
- **Protecting designated sites:** by strengthening habitats directly surrounding our existing designated sites, and important and irreplaceable habitats.
- **Stakeholder engagement:** local knowledge and expertise identified areas of interest.
- **Other environmental benefits:** such as focusing on improving overall natural flood management and enhancing water quality.
- **Social:** improving people's access to nature.
- **Other:** such as ensuring the best farmland for food production was left alone.

B1: Habitat specific priority opportunities criteria determined and built:

Criteria to identify locations to create and enhance habitat was based on local priorities and determined by stakeholders, examples include:

- Enhancing interconnectivity between/with existing habitats (including existing APIBs), both at a local and regional level.
- Incorporating existing published habitat specific opportunity datasets, such as;
  - Forestry Commission's woodland sensitivity
  - Natural England's GCN Strategic Opportunity Areas
  - Environment Agency's 'Seagrass Potential'
  - WWT's Wetland Potential
- Taking into account local and expert stakeholder identified opportunity areas.
- Ensuring habitat creation and enhancements will also provide other benefits, such as wider environmental and social benefits.

B2: Habitat specific priority constraints determined and built:

Criteria to identify locations to avoid creating or enhancing habitat was based on local priorities and determined by stakeholders, examples include:

- Existing good quality habitats
- Existing APIBs (National APIBs only for enhancements)
- Land already designated as future sites for development
- Existing habitat specific constraint published datasets, such as;
  - Existing habitat
  - Forestry Commission's woodland sensitivity; 'not suitable'

B3: Multi-criteria evaluation analysis:

The main step of the analysis took the form of a multi-criteria evaluation analysis. This took in a set of criteria as its inputs (see opportunities and constraints above), adding weighting based on the importance of each criteria where desired. Each habitat type had its own unique set of specific criteria.

Example subset criteria and weightings for woodland creation habitats is shown in the table below:

Criteria	Reason / Description	Order of Importance / Influence	Weighting
Local connectivity – new connections	Ensuring new habitat is created in areas to enhance overall connectivity, particularly the creation of new connections between habitat which is currently disconnected via a targeted stepping stone approach.	1	17%
Local connectivity – strengthening	Ensuring new habitat is created in areas to enhance overall connectivity, particularly the strengthening and expansion of existing habitat.	2	15%
Biodiversity quality index bottom 30%	Ensuring new habitat is created in areas which is currently of limited biodiverse value.	=3	9%
Proximity to APIBs	Ensuring new habitat is created in areas which protect and grow our existing APIBs.	=3	9%

This analysis outputted precise results, allocating areas across Greater Essex with a unique overall score based on the input criteria – here the more opportunities criteria an area meets, the higher the score, which equate to a higher value/quality of overall opportunity.

Any area falling within any constraint criteria did not receive a score, regardless of its number of met opportunity criteria.

B4: Generalisation:

Outputs from the multi-criteria evaluation were generalised into a 0.01km² (1 hectare) hexagon grid, which:

- Blurs the lines where required:
  - Removes false precision – analyses such as those used here (analysis which involves interconnectivity) is not an exact science and as such it is not possible to 100% correctly calculate, therefore total precision should not be inferred in displaying results.
  - Followed feedback from various landowners who did not wish to have their land specifically put forward for nature recovery.
- Made the final output data easier to understand by non-technical personnel.
- Adds greater speed and efficiency and removes complexity to the process of determining final strategic opportunities.
- Allows for more manageable dataset sizes.

C: Outputs:

Final outputs/results comprise of 'potential opportunities', 'strategic opportunities' and 'combined strategic opportunities'.

C1: Potential Opportunities:

Potential opportunities include all hexagon grid areas which were not 100% covered by constraints – remaining areas were categorised based on the relative overall analysis score.

C2: Strategic Opportunities:

Strategic opportunities include only the top scoring potential opportunity areas, individually for each habitat. The following percentiles were utilised:

Creation:

- Top 25% scoring areas:
  - Woodland
  - Grassland
  - Scrub
  - Freshwater Standing Water
  - Coast
- Top 70% scoring areas:
  - Freshwater River Buffers
- Top 100% scoring areas:
  - Marine*
  - Stakeholder strategic sites**

Enhancements:

- Top 100% scoring areas:
  - Woodland (unmanaged woodland only)
  - Grassland

The strategic opportunities were chosen at these percentage levels in order to meet a total strategic opportunities' target Greater Essex coverage of >30% – our final strategic opportunities have an overall Essex coverage of 33.47%. Here, all overlapping APIBs, as well as trunk roads and selected other elements were clipped from the output.

Our final strategic enhancement opportunities have an overall Essex coverage of 3.71%. Here, National overlapping APIBs, as well as trunk roads and selected other elements were clipped from the output.

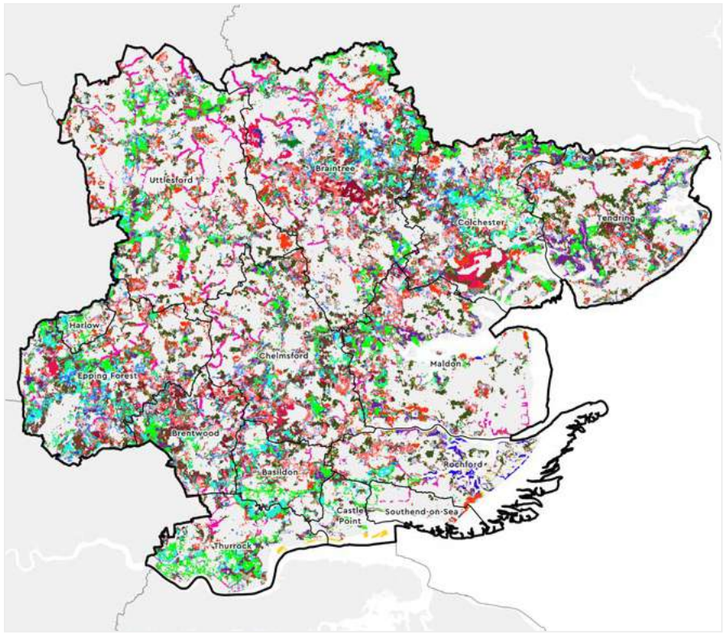
C3: Combined Strategic Opportunities:

Our final, combined strategic opportunities, is a merged version of each individual habitats' strategic creation opportunities.

* Due to a lack of opportunities for our marine habitat, all potential opportunities were included within our strategic opportunities.

** 'Stakeholder strategic sites' are areas which selected stakeholders consider as key opportunities, as such these identified opportunities were automatically upgraded to strategic.

3. Combined Strategic Creation Opportunities Map



Areas that could become of particular importance – 'strategic' combined habitat creation opportunities.

Analysis results presented as a generalised 0.01km² hexagonal grid and categorised by habitat type. All combined 'strategic' habitat creation opportunities cover 33.39% of the Greater Essex LNRS region. APIBs removed. APIBs and trunk roads removed from all categories, coastline at mean high water mark removed from marine only.

