GREATER MANCHESTER

DOING THINGS DIFFERENTLY FOR THE ENVIRONMENT

Greater Manchester Local Nature Recovery Strategy

Appendices 1-8

Table of Contents

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Greater Manchester Local Nature Recovery Strategy

Appendix 1 – Relationship with other policies and strategies

Relationship between the Greater Manchester Local Nature Recovery Strategy and other Greater Manchester policies and strategies

The Local Nature Recovery Strategy (LNRS) joins a wider family of Greater Manchester policies and strategies, such as our Local Industrial Strategy and Places for Everyone.

A key relationship lies between the LNRS and our Greater Manchester 5-Year Environment Plan. The 2025 update to the GM 5-Year Environment Plan reflects the top ambitions of the LNRS and sets out high level actions for the delivery of the first 5 years of the strategy.

The delivery of the LNRS will also connect with many of the other strategies shown in the **diagram below**. For example, Streets for All – which is TFGM's plan to ensure our streets are welcoming, green, safe spaces for all – reflects the ambitions in the LNRS to green our streets and highways to act as corridors for nature. Equally, the need to reduce pressure on our environment set out in the LNRS overlaps with shared ambitions to reduce air pollution in the GM Clean Air Plan.

For each of the Greater Manchester Local Authorities and the Peak District National Park Authority, the Local Nature Recovery Strategy should be used and had regard to in future relevant strategies and plans, and particularly in:

- Local Plans.
- Local Green Infrastructure Plans or Strategies.
- Local Biodiversity Strategies, Action Plans or Nature Recovery Delivery Plans.
- Operational Plans for Parks or Public Estates.

Figure 1. How Greater Manchester LNRS connects with other strategies

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Greater Manchester Local Nature Recovery Strategy

Appendix 2 – Methodological Statement: Evidence used and processes undertaken

Introduction

The Greater Manchester Combined Authority (GMCA) has led the preparation of the Greater Manchester Local Nature Recovery Strategy (LNRS), through a stepped process, supported by the Greater Manchester Ecology Unit (GMEU), Natural England, the 10 Greater Manchester local authorities and the Peak District National Park Authority and the members of the Local Nature Recovery Strategy Steering and Officer Groups. The key steps followed in the preparation process are set out in the diagram below (Figure 2) and reflect the key components of the statutory guidance on the preparation of LNRS.

In this appendix, we provide further details and information about key parts of this process, including the development of habitat and species priorities and actions for the strategy and the mapping of opportunity areas

- Appendix 2a – The processes and evidence used to develop habitat priorities and actions
- Appendix 2b – The processes and evidence involved in developing the target species and actions
- Appendix 2c – The processes and key steps undertaken in mapping the Nature Network
- Appendix 2d – Longlist Species

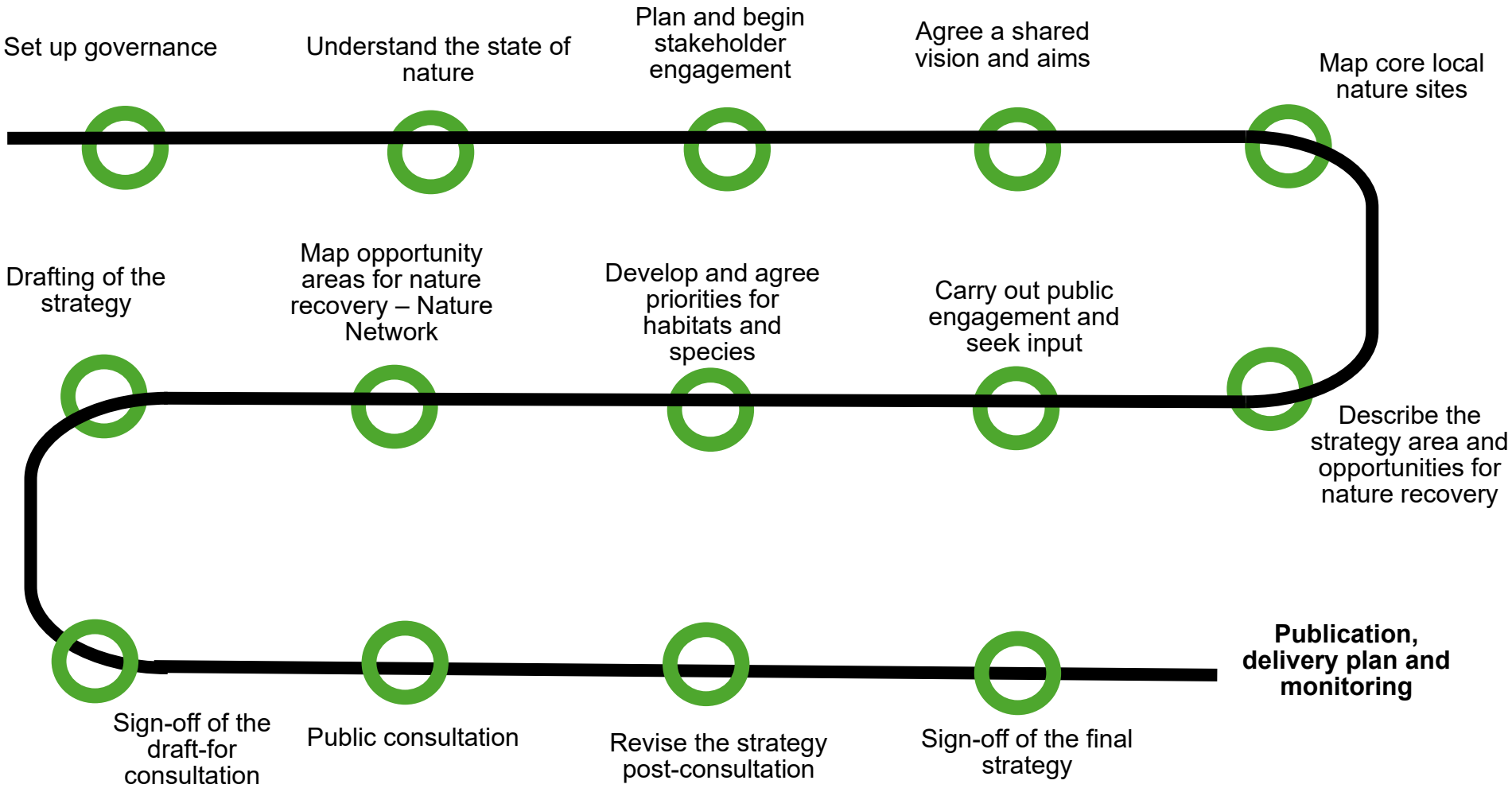


Figure 2. Key steps in developing the Greater Manchester Local Nature Recovery Strategy

Appendix 2a. The processes and evidence used to develop habitat priorities and actions

Priorities and actions

As per the Environment Act 2021, each LNRS must include:

- **Priorities** for biodiversity recovery or enhancement, considering contributions to other environmental benefits. These are the end results or outcomes that we all need to work towards.
- Proposals for potential **measures** ("actions") related to those priorities. These are the measures we all need to undertake to try to achieve those end results or outcomes.

Following the Environment Act 2021, we set out priorities and actions within the strategy, building on the description of the strategy area, State of Nature report and opportunities for nature recovery.

Within the strategy, priorities and actions have been identified for different types of habitats and target species. The following sections outline the key inputs and steps followed to identify and develop the habitat priorities and actions for the LNRS.