Key

- Woodland Only (1)
- Grassland Only (1)
- Scrub Only (1)
- Freshwater Standing Water Only (1)
- Freshwater River Buffer Only (1)
- Coast Only (1)
- Marine Only (1)
- Woodland and Grassland (2)
- Woodland and Scrub (2)
- Woodland and Freshwater Standing Water (2)
- Woodland and Freshwater River Buffer (2)
- Grassland and Scrub (2)
- Grassland and Freshwater Standing Water (2)
- Grassland and Freshwater River Buffer (2)
- Grassland and Coast (2)
- Grassland and Marine (2)
- Scrub and Freshwater Standing Water (2)
- Scrub and Freshwater River Buffer (2)
- Scrub and Coast (2)
- Scrub and Marine (2)
- Freshwater Standing Water and Freshwater River Buffer (2)
- Freshwater Standing Water and Coast (2)
- Freshwater River Buffer and Coast (2)
- Woodland, Grassland and Scrub (3)
- Woodland, Grassland and Freshwater Standing Water (3)
- Woodland, Grassland and Freshwater River Buffer (3)
- Woodland, Grassland and Coast (3)
- Woodland, Grassland and Marine (3)
- Woodland, Scrub and Freshwater Standing Water (3)
- Woodland, Scrub and Freshwater River Buffer (3)
- Woodland, Scrub and Coast (3)
- Woodland, Freshwater Standing Water and Freshwater River Buffer (3)
- Woodland, Freshwater Standing Water and Coast (3)
- Grassland, Scrub and Freshwater Standing Water (3)
- Grassland, Scrub, and Freshwater River Buffer (3)
- Grassland, Scrub and Coast (3)
- Grassland, Freshwater Standing Water and Freshwater River Buffer (3)
- Grassland, Freshwater Standing Water and Coast (3)
- Grassland, Freshwater River Buffer and Coast (3)
- Grassland, Coast and Marine (3)
- Scrub, Freshwater Standing Water and Freshwater River Buffer (3)
- Scrub, Freshwater Standing Water and Coast (3)
- Scrub, Freshwater River Buffer and Coast (3)
- Freshwater Standing Water, Freshwater River Buffer and Coast (3)
- Woodland, Grassland, Scrub and Freshwater Standing Water (4)
- Woodland, Grassland, Scrub and Freshwater River Buffer (4)
- Woodland, Grassland, Scrub and Coast (4)
- Woodland, Grassland, Freshwater Standing Water and Freshwater River Buffer (4)
- Woodland, Grassland, Freshwater Standing Water and Coast (4)
- Woodland, Grassland, Freshwater River Buffer and Coast (4)
- Woodland, Grassland, Freshwater River Buffer and Marine (4)
- Woodland, Scrub, Freshwater Standing Water and Coast (4)
- Woodland, Scrub, Freshwater Standing Water and Freshwater River Buffer (4)
- Woodland, Scrub, Freshwater River Buffer and Coast (4)
- Grassland, Scrub, Freshwater Standing Water and Freshwater River Buffer (4)
- Grassland, Scrub, Freshwater Standing Water and Coast (4)
- Grassland, Scrub, Freshwater River Buffer and Coast (4)
- Grassland, Freshwater Standing Water, Freshwater River Buffer and Coast (4)
- Scrub, Freshwater Standing Water, Freshwater River Buffer and Coast (4)
- Woodland, Grassland, Scrub, Freshwater Standing Water and Freshwater River Buffer (5)
- Woodland, Grassland, Scrub, Freshwater Standing Water and Coast (5)
- Woodland, Grassland, Scrub, Freshwater River Buffer and Coast (5)
- Woodland, Grassland, Freshwater Standing Water, Freshwater River Buffer and Coast (5)
- Woodland, Scrub, Freshwater Standing Water, Freshwater River Buffer and Coast (5)
- Grassland, Scrub, Freshwater Standing Water, Freshwater River Buffer and Coast (5)
- Woodland, Grassland, Scrub, Freshwater Standing Water, Freshwater River Buffer and Coast (6)

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4. LNRS Delivery: Key Partners

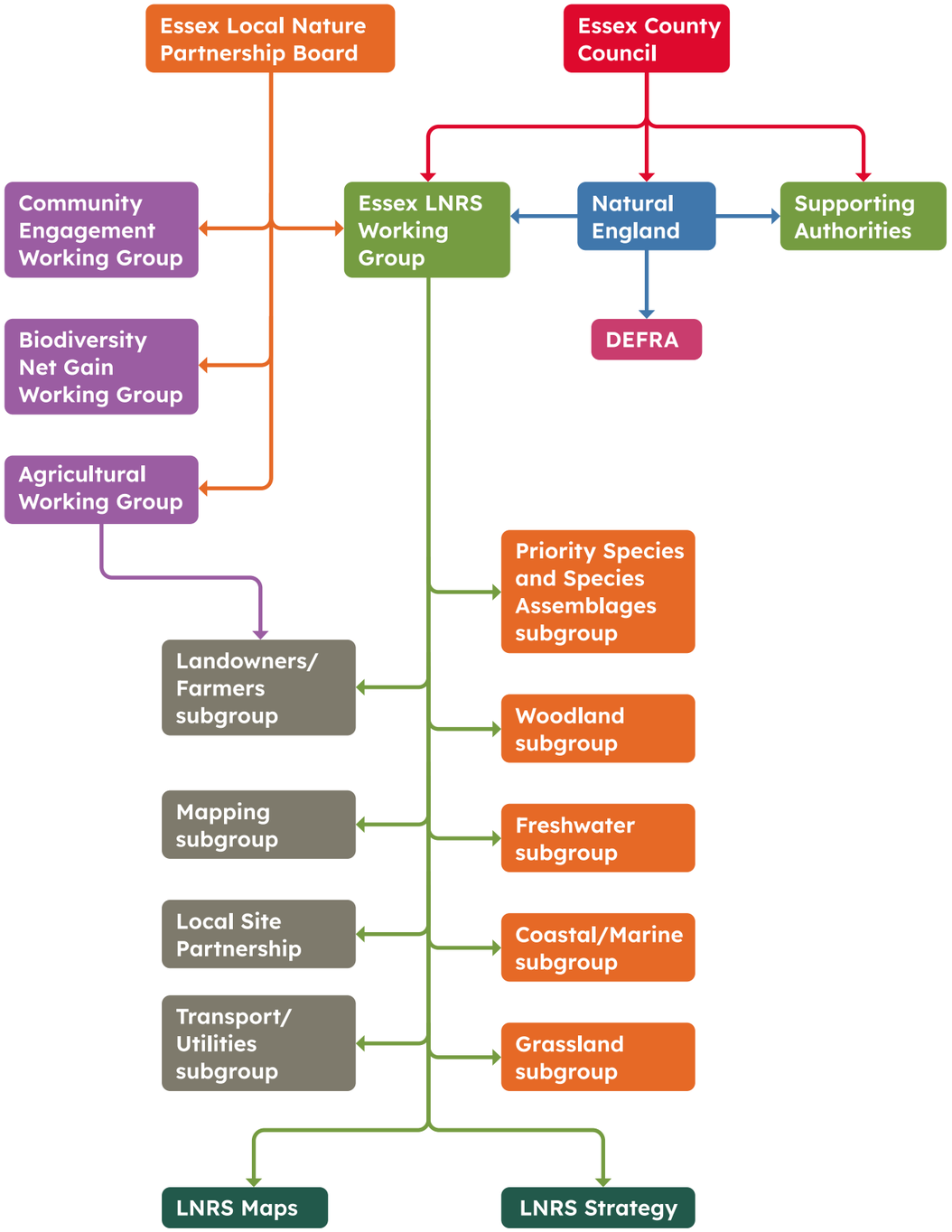


Figure 1: Diagram of Essex LNRS Delivery Structure

This LNRS was meticulously developed through a collaborative effort with the people of Essex, benefiting from the support, advice and guidance of a diverse array of experts and stakeholders throughout Essex from August 2022 to March 2024.

LNRS Working Group and specialist subgroups

The LNRS Working Group – part of the Essex LNP – worked collaboratively across multiple sectors to deliver a LNRS that reflects local priorities for nature recovery. The group's objective was to oversee the development of the LNRS document, including the biodiversity priorities, potential measures and opportunity maps. Since the group formed in mid-2022, a series of subgroups were formed later in 2023, to support the development of specific sections of the strategy including habitat and landscape types. These subgroups include: woodland; grassland; freshwater; coastal and marine; data and mapping; farmers and landowners; priority species; and the re-establishment of the local wildlife sites partnership.

Supporting Authorities

Supporting Authorities in Essex, which have been working with ECC, the Responsible Authority, since the LNRS regulations and guidance were released by DEFRA in March 2023, have contributed local data and expertise, including local wildlife site data and species records.

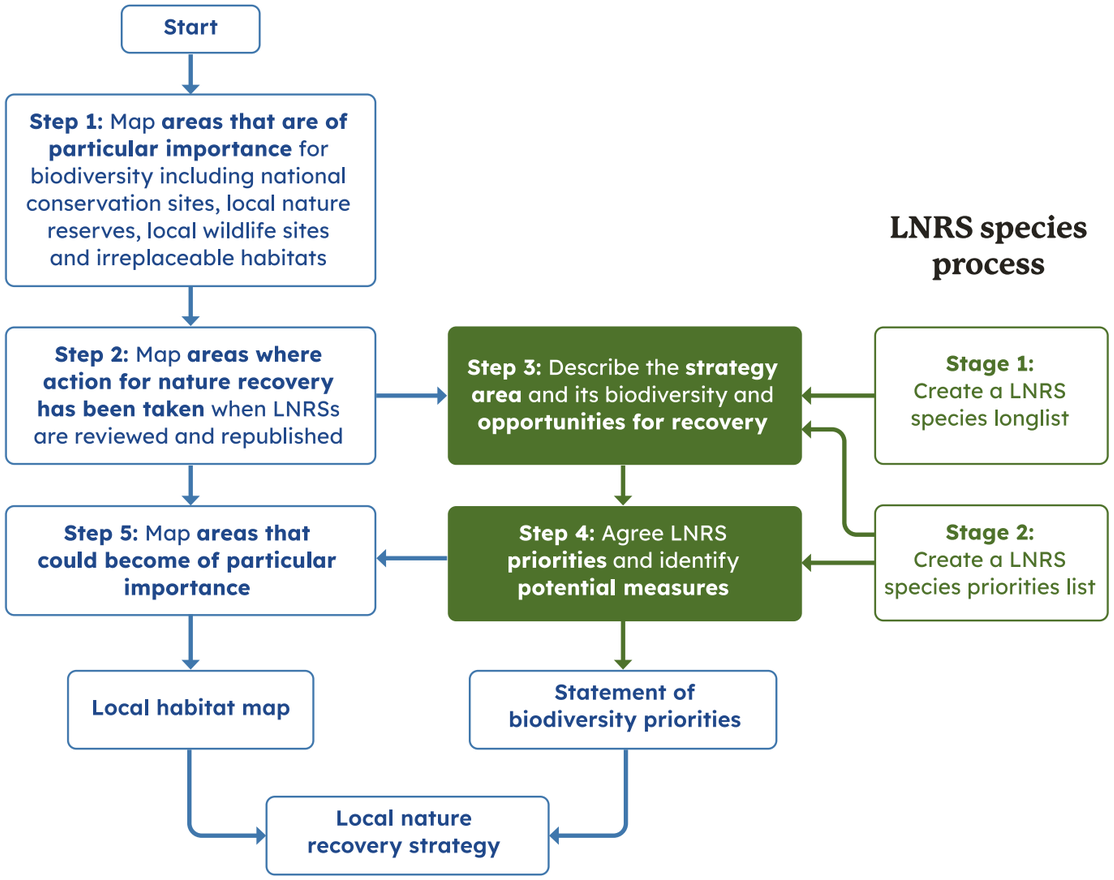
They are:

1. Basildon Borough Council
2. Braintree District Council
3. Brentwood Borough Council
4. Castle Point Borough Council
5. Chelmsford City Council
6. Colchester City Council
7. Epping Forest District Council
8. Harlow District Council
9. Maldon District Council
10. Rochford District Council
11. Southend-on-Sea City Council
12. Tendring District Council
13. Thurrock Council
14. Uttlesford District Council
15. Natural England

5. Species Recovery

A LNRS priority species and species assemblage's subgroup was formed mid-2023, to support the creation of the LNRS species longlist and LNRS priority species shortlist. Membership of the priority species subgroup included representatives from National Landscapes, RSPB, Place Services, Essex Wildlife Trust, Essex Field Club, Natural England, Uttlesford District Council, City of London, Ground Control, County recorders, the Environment Agency and Forestry Commission.

Order of steps to be followed in preparing contents of a LNRS



LNRS species process

Natural England released "species guidance" for Responsible Authorities to follow when creating LNRS species long list and shortlist. This flow diagram highlights how Responsible Authorities were to create their species lists in the process of the creating the overall LNRS.

Species Long list Methodology

- Stakeholders were firstly asked to identify species of local significance for the species long list.
- Local data sets, knowledge and expertise were used to identify species for the long list, including any native species which have been assessed as Red List **Threatened** against IUCN criteria, any native species which have not been formally assessed against IUCN Red List criteria but where strong evidence is provided to show that they would meet the criteria for **Threatened** status and any native species considered to be nationally extinct that re-establish themselves or are rediscovered.
- Natural England provided species which they suggested as suitable candidates for the long list. Place Services, The Essex Field Club and Essex Wildlife Trust greatly supported the long list formation too.
- The species long list is formed of 436 species.

Species Short list methodology

- Once a draft long list was formed, processes begun to create the LNRS priority species shortlist. Following the LNRS species guidance, this was formed by grouping species on the long list into habitat-based assemblages, alongside using the categories in the species guidance to identify which species the LNRS can best support.
- Other aspects considered when shortlisting included urgency for the species, national species recovery and climate change impacts.
- The species on the LNRS priority species shortlist were those that had very specific actions for recovery and habitat requirements, which would not be addressed elsewhere in the strategy, and bespoke actions for those species are listed in this LNRS.
- There are 28 individual species on the LNRS priority species shortlist, which have been selected from the long list.

The species guidance outlined a series of categories on how to group species, to help with the shortlisting process. Categories B, C and D related to those species which would benefit from the LNRS, as outlined below.

B: Needs targeted habitat management

- Species with specific requirements for habitat quality, structure, conditions, or processes above and beyond Category A species are those likely to markedly benefit from general creation, expansion, and improved connectivity of good quality habitats in the strategy area
- Species may require specific configurations or complexes of connected or nearby habitat/s, either at site level or across large areas / multiple sites. This may include habitat connectivity measures for species needing support to track climate change.
- Causes of decline can be addressed with new or improved management practices.

C: Needs improvements in environmental quality

- Species primarily limited by one or more pressures beyond site level that can be mitigated at LNRS scale or wider scales through collaboration with neighbouring RAs.
- For example, better catchment water quality, improved spatial planning of air pollution sources, mitigation of recreational disturbance.

D: Needs bespoke conservation action/s

- Species requiring additional, tailored measures which can be spatially indicated on the local habitat map.
- Species may need multiple coordinated actions to bring about recovery, including combinations of local actions and national actions, where LNRS could address the former.
- Examples of bespoke, spatially targetable local actions include conservation translocations (such as assisted colonisation for climate change adaptation), control of invasive species, and localised surveys.

In January 2024, the Essex LNRS team hosted a LNRS priority species workshop, where the county recorders and key species experts, including those in the priority species subgroup, came together to work through the shortlisting method. Following the efforts of the workshop, a smaller group of stakeholders met to work through the results of the workshop to finalise the shortlist. The smaller group included Place Services, Essex Field Club, Essex County Council and Essex Wildlife Trust. The LNRS priority species shortlist was then shared with stakeholders and partners for further consideration, before agreeing and finalising the shortlist.