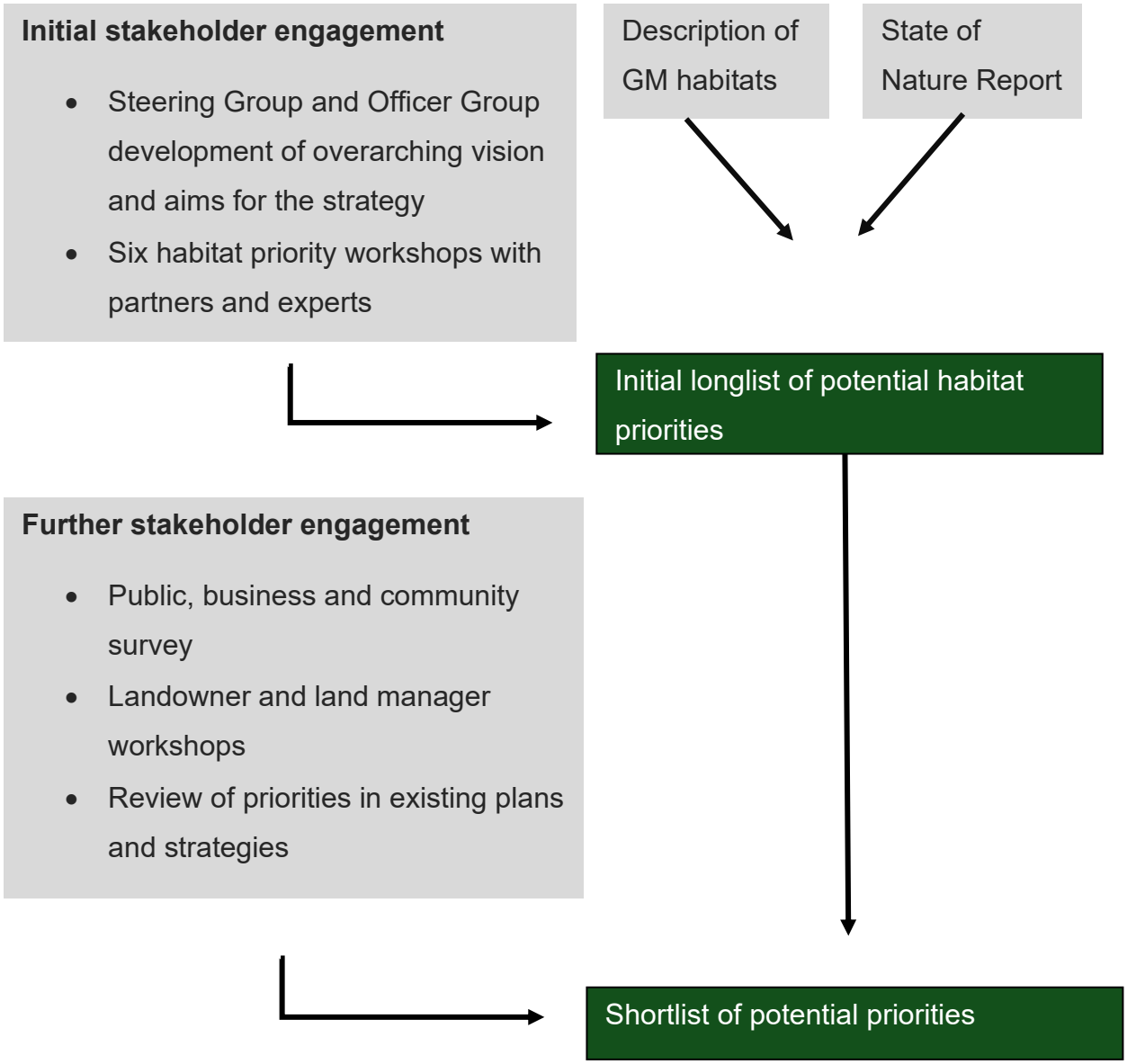
Approach to identifying habitat priorities and actions

The main inputs used to inform the identification and selection of habitat priorities and actions for the LNRS included:

- **Stakeholder input** – from multiple workshops with habitat experts, workshops with landowners/managers and responses to an open public survey.
- **Steering Group and Officer Group input** – feedback and sessions with the LNRS Steering and Officer groups.

- **Priorities in existing plans and strategies** – including all those listed below.
- **The State of Nature Report** – published in 2023 (see appendix 3).
- **Description of habitats** – see the main strategy text and appendix 6.
- **Opportunities for nature recovery identified for each habitat type** – identified from multiple habitat-based workshops.

These inputs informed, and were used throughout, a stepped process to develop the habitat priorities and actions. The diagram below condenses this process into a flow diagram (Figure 3). The key steps of which are expanded on further in the subsequent section.



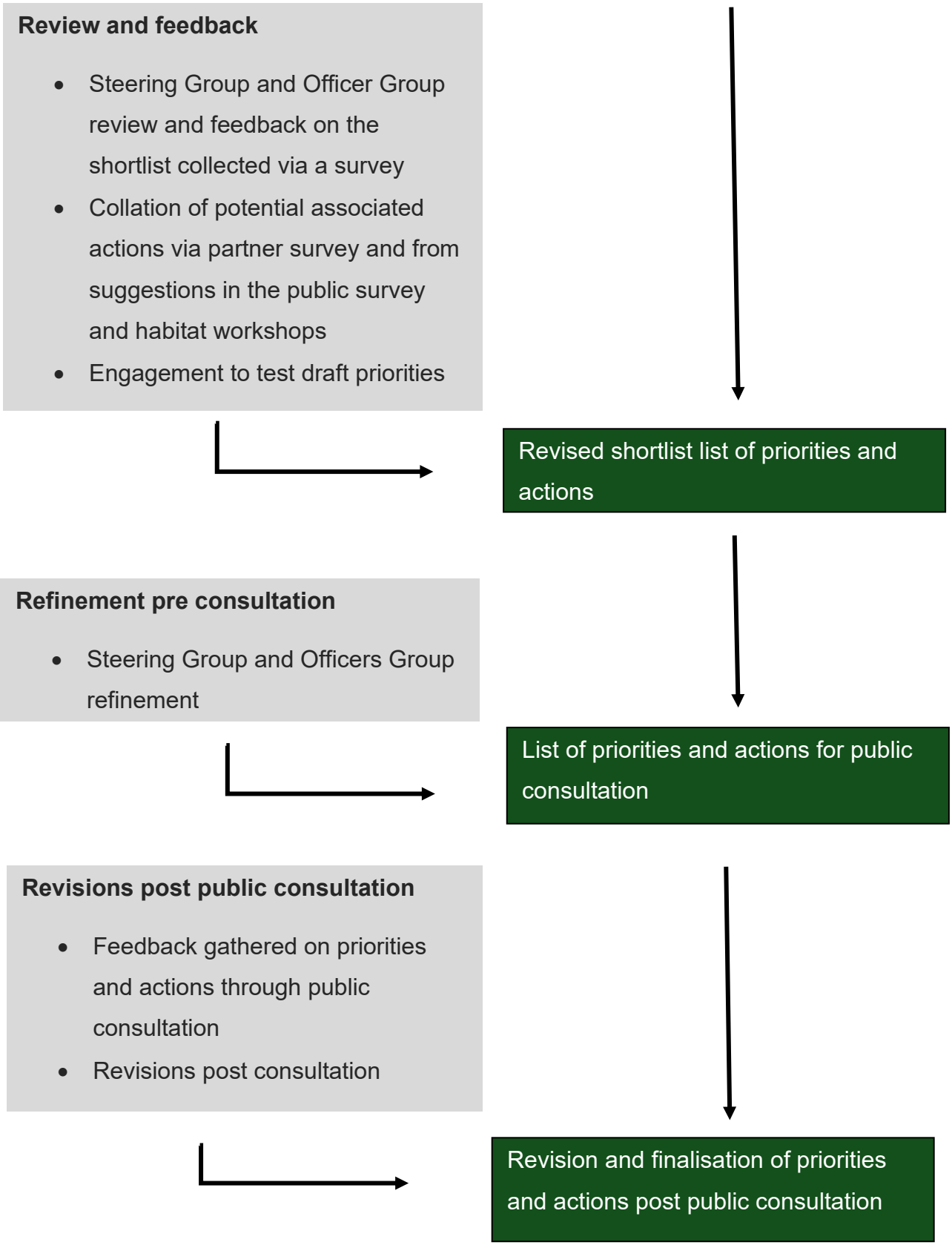


Figure 3. Process for developing habitat priorities and actions

List of existing strategies and plans used to inform the priorities and actions in the LNRS