6. Species long list

Species	Common name	Taxonomic name
1.	N/A	Acephalus brunnipes
2.	N/A	Agyneta mollis
3.	N/A	Amara strenua
4.	N/A	Aphaniosoma propinquans
5.	N/A	Aphaniosoma socium
6.	N/A	Arctosa fulvolineata
7.	N/A	Astiosoma rufifrons
8.	N/A	Aulacochthebius exaratus
9.	N/A	Axinotarsus pulicarius
10.	N/A	Bagous argillaceus
11.	N/A	Bagous tubulus
12.	N/A	Caenocara bovistae
13.	N/A	Campiglossa malaris
14.	N/A	Centromerus capucinus
15.	N/A	Centromerus serratus
16.	N/A	Cercagnota collini
17.	N/A	Chamaepsila luteola
18.	N/A	Chrysopilus laetus
19.	N/A	Cistogaster globosa
20.	N/A	Clanoptilus marginellus
21.	N/A	Clubiona juvenis
22.	N/A	Clusia tigrina
23.	N/A	Cozyptila blackwalli
24.	N/A	Crossocerus palmipes
25.	N/A	Crossocerus walkeri
26.	N/A	Cryptocephalus frontalis
27.	N/A	Curimopsis setigera
28.	N/A	Doros profuges
29.	N/A	Dorycera graminum
30.	N/A	Dyschirius angustatus

Species	Common name	Taxonomic name
31.	N/A	Elampus foveatus
32.	N/A	Erioptera bivittata
33.	N/A	Eurina lurida
34.	N/A	Eutheia formicetorum
35.	N/A	Euthyneura albipennis
36.	N/A	Evagetes pectinipes
37.	N/A	Geranomyia bezzii
38.	N/A	Glocianus pilosellus
39.	N/A	Gongylidiellum murcidum
40.	N/A	Graphoderus cinereus
41.	N/A	Gymnosoma nitens
42.	N/A	Haplodrassus umbratilis
43.	N/A	Harpactea rubicunda
44.	N/A	Harpalus dimidiatus
45.	N/A	Harpalus servus
46.	N/A	Helina intermedia
47.	N/A	Lejops vittatus
48.	N/A	Leopoldius brevirostris
49.	N/A	Leptometopa latipes
50.	N/A	Leptophloeus clematidis
51.	N/A	Limnebius papposus
52.	N/A	Limnophila pictipennis
53.	N/A	Lionychus quadrillum
54.	N/A	Lipsothrix nervosa
55.	N/A	Litophasia hyalipennis
56.	N/A	Lycoperdina succincta
57.	N/A	Macrorrhyncha flava
58.	N/A	Malthodes crassicornis
59.	N/A	Manota unifurcata
60.	N/A	Melanapion minimum
61.	N/A	Melitta haemorrhoidalis
62.	N/A	Metalimnobia quadrimaculata
63.	N/A	Mordellistena nanuloides
64.	N/A	Myrmica lobicornis

Species	Common name	Taxonomic name
65.	N/A	Neoempheria bimaculata
66.	N/A	Neoleria propinqua
67.	N/A	Neolimnophora maritima
68.	N/A	Nephrocerus scutellatus
69.	N/A	Nicrophorus vestigator
70.	N/A	Nomada subcornuta
71.	N/A	Ophonus puncticollis
72.	N/A	Orchestina sp.
73.	N/A	Orthopodomyia pulcripalpis
74.	N/A	Paragus albifrons
75.	N/A	Parochthiphila coronata
76.	N/A	Parochthiphila spectabilis
77.	N/A	Parydroptera discomyzina
78.	N/A	Pediasia fascelinella
79.	N/A	Phaeocedus braccatus
80.	N/A	Phalacrotophora harveyi
81.	N/A	Phlegra fasciata
82.	N/A	Phortica variegata
83.	N/A	Phyllocnistis xenia
84.	N/A	Platypalpus ingenuus
85.	N/A	Podalonia affinis
86.	N/A	Poecilobothrus ducalis
87.	N/A	Polistichus connexus
88.	N/A	Praestigia duffeyi
89.	N/A	Psacadina zernyi
90.	N/A	Rachispoda duplex
91.	N/A	Saaristoa firma
92.	N/A	Saprinus virescens
93.	N/A	Scopaeus sulcicollis
94.	N/A	Scybalicus oblongiusculus
95.	N/A	Scydmaenus rufus
96.	N/A	Solva marginata
97.	N/A	Spilogona scutulata
98.	N/A	Systenus tener

Species	Common name	Taxonomic name
99.	N/A	Tenellia adspersa
100.	N/A	Tomosvaryella minima
101.	N/A	Trachys minutus
102.	N/A	Trichoncus hackmani
103.	N/A	Trichonyx sulcicollis
104.	N/A	Trichopterna cito
105.	N/A	Trochosa robusta
106.	N/A	Trypeta zoe
107.	N/A	Wiehlea calcarifera
108.	N/A	Zelotes longipes
109.	N/A	Zeugophora flavicollis
110.	N/A	Henestaris halophilus
111.	N/A	Chlorita viridula
112.	N/A	Eremocoris fenestratus
113.	N/A	Ribautodelphax imitans
114.	N/A	Stenophiloscia glarearum
115.	5-banded Tailed Digger Wasp	Cerceris quinquefasciata
116.	Adder	Vipera berus
117.	Allseed	Radiola linoides
118.	Annual Knawel	Scleranthus annuus
119.	Atlantic Salmon	Salmo salar
120.	Autumn Gentian	Gentianella amarella
121.	Autumn Lady's-tresses	Spiranthes spiralis
122.	Barbastelle Bat	Barbastella barbastellus
123.	Bar-tailed godwit	Limosa lapponica
124.	Basil Thyme	Clinopodium acinos
125.	Beautiful Pearl	Agrotera nemoralis
126.	Bee Wolf	Philanthus triangulum
127.	Bell Heather	Erica cinerea
128.	Bembridge Beetle	Paracymus aeneus
129.	Bird's Nest Orchid	Neottia nidus-avis
130.	Bithynian Vetch	Vicia bithynica
131.	Bittern	Botaurus stellaris
132.	Bitter-vetch	Lathyrus linifolius

Species	Common name	Taxonomic name
133.	Black Headed Mason Wasp	Odynerus melanocephalus
134.	Black Oil Beetle	Meloe proscarabaeus
135.	Black Water Beetle	Limnoxenus niger
136.	Black-necked grebe	Podiceps nigricollis
137.	Black-tailed Godwit	Limosa limosa
138.	Blair's Wainscot	Sedina buettneri
139.	Blue Mint Beetle	Chrysolina marginata
140.	Bordered Gothic	Sideridis reticulata
141.	Borrer`s Saltmarsh-grass	Puccinellia fasciculata
142.	Brandts bat	Myotis brandtii
143.	Broad-leaved Cudweed	Filago pyramidata
144.	Bronze Bolete	Boletus aereus
145.	Brown hairstreak	Thecla betulae
146.	Brown Hare	Lepus europaeus
147.	Brown Trout	Salmo trutta
148.	Brown-banded Carder Bee	Bombus humilis
149.	Buffish Mining Bee	Andrena nigricornis
150.	Bugloss Ermine	Ethmia bipunctella
151.	Bullhead	Cottus gobio
152.	Bur Medick	Medicago minima
153.	Cardinal Click Beetle	Ampedus cardinalis
154.	Carline Thistle	Carlina vulgaris
155.	Cat-mint	Nepeta cataria
156.	Cattle Egret	Bubulcus ibis
157.	Chaffweed	Lysimachia minimus
158.	Chalk Screw-moss	Tortula vahliana
159.	Chamomile	Chamaemelum nobile
160.	Changeable Dor Beetle	Geotrupes mutator
161.	Chicory	Cichorium intybus
162.	Common Cottongrass	Eriophorum angustifolium
163.	Common Cow-wheat	Melampyrum pratense
164.	Common Cuckoo	Cuculus canorus
165.	Common Cudweed	Filago vulgaris
166.	Common Eyebright	Euphrasia nemorosa