The identification of opportunities, priorities and actions for the strategy were built upon a strong platform of existing plans and strategies which have already been published across Greater Manchester. All the documents listed below were reviewed when building our long list of priorities for nature recovery and helping to identify possible actions for priorities:

- Greater Manchester Biodiversity Action Plan (2008)
- An Ecological Framework for Greater Manchester (2009)
- Greater Manchester's Trees and Woodland Strategy (2018)
- Greater Manchester Forest Plan (2020-2029)
- Local Plans and Core Strategies
    - Bury Unitary Development Plan (1991)
    - Bolton Local Development Framework (2011)
    - Manchester Local Plan and Core Strategy (2012-2027)
    - Oldham Unitary Development Plan (2006) and Joint DPD (2011)
    - Rochdale Local Plan and Core Strategy (2016)
    - Salford Local Plan, Development Management Policies and Designations (2023)
    - Stockport Core Strategy (2011-2027)
    - Tameside Unitary Development Plan (2004)
    - Trafford Local Plan and Core Strategy (2012)
    - Wigan Local Plan and Core Strategy (2013) Wigan UDP [Written statement of retained policies] (2006)
- Climate Change Strategies
    - Bolton Climate change strategy (2021)
    - Wigan Climate change strategy (2020)
    - Rochdale's Climate change strategy and delivery plan- a partnership approach (2021 – 2025)
    - Stockport Climate Action Now (2019)
    - Tameside Carbon and Environment Strategy (2021)
- Local Biodiversity and Green Infrastructure strategies

    - Manchester Our Rivers Our City (2021)
    - Manchester's Great Outdoors - a green and blue infrastructure strategy for Manchester (2015-2018)
    - Bolton Climate Change Strategy - A Joint Framework for Bolton to Act on (2021)
    - Tameside Carbon & Environment Strategy (2021)
    - Trafford Council Tree policy (2023)
    - Bury Biodiversity Strategy (2023)
    - Stockport's Ecological Network (2020)
    - Oldham Council Green Infrastructure Strategy (2022)
    - Manchester City Council Biodiversity Strategy (2022)
    - Peak District National Park Authority Nature Recovery Plan (Draft 2024)
    - Stockport Council Wildflower Grasslands (2021)
- Catchment Plans
    - Upper Mersey Catchment Plan (2021) and Lower Mersey Catchment Plan (2021)
    - Irwell Catchment Plan (2019)
    - Douglas Catchment Plan (2019)
- Places for Everyone (2023)
- Lancashire Wildlife Trust 2030 Strategy
- National Character Areas (NCA) profiles and objectives for all 6 NCA overlapping with Greater Manchester
- NHS Code Green - Delivering Net Zero carbon at Manchester University NHS Foundation Trust 2022-2025
- Greater Manchester NHS Green Plan

Key steps in the development of habitat priorities and actions

Initial longlist of potential habitat priorities and actions

The initial longlist of potential habitat priorities was informed and developed using a wide range of evidence and views, including the following main inputs:

- The overarching vision and aims for the LNRS developed with the LNRS Steering Group and Officer Group
- Engagement with key experts and stakeholders via six habitat workshops
- State of Nature Report and overview of the main pressures on nature
- Detailed description of landscape character and habitats (see appendix 6)
- LNRS pilot priorities

Shortlist of potential priorities and measures

The initial longlist of potential habitat priorities was then condensed to reduce any repetition and to ensure the priorities identified met the broad requirements of the LNRS regulations and statutory guidance. The statutory guidance highlights that LNRS priorities and actions should mainly focus on habitat enhancement and creation, and therefore many initial suggestions (e.g. research and monitoring) were outside the scope of the LNRS.

The initial longlist was also reviewed against priorities in existing plans, policies and strategies to identify and resolve any gaps and missing priorities.

Further stakeholder engagement on priorities was also undertaken and fed into the refinement and shortlisting of priorities and the identification of actions, including:

- A public survey, with over 800 responses from members of the public, community groups, landowners, environmental charities and local businesses
- Dedicated workshops with landowners and farmers
- Dedicated events and workshops for sectors such as health care, parks and business

Revised shortlist list of priorities and actions

The shortlist of potential priorities was then reshared with the LNRS Steering Group and Officer Group via a partner feedback survey, which enabled partner feedback on each of the priorities and provided an opportunity to input further suggested actions for each priority.

Feedback received through this survey was then used to revise the priorities and actions. Engagement events were also used to test some of the draft priorities and actions with stakeholders outside of the steering group.

List of priorities and actions for public consultation

The priorities and actions were subsequently reissued to the LNRS Steering Group and Officer Group after revisions had been made, with a further opportunity for final comments to be made. After this final review period, the draft priorities and actions for the strategy were finalised for the draft-for-consultation.

Public consultation

Feedback on the priorities was then requested through the public consultation. GMCA ran a public consultation on the draft LNRS from 15th November 2024 to 31st January 2025, which was open to all stakeholder groups and a requirement under the LNRS statutory national regulations and guidance. Residents and stakeholders could respond to the public consultation via a survey, available online or in paper copy, and providing comments via email. The public consultation received over 400 responses. During this period, GMCA ran numerous engagement events to promote the public consultation and encourage feedback on the aims, targets, priorities and maps in the strategy. Events included:

- 10 in-person drop in events in each of the local districts, with a total of over 180 attendees.
- Sector specific events for different audiences including young people, businesses, communities, water sector, farmers and land managers.
- A general webinar.
- A workshop for 125 attendees at the Green Summit in December 2024.

Please see appendix 9 and 10 for full details of the responses we received to the public consultation.

Revisions post public consultation

The public consultation indicated strong support for the priorities set out in the LNRS, with an average of 81% of respondents agreeing or strongly agreeing with the habitat priorities. The public consultation also provided the GMCA with comments and technical feedback on the priorities and actions. This feedback was reviewed, and the most common themes were taken forward as suggested revisions to the priorities and action, where within the remit and scope of a LNRS and endorsed by our Steering Group and Officer Group.

Proposed revisions to the priorities and actions, in response to feedback from the public consultation, were taken to the LNRS Steering Group and Officer Group for further discussion through a series of three workshops held in March 2025. The Steering Group and Officer Group provided their views on the proposed amendments. GMCA then made further amendments and finalised the priorities and actions, based on the proposed changes and the response from the Steering Group and Officer Group to these proposed changes.

Appendix 2b. The processes and evidence involved in developing the target species and actions

The species priorities were developed in parallel to the habitat priorities. We already know that working to enhance, create and connect habitats across Greater Manchester will be of huge benefit to many species. However, some species and groups of species are particularly at risk locally, and some need bespoke action beyond the wider habitat priorities set out in this strategy.

Under the national LNRS guidance, LNRSs should set out a manageable list of target species and species groups for focused attention to help these species recover and avoid local species loss – these should be understood as a local list of species requiring targeted action and in no way impacts upon the status of any other protected, priority or principal species list set out nationally, such as species listed under Section 41 of the Natural Environment and Rural Communities Act 2006. Instead, the LNRS process sought to identify species and groups of species particularly at risk locally and those in need of bespoke action.