Species	Common name	Taxonomic name
167.	Common Gromwell	Lithospermum officinale
168.	Common Rock-rose	Helianthemum nummularium
169.	Common Sea-lavendar	Limonium vulgare
170.	Common sturgeon	Acipenser sturio
171.	Common tern	Sterna hirundo
172.	Common Toad	Bufo bufo
173.	Common Valerian	Valeriana officinalis
174.	Coral Tooth Fungus	Hericium coralloides
175.	Corn Bunting	Emberiza calandra
176.	Corn Buttercup	Ranunculus arvensis
177.	Corn Chamomile	Anthemis cotula
178.	Corn Mint	Mentha arvensis
179.	Corn Spurrey	Spergula arvensis
180.	Creeping Marshwort	Apium repens
181.	Creeping Willow	Salix repens
182.	Crested Cow Wheat	Melampyrum cristatum
183.	Cross-leaved Heath	Erica tetralix
184.	Crosswort	Cruciata laevipes
185.	Dark Crimson Underwing	Catocala sponsa
186.	Dark Green Fritillary	Speyeria aglaja
187.	Depressed River Mussel	Pseudanodonta complanata
188.	Deptford Pink	Dianthus armeria
189.	Desmoulin's Whorl Snail	Vertigo moulinsiana
190.	Devil's-bit Scabious	Succisa pratensis
191.	Distinct Ground Beetle	Bradycellus distinctus
192.	Distinguished Jumping Spider	Attulus distinguendus
193.	Dunlin	Calidris alpina
194.	Dwarf Eelgrass	Zostera noltei
195.	Dyer's Greenweed	Genista tinctoria
196.	Early Tephritis Fly	Tephritis praecox
197.	Eelgrass	Zostera marina
198.	Eight-spotted Tree Fruit Fly	Myennis octopunctata
199.	English Eyebright	Euphrasia officinalis subsp. anglica
200.	Eurasian Curlew	Numenius arquata

Species	Common name	Taxonomic name
201.	European Eel	Anguilla anguilla
202.	European White-fronted Goose	Anser albifrons albifrons
203.	Fancy-legged Fly	Campsicnemus magius
204.	Fen Mason-wasp	Odynerus simillimus
205.	Few-flowered Fumitory	Fumaria vaillantii
206.	Field Garlic	Allium oleraceum
207.	Field Mouse-ear	Cerastium arvense
208.	Field Scabious	Knautia arvensis
209.	Field Woundwort	Stachys arvensis
210.	Fine-leaved Fumitory	Fumaria parviflora
211.	Fisher's Estuarine Moth	Gortyna borelii lunata
212.	Flat-sedge	Blysmus compressus
213.	Flat-stalked Pondweed	Potamogeton friesii
214.	Forest Windowfly	Scenopinus niger
215.	Four-banded Digger Wasp	Cerceris quadricincta
216.	Four-spotted	Tyta luctuosa
217.	Four-spotted Ground Beetle	Bembidion quadripustulatum
218.	Four-spotted Ladybird	Nephus quadrimaculatus
219.	Frog-bit	Hydrocharis morsus-ranae
220.	Gall wasp	Aulacidea follioti
221.	Garganey	Spatula querquedula
222.	Glow Worm	
223.	Golden Hoverfly	Callicera spinolae
224.	Golden Jumping Spider	Heliophanus auratus
225.	Golden Leaf-roller Weevil	Rhynchites auratus
226.	Goldenrod	Solidago virgaurea
227.	Good-King-Henry	Blitum bonus-henricus
228.	Gray Tooth Fungus	Phellodon melaleucus
229.	Grayling	Hipparchia semele
230.	Great Cormorant	Phalacrocorax carbo
231.	Great Silver Water Beetle	Hydrophilus piceus
232.	Green Dasytes Beetle	Dasytes virens
233.	Greenfinch	Chloris chloris
234.	Green-winged Orchid	Anacamptis morio

Species	Common name	Taxonomic name
235.	Grey Partridge	Perdix perdix
236.	Grey Plover	Pluvialis squatarola
237.	Grey-backed Mining Bee	Andrena vaga
238.	Grizzled Skipper	Pyrgus malvae
239.	Gypsy Moth	Lymantria dispar
240.	Hairy Fungus Beetle	Trinodes hirtus
241.	Harbour Porpoise	Phocoena phocoena
242.	Harbour Seal	Phoca vitulina
243.	Harebell	Campanula rotundifolia
244.	Harvest Mouse	Micromys minutus
245.	Hawfinch	Coccothraustes coccothraustes
246.	Hazel Dormouse	Muscardinus avellanarius
247.	Heath Bumblebee	Bombus jonellus
248.	Heath Dog-violet	Viola canina
249.	Heath Fritillary	Melitaea athalia
250.	Heath Milkwort	Polygala serpyllifolia
251.	Heather	Calluna vulgaris
252.	Heather Mining Bee	Andrena fuscipes
253.	Hedgehog	Erinaceus europaeus
254.	Hen Harrier	Circus cyaneus
255.	Henbane	Hyoscyamus niger
256.	Hoary Cinquefoil	Potentilla argentea
257.	Hornet Robberfly	Asilus crabroniformis
258.	Hound's-tongue	Cynoglossum officinale
259.	House martin	Delichon urbicum
260.	Kestrel	Falco tinnunculus
261.	Kingfisher	Alcedo atthis
262.	Knothole Yoke Moss	Codonoblepharon forsteri
263.	Lagoon Sand Shrimp	Gammarus insensibilis
264.	Lapwing	Vanellus vanellus
265.	Large Dune Leafhopper	Doratura impudica
266.	Large Garden Bumblebee	Bombus ruderatus
267.	Large Scabious Bee	Andrena hattorfiana
268.	Large Tortoiseshell	Nymphalis polychloros

Species	Common name	Taxonomic name
269.	Least Lettuce	Lactuca saligna
270.	Leisler's bat	Nyctalus leisleri
271.	Lesser Calamint	Clinopodium calamintha
272.	Lesser Spearwort	Ranunculus flammula
273.	Lesser Spotted Woodpecker	Dryobates minor
274.	Little tern	Sternula albifrons
275.	Lizard Orchid	Himantoglossum hircinum
276.	Long-fringed Mini-miner	Andrena niveata
277.	Long-horned Bee	Eucera longicornis
278.	Looping Snail	Truncatella subcylindrica
279.	Lousewort	Pedicularis sylvatica
280.	Maiden Pink	Dianthus deltoides
281.	Man Orchid	Orchis anthropophora
282.	Maritime Shore Beetle	Augyles maritimus
283.	Marsh Helleborine	Epipactis palustris
284.	Marsh Pennywort	Hydrocotyle vulgaris
285.	Marsh Speedwell	Veronica scutellata
286.	Marsh St John's-wort	Hypericum elodes
287.	Marsh Tit	Poecile palustris
288.	Marsh Valerian	Valeriana dioica
289.	Meadow Crane's-bill	Geranium pratense
290.	Mellet's Downy-back	Ophonus melletii
291.	Midas Tree-weaver	Midia midas
292.	Moss Carder Bee	Bombus muscorum
293.	Mountain Bulin	Ena montana
294.	Mousetail	Myosurus minimus
295.	Mugwort Pearl	Loxostege sticticalis
296.	Narrow Anthicid Beetle	Anthicus angustatus
297.	Narrow-fruited Cornsalad	Valerianella dentata
298.	Nathusius' pipistrelle	Pipistrellus nathusii
299.	Native Oyster	Ostrea edulis
300.	Necklace Ground Beetle	Carabus monilis
301.	Night-flowering Catchfly	Silene noctiflora
302.	Nightingale	Luscinia megarhynchos