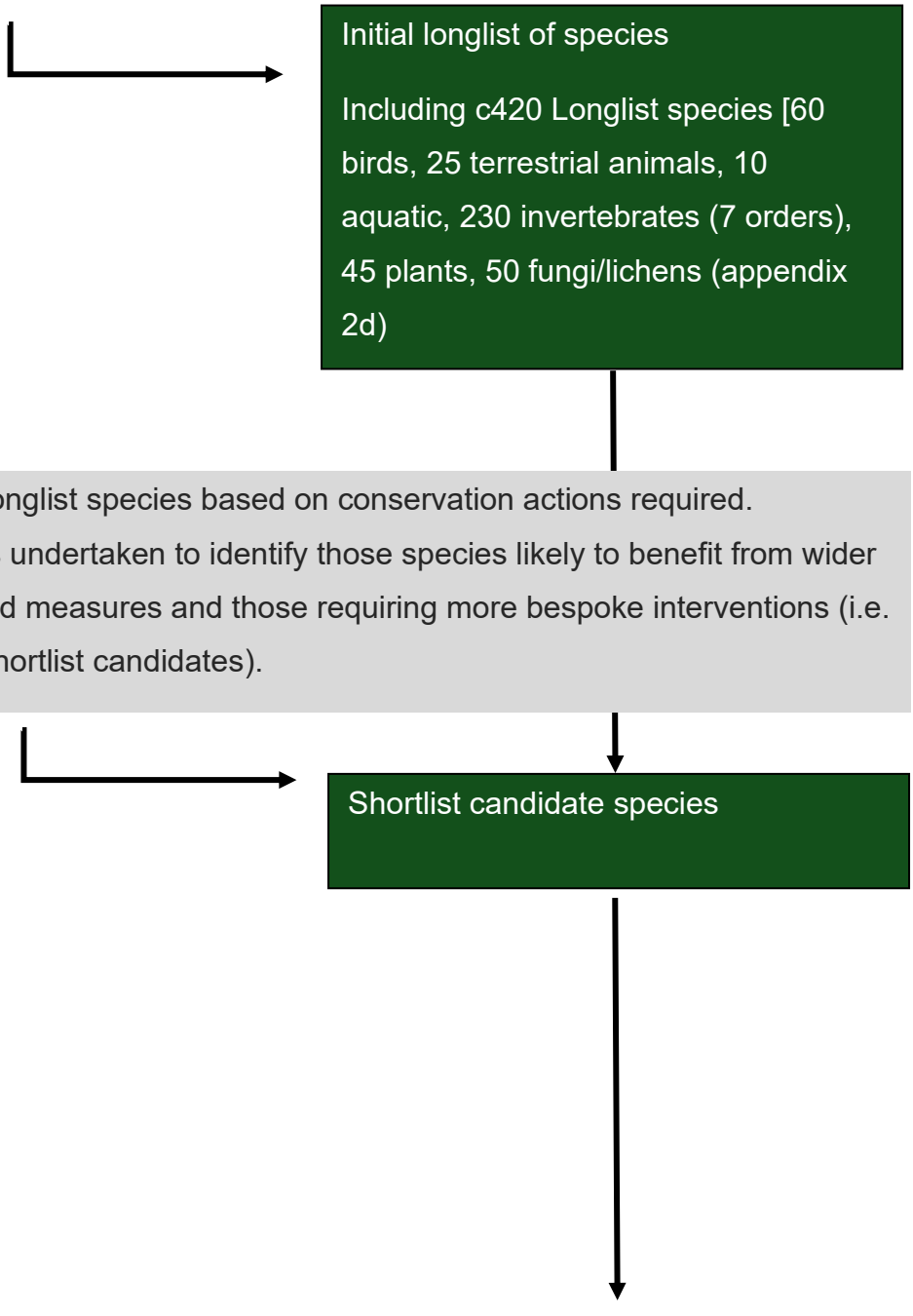
The selection process for the target species and species groups followed the national process set out by Natural England. Through working with local species experts, a list was initially agreed of over 400 vulnerable species which should benefit from the LNRS (see appendix 2d). From this list, 16 target species and species groups were then selected for bespoke action in this first iteration of the LNRS.

From this list, 16 target species and species groups were then selected for action in this first iteration of the LNRS. The diagram below condenses the process followed to select target species into a flow diagram. Further details are then provided on the selection criteria used to identify the 16 target species and species groups.

The target species and species group selection process involved the following steps with GMEU and a group of species experts from across Greater Manchester.

Creation of a local LNRS species long list of relevant threatened species for each taxonomic group by including:

- UK IUCN and BAP Section 41 UK species list
- Discussion and input from expert local species experts including country recorders, Lancashire Wildlife Trust, Natural England and Environment Agency



Ranking of shortlist candidate species to identify a manageable number for the strategy to prioritise. Each of the shortlist candidate species was ranked by local experts and species recorders to aid prioritisation, based on the following factors:

- urgency of action
- deliverability of conservation action
- national significance of the GM population
- biodiversity co-benefits
- environmental and social co-benefits
- climate change vulnerability.

Proposed shortlist

Species and groups of species ranked highest were proposed for shortlist inclusion in the strategy as target species

Results of the ranking of candidate shortlisted species presented back to the species expert group (recorders and local experts, Natural England, Lancashire Wildlife Trust and the Environment Agency) for review and feedback and the addition of actions (measures) for each target species/species group.

Target species/species groups and actions for public consultation

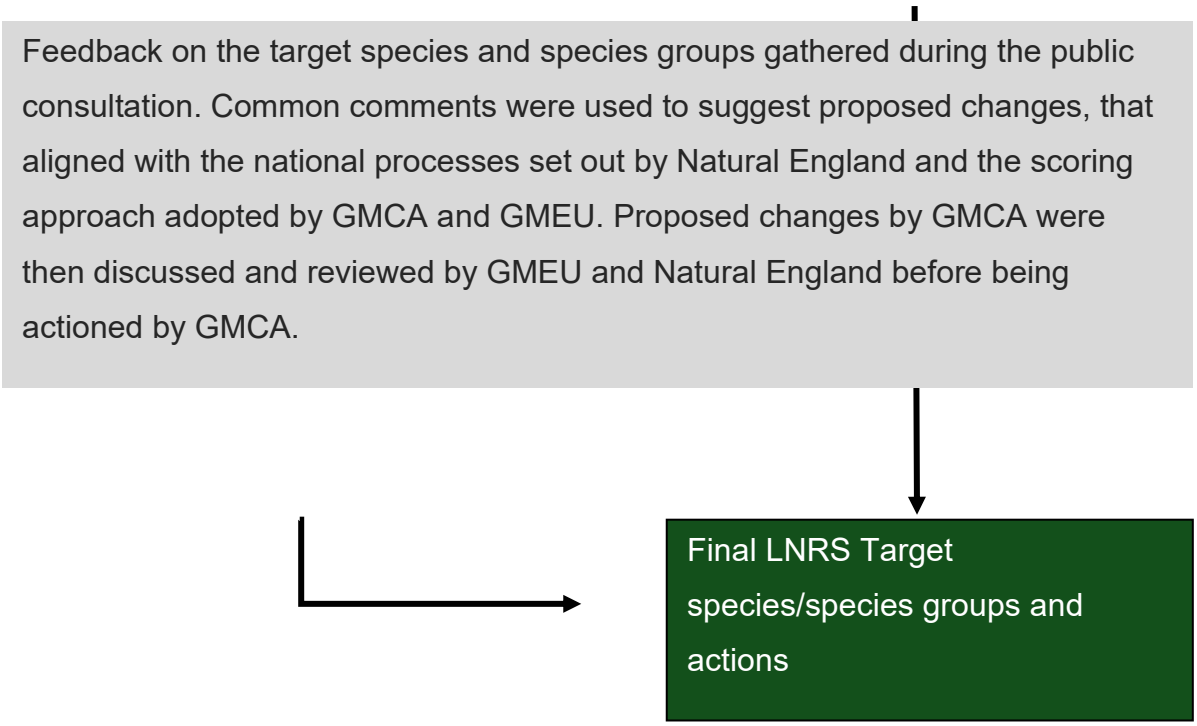


Figure 4. Process for selecting target species and target species groups

Selection criteria

The list of over 400 vulnerable species identified by the species experts were identified using the following criteria, and categorised to show the LNRS habitats relevant to them:

- **Conservation status:** Particularly threatened, vulnerable or endangered species (according to International Union for Conservation of Nature red lists, national red lists of species at risk of extinction or Biodiversity Action Plan Section 41 UK lists).
- **Local significance:** Species that are locally significant in Greater Manchester.

Key to the selection of the target from this list of vulnerable species was the use of a ranking approach to narrow down to a manageable list for bespoke action within the LNRS. The following factors informed this process:

- **Bespoke requirements:** Specific action required to aid these species recovery beyond the multiple habitat priorities set out in the LNRS.
- **Urgency:** Level of urgency of action needed to stabilise species loss.

- **Deliverability:** Feasibility of actions and whether actions could be delivered within Greater Manchester to aid recovery.
- **National significance:** National significance of the population in Greater Manchester.
- **Wider benefits:** Benefits for other species and wider ecosystem services, such as flood risk reduction or carbon sequestration.
- **Climate change:** Vulnerability to current and future climate change.

There are, of course, many vulnerable species beyond those that have been covered in the targeted species actions. The habitat priorities and actions will help conserve these species, and monitoring their populations will help assess whether other species should be prioritised for action in future updates to this strategy.

Appendix 2c. The processes and key steps undertaken in mapping the Nature Network for the LNRS

The Environment Act 2021 requires that all LNRS must identify and map:

- Areas of particular importance for biodiversity (APIBs), GMCA has referred to these as our "***core local nature sites***" within the text of the strategy
- Areas that could become of particular importance for biodiversity, or where the recovery or enhancement of biodiversity could make a particular contribution to other environmental benefits. They are where the responsible authority and local partners propose that effort should be concentrated to restore habitats to achieve the most for biodiversity and the wider environment. GMCA has referred to these as "***nature recovery opportunity areas***" or "***opportunity areas***" throughout the strategy

When brought together, GMCA has collectively referred to these two sets of mapped sites as the Greater Manchester Nature Network or **"Nature Network"**: for the purpose of the national LNRS regulations and statutory guidance this forms the Local Habitat Map for Greater Manchester. The subsequent sections provide further information on the evidence and processes used to develop these two mapped components of the LNRS, our Nature Network.

Methodology for identifying and mapping core local nature sites

These are our best remaining wildlife sites across the city-region and are already recognised for their importance for biodiversity (our "areas of particular importance for biodiversity"). The areas eligible for inclusion as core local nature sites are tightly defined by Defra, in national LNRS regulations and statutory guidance. This guidance sets out that the map should only include statutory and non-statutory designated or scheduled sites for nature conservation and irreplaceable habitats as

defined under Biodiversity Net Gain Regulations (2024). The intention behind this approach is to establish a nationally consistent baseline map.

Following national guidance, the map of core local nature sites for Greater Manchester contains only the follow types of sites and habitats:

- **Nationally designated sites** for their value to nature: including Sites of Special Scientific Interest (SSSI); Special Protected Areas (SPA), Special Areas of Conservation (SAC), National Nature Reserves (NNR);
- **Locally designated or scheduled sites** for their value to nature: Local Nature Reserves (LNR), locally designated Local Wildlife Sites (LWS) – the latter known locally as Sites of Biological Importance (SBI);
- **Irreplaceable habitats** as defined in the Biodiversity Gain Requirements (Irreplaceable Habitat) Regulations 2024[1]. The habitats that meet the Biodiversity Gain Requirements definition, and are present, include: blanket bog, lowland fens, ancient woodland, ancient trees and veteran trees.

The datasets used to identify sites included in the core local nature sites are as set out in the table below:

Datasets used in the development of the LNRS core local nature sites map

Site or habitat for inclusion in Core Local Nature Sites LNRS Map (APIBs)	**Source and datasets used**
Sites of Special Scientific Interest	Natural England: Sites of Special Scientific Interest (England) - data.gov.uk
Special Protection Areas	Natural England: Special Protection Areas (England) - data.gov.uk
Special Areas of Conservation	Natural England: Special Area of Conservation (time series) - data.gov.uk
National Nature Reserves	Natural England: National Nature Reserves (England) - data.gov.uk
Local Nature Reserves	Natural England: Local Nature Reserves (England) - data.gov.uk

[1] The Biodiversity Gain Requirements (Irreplaceable Habitat) Regulations 2024

Sites of Biological Importance (including Local Wildlife Sites)	Greater Manchester Ecology Unit: Sites of Biological Importance (SBI / LWS) in Greater Manchester - data.gov.uk
Irreplaceable habitats: Blanket bog	Natural England (Priority Habitats Inventory): Priority Habitats Inventory (England) - data.gov.uk
Irreplaceable habitats: Lowland Fen	Natural England (Priority Habitats Inventory) - Priority Habitats Inventory (England) - data.gov.uk
Irreplaceable habitats: Ancient woodland	Natural England (Ancient Woodland Inventory) - Ancient Woodland (England) - data.gov.uk
Irreplaceable habitats: Ancient and veteran trees	Woodland Trust: Using the data - Ancient Tree Inventory

In some instances, stakeholders have notified us that habitats identified in the Priority Habitat Inventory (or PHI) are inaccurate and provided ecological survey evidence to support this. Where this evidence has been provided, and GMEU agrees with this evidence, the Priority Habitats Inventory has been amended on our LNRS core local nature site map. However, it has not been possible to check the accuracy of the PHI over Greater Manchester as a whole and therefore these amendments have only been made where we have been notified of an inaccuracy.

Methodology for identifying and mapping nature recovery opportunity areas

The nature recovery opportunity areas (our “areas which could become of particular importance for biodiversity”) are locations where taking action to enhance, restore or create different types of habitats (i.e. woodlands, grasslands, moorlands, waterbodies and wetlands) would expand and better connect our core local nature sites. By prioritising action in these areas, we can focus our efforts and resources where we can have the greatest impact on reconnecting our remaining wildlife-rich spaces. To identify opportunity areas for nature recovery, GMCA followed a stepped process involving ecological modelling and expert input. This stepped process was informed by the regulations and statutory guidance, along with the availability of local data, resources, tools and expertise.

The methodology adopted looked to meet the broad vision for the LNRS, as agreed with our Steering Group and Officer Group, to ‘deliver a resilient network for nature across the city-region, connecting and enhancing wild spaces so that people and nature can thrive’. The methodology set out below was presented to our Steering Group and Officer Group for comment prior to commencement. It is important to note that our mapping of nature recovery opportunity areas was predominantly habitat rather than species driven. This is based on the need to work towards a nature network that will benefit many species, rather than focusing on the specific conservation needs of a single species.

The subsequent sections provide details on each of the steps undertaken to develop and finalise the Nature Network maps.

Step 1. Identification and mapping of core local nature sites

The national LNRS statutory guidance highlights that opportunity areas should be targeted where they will join up or expand core local nature sites. The identification and mapping of core local nature sites formed a key first step for the subsequent identification of locations for nature recovery opportunity areas. The subsequent steps in the methodology focus on how to identify opportunity areas that would best connect core local nature sites to help establish a larger, more resilient network of high-quality joined up habitats.

Step 2. Creation of a land cover and land use map

After the identification of the core local nature sites, a key next step in informing the identification of opportunity areas was the development of a comprehensive land use and land cover map. The creation of a land cover and land use map enabled GMCA to understand the habitats and land use types that surrounded each of the core local nature sites. This information was then used to inform the identification of locations for the best potential corridors between them in subsequent steps of the process.