Species	Common name	Taxonomic name
303.	Norfolk Hawker dragonfly	Aeshna isosceles
304.	Oblong-leaved Sundew	Drosera intermedia
305.	Orache Moth	Trachea atriplicis
306.	Ornate Cranefly	Ctenophora ornata
307.	Ornate Cuckoo Bee	Stelis ornatula
308.	Oystercatcher	Haematopus ostralegus
309.	Parsley Water-dropwort	Oenanthe lachenalii
310.	Pedunculate Sea-purslane	Atriplex pedunculata
311.	Pennyroyal	Mentha pulegium
312.	Petty Whin	Genista anglica
313.	Pintail	Anas acuta
314.	Plain Dark Bee	Stelis phaeoptera
315.	Pochard	Aythya ferina
316.	Prickly Poppy	Papaver argemone
317.	Prickly Saltwort	Kali turgida
318.	Quaking grass	Briza media
319.	Queens Executioner	Megapenthes lugens
320.	Ragged Robin	Silene flos-cuculi
321.	Red Hemp-nettle	Galeopsis angustifolia
322.	Redshank	Tringa totanus
323.	Red-shanked Carder Bee	Bombus ruderarius
324.	Red-throated diver	Gavia stellata
325.	Red-tipped Cudweed	Filago lutescens
326.	Rest Harrow	Aplasta ononaria
327.	Ringed plover	Charadrius hiaticula
328.	Rosser's Sac-spider	Clubiona rosserae
329.	Round-fruited Rush	Juncus compressus
330.	Round-leaved Sundew	Drosera rotundifolia
331.	Round-leaved Wintergreen	Pyrola rotundifolia
332.	Ruby-tailed Wasp	Hedychrum rutilans
333.	Rusty Click Beetle	Elater ferrugineus
334.	Rusty Flea Beetle	Longitarsus ferrugineus
335.	Rye-brome	Bromus secalinus
336.	Saltmarsh Short spur	Anisodactylus poeciloides

Species	Common name	Taxonomic name
337.	Sand Cat's-tail	Phleum arenarium
338.	Sandwich Click Beetle	Melanotus punctolineatus
339.	Sanicle	Sanicula europaea
340.	Satan's Bolete	Boletus satanas
341.	Scaly stalked puffball	Battarrea phalloides
342.	Scarce Black Arches	Nola aerugula
343.	Scarce Bugloss Ermine	Ethmia terminella
344.	Scarce Chaser	Libellula fulva
345.	Scarce Chocolate-tip	Clostera anachoreta
346.	Scarce emerald Damselfly	Lestes dryas
347.	Scarce Knapweed Fly	Acinia corniculata
348.	Scarlet Malachite Beetle	Malachius aeneus
349.	Sea aster mining bee	Colletes halophilus
350.	Sea Barley	Hordeum marinum
351.	Sea Bindweed	Calystegia soldanella
352.	Sea Heath	Frankenia laevis
353.	Sea Wormwood	Artemisia maritima
354.	Sea-holly	Eryngium maritimum
355.	Serotine	Eptesicus serotinus
356.	Set-aside Downy-back Beetle	Ophonus laticollis
357.	Sheep's-bit	Jasione montana
358.	Shelduck	Tadorna tadorna
359.	Shepherd's-needle	Scandix pecten-veneris
360.	Shining Guest Ant	Formicoxenus nitidulus
361.	Shiny Seed Beetle	Amara nitida
362.	Short Snouted Seahorse	Hippocampus hippocampus
363.	Short-spined Nomad Bee	Nomada guttulata
364.	Shrill Carder Bee	Bombus sylvarum
365.	Silver Barred	Deltote bankiana
366.	Six spotted Orbweaver	Araniella displicata
367.	Six-spotted Leaf Beetle	Cryptocephalus sexpunctatus
368.	Slate Bolete	Leccinum duriusculum
369.	Slender Bird's-foot-trefoil	Lotus angustissimus
370.	Slender Cuckoo Wasp	Chrysis gracillima

Species	Common name	Taxonomic name
371.	Slender Hare`s-ear	Bupleurum tenuissimum
372.	Slender Tare	Vicia parviflora
373.	Small Blue	Cupido minimus
374.	Small Cord-grass	Spartina maritima
375.	Small Cudweed	Filago minima
376.	Small Eggar	Eriogaster lanestris
377.	Small Heath	Coenonympha pamphilus
378.	Small Plain Stiletto	Thereva fulva
379.	Small Ranunculus	Hecatera dysodea
380.	Small-flowered Catchfly	Silene gallica
381.	Smooth Cat's-ear	Hypochaeris glabra
382.	Speckled Footman	Coscinia cribraria
383.	Spined Blood Bee	Sphecodes spinulosus
384.	Spiny Restharrow	Ononis spinosa
385.	Spiral Tasselweed	Ruppia cirrhosa
386.	Spotted Flycatcher	Muscicapa striata
387.	Spotted Ground Beetle	Acupalpus maculatus
388.	Spotted Sulphur	Acontia trabealis
389.	Spreading Hedge-parsley	Torilis arvensis
390.	Stag Beetle	Lucanus cervus
391.	Stag's-horn Clubmoss	Lycopodium clavatum
392.	Star Sedge	Carex echinata
393.	Starling	Sturnus vulgaris
394.	Stinking Goosefoot	Chenopodium vulvaria
395.	Strawberry Clover	Trifolium fragiferum
396.	Streaked Bombardier Beetle	Brachinus sclopeta
397.	Striped Horsefly	Hybomitra expollicata
398.	Sulphur Clover	Trifolium ochroleucon
399.	Swift	Apus apus
400.	Swollen Spire Snail	Mercuria cf. similis
401.	Tawny Owl	Strix aluco
402.	Tawny Water Beetle	Berosus fulvus
403.	Thatch Moss	Leptodontium gemmascens
404.	Tormentil	Potentilla erecta
405.	Tower Mustard	Turritis glabra
406.	Trembling sea mat	Victorella pavida
407.	Tubular Water-dropwort	Oenanthe fistulosa
408.	Turtle Dove	Streptopelia turtur
409.	Umbrella Fly	Platycephala umbraculata
410.	Upright Chickweed	Moenchia erecta
411.	Upright Goosefoot	Oxybasis urbica
412.	Veilwort	Pallavicinia lyelli
413.	Viper's Bugloss	Hadena irregularis
414.	Wall Bedstraw	Galium parisiense
415.	Wall Brown	Lasiommata megera
416.	Wasp Wood-soldierfly	Xylomya maculata
417.	Water Vole	
418.	Water-violet	Hottonia palustris
419.	Western European Herring Gull	Larus argentatus argenteus
420.	White Admiral	Limenitis camilla
421.	White-letter hairstreak	Satyrium w-album
422.	Whorled Water-milfoil	Myriophyllum verticillatum
423.	Wigeon	Mareca penelope
424.	Wild Clary	Salvia verbenaca
425.	Wild Pansy	Viola tricolor
426.	Wild Strawberry	Fragaria vesca
427.	Wood Sorrel	Oxalis acetosella
428.	Wormwood Flea Beetle	Longitarsus absynthii
429.	Yellow Bird's-nest	Hypopitys monotropa
430.	Yellow Horned-poppy	Glaucium flavum
431.	Yellow Loosestrife Bee	Macropis europaea
432.	Yellow Vetchling	Lathyrus aphaca
433.	Yellow Wagtail	Motacilla flava flavissima
434.	Yellow-horned Cranefly	Ctenophora flaveolata
435.	Yellow-shouldered Nomad Bee	Nomada ferruginata
436.	Yellow-vetch	Vicia lutea

7. Glossary of terms

Action

In the context of nature recovery, an “action” sets out the primary activity to achieve the goal of habitat creation.

Agroforestry

A land management practice that combines trees and shrubs with crops or livestock, promoting biodiversity, improving soil health and providing additional economic benefits.

All Opportunities Maps

These present all locations that could become of particular importance for biodiversity.

Base Maps

These show areas of particular importance for biodiversity. They identify national conservation sites, local nature reserves, local wildlife sites and areas of irreplaceable habitat in Essex.

Biodiversity

The total variety of all living things. This includes all plants and animals, as well as the places and spaces in which they live.