As there was no comprehensive UKHab[2] or Phase 1 habitat survey[3] covering the whole of Greater Manchester, a bespoke land cover and land use map was created by combining land cover and land use datasets from several sources, using data with the highest confidence first, and then progressively filling any gaps with lower confidence data to ensure full coverage.

The datasets used to create the land cover and land use map are outlined in the table below, in order of confidence.

List of datasets used in the creation of the land use land cover map

Data	**Source**
Rivers and streams, canals, ditches, standing water including ponds	Ordnance Survey National Geographic Database
Hedgelines (buffered by 1m)	Rural Payments Agency Hedgeline Inventory
Residential gardens	Ordnance Survey National Geographic Database
Buildings	Ordnance Survey National Geographic Database
Roads, paving, paths, transport curtilage, tracks, towing paths	Ordnance Survey National Geographic Database
Ancient woodland	Natural England Ancient Woodland Inventory

[2] Ukhab refers to the Uk Habitat Classification, more information on this can classification system is available on the ukhab website (external link): ukhab – UK Habitat Classification

[3] Phase 1 Habitat Survey is a standard technique for recording habitats and ecological features within a site published by the Joint Natur Conservation Committee. Available on the JNCC website (external link) Handbook for Phase 1 habitat survey

Broadleaved woodland, coniferous woodland, mixed woodland	Forestry Commission National Forest Inventory
Broadleaved woodland, mixed woodland, coniferous woodland	Ordnance Survey National Geographic Database
Rails, made surfaces, transport curtilage	Ordnance Survey National Geographic Database
Structures	Ordnance Survey National Geographic Database
Arable land	Rural Payments Agency Land Registry
Blanket bog, lowland raised bog, reedbeds, upland heathland, upland flushes fens & swamps, lowland heathland, lowland fens, traditional orchard	Natural England
Amenity land, religious grounds, cemeteries, parks, gardens, educational grounds, playing fields, golf courses, sports facilities, institutional grounds, allotments	Ordnance Survey MasterMap Greenspaces & NGD
Permanent grassland, scrub, woodlands, heathlands, tracks, farmyards, hard standings, streams, ditches, ponds	Rural Payments Agency Land Registry
Boulders, quarry, sand, shingle, exposed peat, bare earth or grass, modified grass, rough grass, scrub, marsh, heath, construction sites, landfill, made surfaces, swimming pools	Ordnance Survey National Geographic Database

When incorporating each dataset into the map, the map was attributed with land cover and land use information. This was then rationalised down to classifications (inspired by UK Biodiversity Action Plan and UK Habitat classifications) with a few bespoke categories.

Habitat categories used in the land cover land use map

Code	Habitat
g1	Acid Grassland
g2	Calcareous grassland
g3	Neutral grassland
(g4)	Modified grassland (Private)
(g5)	Modified grassland (Public)
(g6)	Sports and leisure
(g7)	Agricultural permanent grassland
(g8)	Transport and road verges
w1	Broadleaved and mixed woodland
w2	Coniferous woodland
h1	Dwarf shrub heath
h2	Hedgerows
h3	Dense scrub
f1	Upland Bog
f2	Fen, marsh and Swamp
c1	Arable and horticulture
u1	Urban made surface
(u2)	Residential gardens
(u3)	Transport infrastructure
(u4)	Buildings and structures
s1	Inland rock
s2	Supralittoral rock
s3	Supralittoral sediment
r1	Standing open water and canals
r2	Rivers and streams
t1	Littoral rock
t2	Littoral sediment

Step 3. Modelling an ecological network and expansion areas

Modelling software selection

The LNRS statutory guidance has a strong focus on identifying opportunity areas that will help build ecological connectivity, including identifying areas that are:

- Targeted to join up or expand existing core local nature sites, as this can help to establish larger, more resilient networks of high-quality habitat across the landscape.
- Areas which would achieve greater connectivity of similar biodiverse habitats across the landscape.

This focus on connectivity in the national LNRS statutory guidance is also reflected in the overarching vision of the LNRS ***'to deliver a resilient network for nature across the city-region, connecting and enhancing wild spaces.'***

To identify areas where there are opportunities to help build better ecological connectivity, GMCA used an established ecological network modelling tool called Linkage Mapper[4]. The selection of Linkage Mapper was based on an independent review of a series of ecological modelling tools and software undertaken and tested for GMCA by Lancashire Wildlife Trust and Cheshire Wildlife Trust in early 2024. Through their research and testing, Linkage Mapper was identified as the best option to model priority locations to boost ecological connectivity across Greater Manchester. Linkage Mapper was also selected by several other Responsible Authorities across North West England, including Liverpool City Region, Cheshire and Warrington and Lancashire.

Setting up parameters for the habitat connectivity modelling

Linkage Mapper operates by assessing the land cover (or habitat) types between our core local nature sites in terms of how difficult, or resistant, it will be for species to move across. This information is then used by the Linkage Mapper tool to identify the best routes for species to move between our core local nature sites. The Linkage Mapper tool does this by using a technique called 'least cost path ecological

[4] https://linkagemapper.org/

modelling', which assesses the difficulty or 'cost' to species to move across different land cover (or habitat) types. By assessing and identifying routes between core local nature sites that are more difficult for species to move across, for example due to lots of roads or built up urban areas, compared to routes that are less difficult for species to move across, for example areas with more semi-natural habitats, agricultural areas or woodlands, the Linkage Mapper tool is able to identify and suggest routes or corridors that would be better suited to build connectivity.

To identify priority corridors the Linkage Mapper tool required two inputs:

- The locations of our core local nature sites.
- A 'resistance surface' – representing how difficult it is for species to move across the different land covers that make up our city-region, based on land cover types.

To set up the specific resistance surface needed for the Linkage Mapper tool to operate, GMCA, supported by GMEU, first used academic research papers and then tailored these locally by building in expertise from local specialists and experts. We consulted local specialists and experts via a series of panels sessions to enable experts to rank the level of resistance or difficulty of different land cover types for species movement across the city-region. Our local expert panels included representatives from The University of Manchester, The Wildlife Trusts, Forestry Commission, City of Trees, GMEU, Natural England and other organisations from our LNRS steering group. This process was repeated for different species assemblages, to enable the modelling of separate networks for woodlands, grasslands and wetlands. Examples of the difficulty rankings used in these panel sessions are shown in the table below. The involvement of local experts enabled bespoke resistance values to be created specific to habitats here.

Resistance categories used in the expert workshops

Category	**Description**	**Resistance Value**
Optimal	Excellent food and shelter	1
Good	Good food and shelter	3
Reasonable	Reasonable food and shelter	5

Category	Description	Resistance Value
Poor	Lacking either food or shelter	10
Very poor	Few food and shelter	20
Very unsuitable	No or little food and shelter	50
Impermeable	Significant block or high risk of mortality	100

Our core local nature sites were also refined for use in the ecological modelling by removing linear sites, that are already inherently connected, such as designated canals (e.g. Rochdale, Bridgewater and Peak Forest Canals), and prioritising the most viable sites with the highest potential to deliver nature recovery based on size (over 2ha in size). This avoided the model trying to build connectivity to very small sites, with less potential to support nature recovery at the city-region scale needed to respond to the biodiversity emergency.

Outputs from the habitat connectivity modelling

Using both the locations of the core local nature sites and the resistance surface, Linkage Mapper toolkit was used to produce a series of suggested corridors or routes to expand and better connect our core local nature sites[5]. Examples of the input and outputs of the connectivity mapping process are illustrated below (Figure 5). These outputs were repeated to produce a general nature connectivity network, as well as dedicated woodland and grassland networks.