Biodiversity duty

A legal obligation imposed on public bodies to consider and integrate biodiversity conservation into their activities, policies and decision-making processes. This duty requires these bodies to actively work towards preserving and enhancing biodiversity, ensuring that their operations and developments contribute positively to the natural environment and support ecological sustainability.

Biodiversity Net Gain (BNG)

An approach to development and land management that aims to leave biodiversity in a better state than before.

Biosecurity

Measures and protocols designed to protect ecosystems from the introduction and spread of harmful organisms, including invasive species, pests, and diseases.

Blue Habitats/Spaces

Aquatic environments such as rivers, lakes, ponds, wetlands and coastal areas, which support aquatic biodiversity and provide services like water filtration, flood regulation and recreational opportunities.

Blue Infrastructure

Water-related natural and semi-natural features, including rivers, lakes, wetlands and coastal waters, which deliver environmental, social and economic benefits, particularly through water management, biodiversity support and recreation.

Carbon emitter

Sources, such as fossil fuel combustion or deforestation, that release carbon dioxide and other greenhouse gases into the atmosphere, contributing to climate change.

Carbon sink

Natural or artificial systems that absorb more carbon dioxide from the atmosphere than they release, helping to mitigate climate change.

Climate Change

Climate change is a large-scale, long-term shift in the planet’s weather patterns and average temperatures. Climate change in Intergovernmental Panel on Climate Change (IPCC) usage refers to a change in the state of the climate that can be identified (e.g. using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. It refers to any change in climate over time, whether due to natural variability or as a result of human activity.

Coastal Squeeze

The loss of coastal habitats, such as salt marshes and mudflats, due to rising sea levels and fixed landward barriers (e.g. seawalls), which prevent natural inland migration to these habitats.

Countryside Stewardship (CS)

This scheme rewards farmers for looking after and improving the natural environment, which includes increasing biodiversity, improving habitat, expanding woodland areas, improving water quality, improving air quality and improving natural flood management.

Ecosystem services

The benefits provided by ecosystems in the form of goods and services that underpin our economy by producing value for people. These goods/services are classified along four functional categories:

- Cultural services - the non-material benefits such as recreation, aesthetic and spiritual enrichment
- Provisioning services – products obtained such as fresh water, food, energy, timber and wood fuel.
- Supporting services – such as wildlife, nutrient cycle, water cycle photosynthesis
- Regulating services – protection from hazards such as the regulation of air quality, climate, flooding and erosion; water purification; disease and pest control and pollination.

Environmental Land Management Schemes (ELMS)

These schemes provide financial incentives, grants, subsidies or payments to landowners and managers who implement nature-friendly practices on their land.

Farm Clusters

Groups of farmers working collaboratively within a specific geographic area to implement nature recovery measures, enhance biodiversity and manage natural resources sustainably.

Freshwater standing water habitats

Bodies of non-flowing water such as lakes, ponds and reservoirs, which provide habitat for a diverse range of aquatic species and offer important ecosystem services.

Geology

The study of the Earth's physical structure and substance, including rocks, minerals and the processes that shape the planet's surface over time.

Lost ponds

Former ponds that have been filled in or lost but still retain potential to be restored to functional wetland habitats.

Greater Essex

The 12 Districts, Boroughs and Cities and the two unitary authorities in Essex.

Green Habitats/Spaces

Areas primarily composed of vegetation, such as forests, meadows and urban parks, that provide habitat for wildlife, recreational space for people and various ecological benefits. May also include biodiverse features within the farmed landscape such as field margins managed for wildlife or agroforestry.

Green Infrastructure

Networks of natural and semi-natural areas, including parks, gardens, forests, green roofs and street trees, designed and managed to provide a wide range of ecosystem services such as air and water purification, climate regulation and recreation.

Habitat connectivity

The degree to which different habitats are linked to allow the movement of species and the flow of ecological processes, essential for maintaining biodiversity and ecosystem health.

Habitat creation

The process of developing new natural habitats to replace lost ones or to enhance biodiversity.

Habitat priorities

For each habitat type in the Local Nature Recovery Strategy, there are three habitat priorities. The habitat priorities fall under three headings: "bigger habitat", "better habitat" and "more connected habitat", to align with the Lawton Principles of nature recovery.

Habitat restoration

Efforts to return degraded or damaged habitats to a healthy, functioning state, often involving activities like reforestation, wetland rehabilitation and invasive species removal.

Invasive Non Native Species (INNS)

Species that are introduced, intentionally or unintentionally, to regions outside their native range and that cause environmental, economic or human health impacts.

Landscape Character Assessment

Landscape character assessment (LCA) is the process of identifying and describing variation in character of the landscape. LCA documents identify and explain the unique combination of elements and features that make landscapes distinctive by mapping and describing character types and areas. They also show how the landscape is perceived, experienced and valued by people.

Landscape Recovery Scheme

These schemes will pay for bespoke, longer term, larger scale projects to enhance the natural environment.

Lawton Principles

Guidelines for nature conservation articulated by Sir John Lawton, emphasising the need for more, bigger, better and connected habitats to create resilient and coherent ecological networks.

LNRS species longlist

A comprehensive list of species considered for inclusion in the Local Nature Recovery Strategy, encompassing a wider range of species before narrowing down to the priority shortlist.

LNRS priority species shortlist

A condensed list of species that have been identified as top priorities for nature recovery action within the Local Nature Recovery Strategy.

Local Nature Partnership (LNP)

Essex body which, through partnership working and collaboration, aims to drive positive change in the local natural environment. The LNP's collective goal is to raise awareness of the nature crisis in Essex, and to support a variety of sectors in working towards nature recovery.

Local Nature Recovery Strategy (LNRS)

A statutory requirement, introduced by the Environment Act 2021, which is a strategic plan developed at a local level to guide actions for nature recovery, enhance biodiversity, and improve ecosystem services, involving collaboration among various stakeholders.

Local geological sites

Sites of geological importance at the local level, often designated for their educational, scientific or aesthetic value, and protected to conserve geological features and heritage.

Local Wildlife Sites (LoWS)

Non-statutory sites of local importance for biodiversity, identified and managed for their value to local wildlife and habitats.

National Character Area

NCAs represent areas of distinct and recognisable character at the national scale. Their boundaries follow natural lines in the landscape, not county or district boundaries. This makes them a good framework for decision-making and planning for future change.

National Landscape

A designated area of land in the UK, previously known as an Area of Outstanding Natural Beauty (AONB), that is of national importance for its natural beauty and is protected in the national interest.

Nature-friendly farming

Agricultural practices that prioritise environmental sustainability and biodiversity enhancement, such as reducing pesticide use, maintaining hedgerows and creating wildlife habitats on farms.

Nature recovery

Efforts aimed at restoring and enhancing natural habitats and ecosystems to increase biodiversity, improve ecosystem services, and strengthen ecological resilience.

Nature Recovery Network (NRN)

A connected network of habitats designed to support biodiversity and ecosystem resilience, facilitating species movement and adaptation to environmental changes.

Potential measures

Actions to achieve agreed priorities of the Local Nature Recovery Strategy.

Regenerative farming

Agricultural practices focused on restoring soil health, enhancing biodiversity, and improving ecosystem services, often through techniques like no-till farming, cover cropping and holistic grazing.

River buffers

Vegetated areas along riverbanks that protect waterways from pollution, provide habitat for wildlife, and help manage flood risks.

Sites of Special Scientific Interest (SSSIs)

Protected areas designated for their exceptional biodiversity, geology or natural features, often subject to specific conservation and management practices to preserve their value.

Soil erosion

The process by which soil is removed from the land by wind, water or human activity, leading to loss of fertile topsoil and degradation of land productivity.

Soil permeability

The capacity of soil to transmit water, influenced by factors such as soil texture, structure and organic matter content, affecting drainage, irrigation and plant growth.

Species priorities

Specific species identified as high priority for nature recovery efforts due to factors like their ecological importance, conservation status, or role in ecosystem functioning. In the Essex LNRS, the species priorities section highlights priority measures to support species on the LNRS priorities species shortlist.