[5] Using the build network and map linkages tools with Linkage Mapper, centrality mapper extension was also used to identify those locations that are most important corridors for overall species movement.

Some habitats are inherently more connected, including our rivers, waterbodies and canals, and our upland areas – network modelling was not required for these habitat types. Instead, all major rivers and canals were included in the network. For wetland areas, further processes were also undertaken, alongside the modelling to identify suitable conditions for the creation of wetland habitat, this included the consideration of factors such as underlying peat soils and land within or close to flood zones. In upland areas the majority of these are covered by core local nature sites, and the general network and water network was used to suggest priority areas to build connectivity between upland and lowland areas.

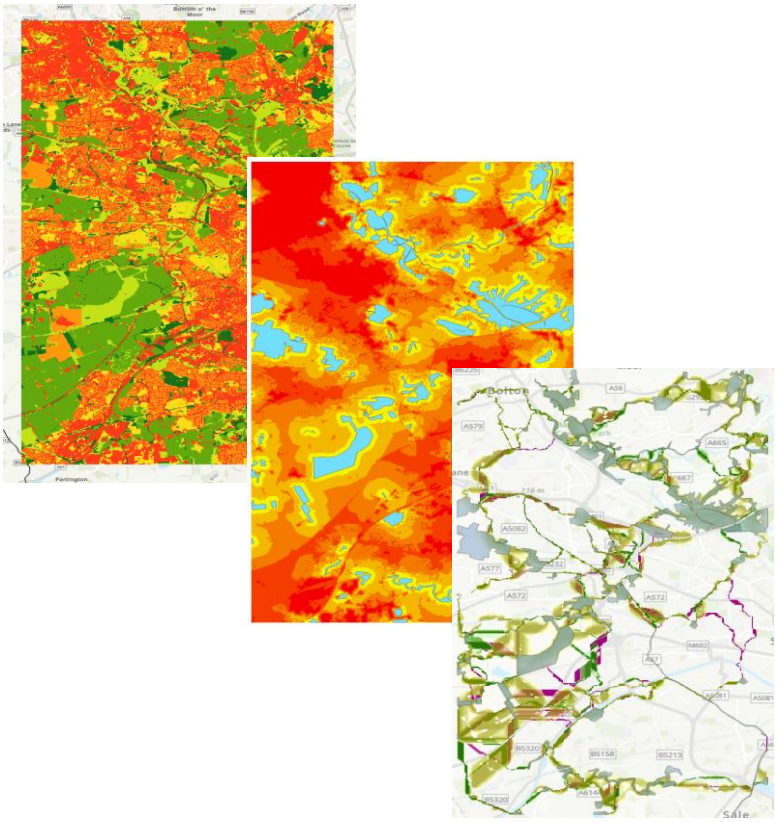


Figure 5. Example inputs and output from the ecological modelling process.

Images show the resistance surface developed, the cost weighted distance developed to inform the mapping through Linkage Mapper around the Core Local Nature Site and an example of some of the test corridors outputted through the Linkage Mapper toolkit.

Adding expansion areas

Alongside modelling, connectivity corridors, where there were opportunities to better connect our core local nature sites, we also modelled expansion zones around our core local nature sites to reflect the importance of expanding these existing areas for nature. This was also undertaken using Linkage Mapper and taking a resistance-based approach to avoid the suggestion of expansion areas over inappropriate land covers and land use, such as roads or residential gardens. This resulted in variable

expansion zones around most core local nature sites, where there is appropriate surrounding land cover and land use types.

Prioritising corridors areas

The outputs from Linkage Mapper included a number of possible corridors. Our next stage was to prioritise within these to help target action and attention towards those areas with the biggest potential to benefit species. To do this, the Linkage Mapper toolkit includes analysis tools designed to rank the relative importance of core sites and corridors for maintaining the overall Nature Network[6]. The least viable and least important corridors were dropped from the models to create maps showing our most important expansion zones and corridors. As a safeguard, we also visually assessed recent indicator species records from the Greater Manchester Local Record Centre to restore any important links that had been incorrectly dropped by the prioritisation tool.

The output from this stage included priority corridors for woodlands, grasslands, wetlands, rivers and waterbodies, upland areas, a general network and expansion zones.

Step 4. Refining opportunity areas with stakeholders

At this point, the corridors had been created objectively through modelling. Once a draft modelled network had been produced, it was then crucial to gather local views and expertise on the outputs, and to use local expertise to sense check, improve and amend the modelled Nature Network. To do this, the outputs were shared with members of the LNRS steering group and officer group through a series of area specific workshops covering different areas of Greater Manchester. These workshops, held over summer 2024, enabled stakeholders to interrogate the priority modelled corridors and expansion zones and allowed members of the steering group and officer group to propose additions and amends to the modelled outputs.

To ensure suggested additions to the corridors were targeted and fitted within the strategic purpose of the LNRS, a series of criteria were used to guide proposed

[6] Linkage Mapper's centrality mapper extension was run to identify those areas with the highest importance to the network i.e. those that are most important for keeping the network connected.

additions and amendments put forward by members of the steering group and officer group, including:

- The addition of a **specific parcel** of land or site.
- The **location and coherence** of the proposed site addition **in relation to a core local nature sites** OR the **modelled corridors** e.g. partially within, adjacent, nearby or isolated.
- Whether the ambitions for the proposed site addition **met the purposes of the LNRS Nature Network**, e.g. to build connectivity for species movement by joining up or expanding good areas for nature, to create or enhance habitat and to focus effort where it would deliver the greatest benefits for nature.
- Whether the ambitions for the proposed site addition could be **aligned with the actions being mapped** for the LNRS. Please see section 5 for mapped and unmapped actions in the LNRS.
- The **size of the proposed site addition**, larger sites over 2ha were preferred to avoid the inclusion of small, fragmented areas.
- The **feasibility and likelihood of action** occurring on the proposed site e.g. whether work related to nature recovery has already started on the site, funding has been secured, landowner permission has been given or support for conservation works or a management plan is in place.

To try to ensure mutual agreement around additions to the Nature Network, members of the steering group and officer group were also asked to try to gather **multi-partner consensus** and support when proposing additions. The use of criteria was necessary to limit the coverage of the network and ensure it remained a targeted and practical tool to drive forward nature recovery over the next decade.

Alongside proposed site additions, site removals were also considered and put forward over the summer 2024 review period. There were two categories of removals:

- **Sites under construction or with agreed planning permission**: To ensure the feasibility and effectiveness of the Nature Network in prioritising and targeting areas where action for nature recovery could be taken, sites that were known to be under construction for development or where planning permission had been granted were removed from the Nature Network. The decision to remove these

areas was based on the justification that the opportunity to use the evidence base provided by the Nature Network had been missed in these locations, as land use change was already underway or had been agreed. Removal of these sites was not based on site-by-site investigation but through the use of all sites marked as ‘under construction’ or ‘planning permission agreed’ on the 2023-24 Strategic Housing Land Availability Assessment (SHLAA), which is information collected by GMCA annually on land use change and planning status of land allocations.

- **Sites with potential for development in the future**: As the Nature Network is not a barrier to development or other land use on a site, nor does it provide any additional designations or restrictions on land use, the GMCA did not recommend the removal of further land from the Nature Network only on the basis that it could potentially be developed for housing, industry or employment in the future. However, some local authorities did request the removal of land considered unfeasible or where they were concerned regarding its inclusion. They did this in their role as Supporting Authorities for the preparation of Local Nature Recovery Strategies under the Environment Act 2021, regulations and statutory guidance. Sites were only removed or amended by GMCA at the explicit request of the relevant local authority.

Once the additions and removals were agreed, GMCA amended the Nature Network.