Strategic Opportunities Maps

These show the top 15% of locations within all opportunities, i.e. those identified as having the most potential to deliver benefits for nature and the wider environment.

Supporting Action

In the context of nature recovery, a “supporting action” is a secondary task which aids the completion of the primary activity and wider goal of habitat creation and nature recovery.

Supporting Authorities

In the LNRS Regulations, a Supporting Authority for a local nature recovery strategy is—

(a) where the strategy area wholly or partly includes the area to which the authority relates, an authority listed in section 105(2)(a) to (e) of the Environment Act 2021; and

(b) Natural England.

Top 10 Priorities

The overarching priorities for nature recovery in Essex, whose purpose is to set out the overall vision for nature, which have been determined and agreed upon by a wide range of stakeholders and partners.

Urban areas

Regions characterised by high population density and infrastructure development.

Urban greening

The incorporation of vegetation and natural elements into urban environments, including parks, green roofs, street trees and community gardens, to enhance urban biodiversity and improve quality of life.

Wetlands

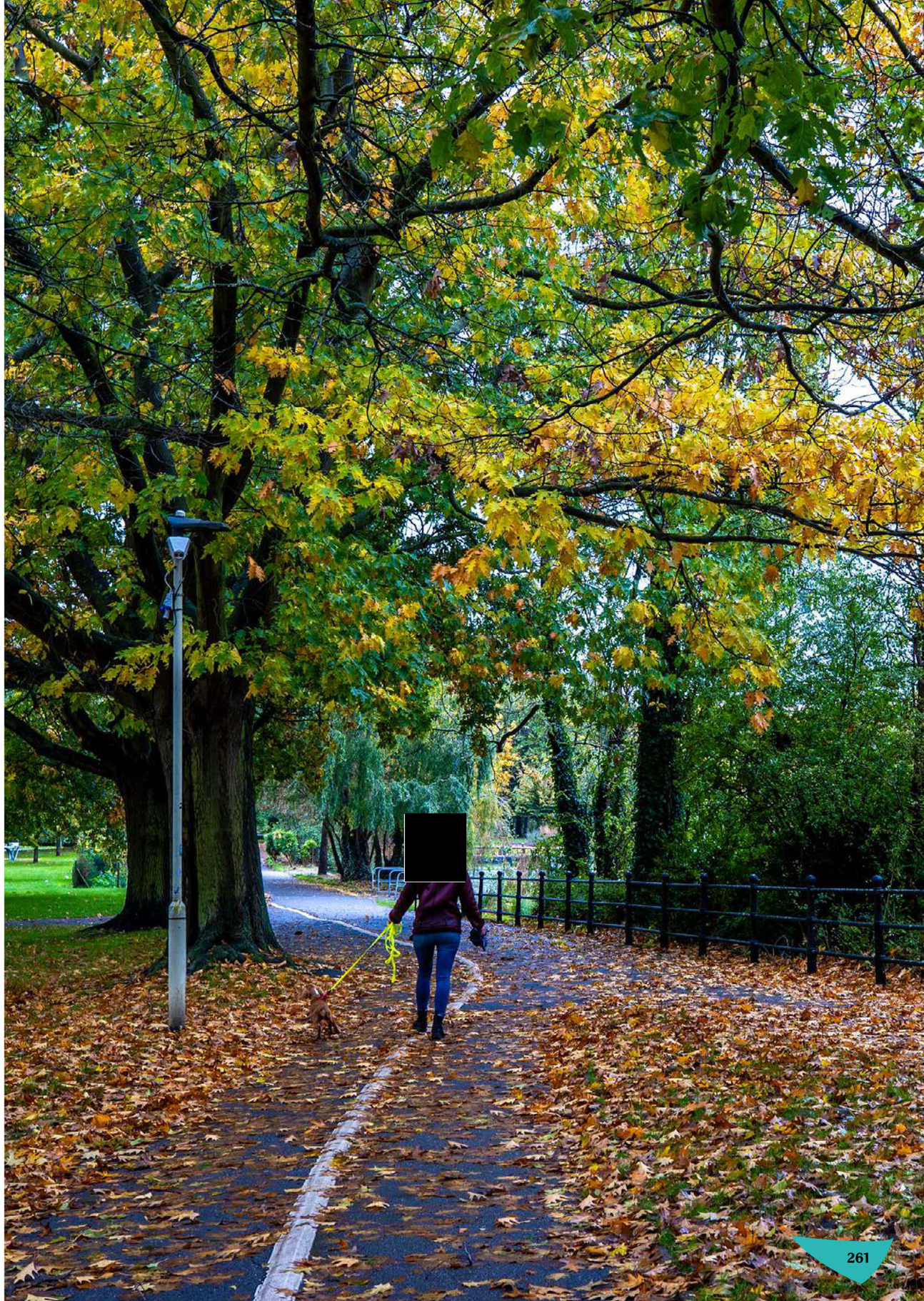
Ecosystems where water saturates the soil, either permanently or seasonally, supporting distinctive plants and wildlife adapted to wet conditions.

Wildlife buffers

Zones of natural or semi-natural habitat that provide additional space and resources for wildlife, often used to protect core habitats from adverse impacts of surrounding land use.

Woodland Carbon Code

This Code, developed by the UK government, provides a framework for certifying woodland creation projects that absorb or ‘sequester’ carbon dioxide from the atmosphere.



Right: Chelmsford © Paul Starr

8. Endnotes

1 “England is the only country in the world with mandatory Biodiversity Net Gain, further cementing our position as world leader on the environment. The UK was also the first country in the world to have legally binding targets to halt the decline of nature.” - New housing developments to deliver nature boost in landmark move - GOV.UK (**www.gov.uk**)

2 Lawton Report 2010: **www.gov.uk/government/news/making-space-for-nature-a-review-of-englands-wildlife-sites-published-today**

3 The base maps of the LNRS (areas of particular importance for biodiversity), cover 14.22% of the county currently. In addition, 14% represents natural Green Infrastructure, as defined by the Essex Climate Action Commission. This is limited to green infrastructure only within ancient woodland; coastal features; natural and semi-natural open spaces; and reservoirs, lakes and ponds.

4 Technically, this is the LNRS for Greater Essex, which includes the 12 Districts, Boroughs and Cities and the two unitary authorities in Essex. The Secretary of State for DEFRA defined the boundaries of the area and appointed Essex County Council (ECC) as Responsible Authority to lead preparation of the LNRS.

5 Lawton Report 2010: **www.gov.uk/government/news/making-space-for-nature-a-review-of-englands-wildlife-sites-published-today**

6 The base maps of the LNRS (areas of particular importance for biodiversity), cover 14.22% of the county currently. In addition, 14% represents natural Green Infrastructure, as defined by the Essex Climate Action Commission. This is limited to green infrastructure only within ancient woodland; coastal features; natural and semi-natural open spaces; and reservoirs, lakes and ponds.

7 **www.gov.uk/guidance/natural-environment#full-publication-update-history**

8 **www.gov.uk/guidance/natural-environment#full-publication-update-history**

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10 30% of land and sea in Essex connected and protected for wildlife by 2030 and 1 in 4 people in Essex taking action for wildlife by 2030.

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42 Essex Green Infrastructure Strategy, 2020

43 Essex GI Strategy, 2020

44 Hwang, 2021

45 Office for National Statistics Census 2021 **www.ons.gov.uk/visualisations/areas**

46 Essex Gi Strategy, 2020

47 Essex Water Strategy, 2024

48 State of Nature Report. 2023

49 Wetlands are areas of marsh, fen, peatland, or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres - Ramsar Convention on Wetlands (2018). Global Wetland Outlook: State of the World's Wetlands and their Services to People. Gland, Switzerland: Ramsar Convention Secretariat

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ESSEX LNRS | LOCAL NATURE RECOVERY STRATEGY

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