Step 5. Mapping actions

Once the amended Nature Network had been agreed, following guidance from Defra, GMCA then needed to map locations within the Nature Network where specific actions (measures) identified within the strategy could potentially take place. The mapping of actions is intended to suggest the most appropriate activities to take place at a location to benefit the network. However, site-specific investigation and local experts still need to be consulted and the habitat principles set out in the strategy need to be closely followed.

Selecting actions to map

The LNRS lists over 108 actions for the 27 habitat priorities in the strategy. Not all these actions were suitable for mapping. For example, non-location specific actions, such as those relating to behaviour change or those that would be similarly beneficial

over a large area, were not selected as suitable for mapping. To determine if an action was suitable for mapping, all actions were assessed against the following criteria, based upon Defra's 'Mapping of Potential Measures' non-statutory LNRS guidance[7]:

Based on this guidance, we did not map actions that:

- Would not directly support habitat creation or improvement
- Would be similarly beneficial over large areas
- Would not be sufficiently impactful or would only be impactful if implemented at a very large scale
- Where there is no known suitable location or where identifying a location would be technically difficult to establish or subject to a high degree of error when mapping at a Greater Manchester scale
- Just highlight a general pressure
- Just promote changed behaviour
- Just improve understanding

This resulted in 26 measures to be mapped (see table below)

Actions mapped per broad habitat type in the LNRS

Broad habitat type	**Mapped actions**
Grasslands, Croplands and Pasture	• Identify and safeguard remaining notable semi-natural grasslands. • Enhance and appropriately manage remaining semi-natural grasslands and lowland heath, including increasing species richness. • Creation or restoration of species-rich grasslands and lowland heath, particularly where they will expand or act as stepping stones or corridors.

[7] Defra (2024) Mapping potential measures in Local Nature Recovery Strategies – advice for Responsible Authorities

	• Enhance and manage improved or semi-improved grasslands to boost species richness.
Lowlands, Wetlands and Mosslands	• Enhance, maintain and manage existing and remnant areas of lowland raised bog, fens and other wetland habitats over the long term, to improve diversity. • Enhance patchworks of semi-natural habitats surrounding our remaining lowland raised bog, fens and other wetland habitats to improve resilience. • Reintroduce lost species across a range of mossland and wetland communities. • Restore degraded wetland sites and areas of restorable deep peat, particularly where they will connect remaining wetland habitats. • Create more patchworks of wetland habitats and transitional habitats, particularly around remaining and restored lowland raised bog, fens and other wetland habitats.
Rivers, Waterbodies and Canals	• Make water channels more natural and complex, re-meander channels and reconnect to floodplains where feasible. • Enhance and maintain existing habitats within our waterbodies and adjacent grassland, wetland and woodland habitats to increase species richness. • Restore and maintain more natural riverbanks, in appropriate locations, and reduce invasive species. • Expansion, creation or restoration of a variety of waterside habitats, including woodlands, wetlands and meadows, where they will better connect existing habitats. • Improve mobility for aquatic creatures by removing barriers, daylighting buried or covered waterbodies or installing by-pass structures, where feasible. • Restoration and reconnection of habitats alongside canals, including targeted woodland creation and tree planting alongside canals.

	• Softening manmade canal banks using natural materials and native plants.
Upland, Moorland and Heath	• Stabilise, rewet and restore deep peat towards active blanket bog, where appropriate. • Encourage more diverse native vegetation and more flower-rich habitats, in appropriate places, on existing upland moorlands. • Create transitional habitats or corridors to increase linkage between our uplands and lowland habitats, where conditions allow. • Restore more naturalised wet areas, flushes and ponds. • Create rough, diverse grasslands around flushes and wetlands, wet in some areas with rushes around flushes and springs. • Encourage the restoration and regeneration of existing upland woodlands and clough woodlands.
Woodlands, Trees and Scrub	• Identify, safeguard and enhance ancient, long-established and designated woodlands, veteran and notable trees. • Enhance existing woodlands, scrub, and hedgerows through positive management, diversify them and increase their resilience to pests, disease and climate change. • Target native woodland and scrub creation or establishment where it will connect existing woodlands and scrub. • Expand existing woodland, scrub and other woodland fringe and transitional habitats.

Mapping actions to land parcels

The mapping of actions was undertaken at the land parcel scale (following the non-statutory guidance provided by Defra[8]) based on (i) the prioritised areas from the ecological connectivity modelling woodlands, grasslands, and wetlands, and areas

[8] Defra (2024) Data Standards Advice for Local Nature Recovery Strategies - advice for Responsible Authorities

identified for rivers and waterbodies and uplands, and (ii) the suitability of land parcels for the action based on the land cover and land use map.

To map actions to land parcels, the following process was broadly followed:

- **Priority locations**: Actions were only mapped within locations identified through steps 1-5 – the prioritised output areas from the ecological connectivity modelling woodlands, grasslands, and wetlands, and areas identified for rivers and waterbodies and uplands. For example, the actions for woodlands, trees, hedgerow and scrub were only mapped within the woodland connectivity corridors outputted after step 4 of the process. Similarly, the grassland, farmland and lowland heath actions were only mapped within the grassland connectivity corridors outputted after step 4 of the process.
- **Suitability by land cover**: Actions were assigned to suitable land cover types (see habitat codes in the table above) for that action. Relevant land cover types were selected depending on the actions described. For example, an action related to woodland enhancement would only be assigned to areas of existing or newly planted woodland, whereas actions on woodland creation would be assigned to land cover types such as amenity grassland. Suitable land cover types were determined on an action-by-action basis as advised by GMEU.
- **Suitability by land use:** The land use land cover map was then used to try to remove potentially unsuitable or unfeasible land parcels from being assigned actions to create or improve habitat. For example, using the land cover land use map, actions were deliberately not mapped over roads, buildings and other unsuitable land use types. Suitability was determined on an action-by-action basis e.g. a woodland measure would not be mapped over a waterbody; a grassland measure would not be mapped over an existing woodland. The land use land cover map is based predominantly on national datasets (as set out in Step 2) and therefore will not be completely accurate in comparison to site specific and local knowledge. Therefore, although we have tried to remove unsuitable land parcels this will not be completely accurate, and in some cases may have removed suitable land parcels.

Through this process, mapped actions were added into the priority areas identified through steps 1-4 of the process. Several potential actions may exist in a single

location, so overlaps within the dataset exist – this relates not just to suitability but also the limited land available for action.

Limitations to the mapping of actions

Due to the size of Greater Manchester and the limited time and resources available to the GMCA, it has not been possible to ground truth the mapped actions. When using the mapped actions, the habitat principles set out in section 5 of the LNRS should be followed, including the prioritisation of site level investigation and consultation of local experts, communities and following existing best practice and processes. The mapped actions should therefore be considered as a starting point, used in combination with local evidence and site investigations and what this tells us would be most beneficial for nature.

Step 6. Amends to the Nature Network post public consultation

Feedback on the Nature Network was received by GMCA through the public consultation on the LNRS (held between November 2024 and January 2025). Included within this feedback were suggested additions and amendments to the Nature Network. GMCA followed a criteria-based process, shown in Figure 5, and assessed each request individually. In some cases, the same site was submitted by multiple respondents – for these, only one assessment was undertaken for each individual site submitted. This criteria-based process enabled consistent decision-making on site additions requests received through the public consultation.

Requests for site removals were also made by landowners through the public consultation. Guided by national statutory guidance and regulations[9], GMCA assessed each such requested removal in terms of whether the request would '*undermine the coherence and ambition of the strategy as a whole'*. If GMCA were satisfied that a requested removal would not '*undermine the coherence and ambition of the strategy as a whole'* then the requested removal was approved and undertaken.

[9] See LNRS Statutory guidance paragraphs 88 and 89. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1146160/Local_nature_recovery_strategy_statutory_guidance.pdf

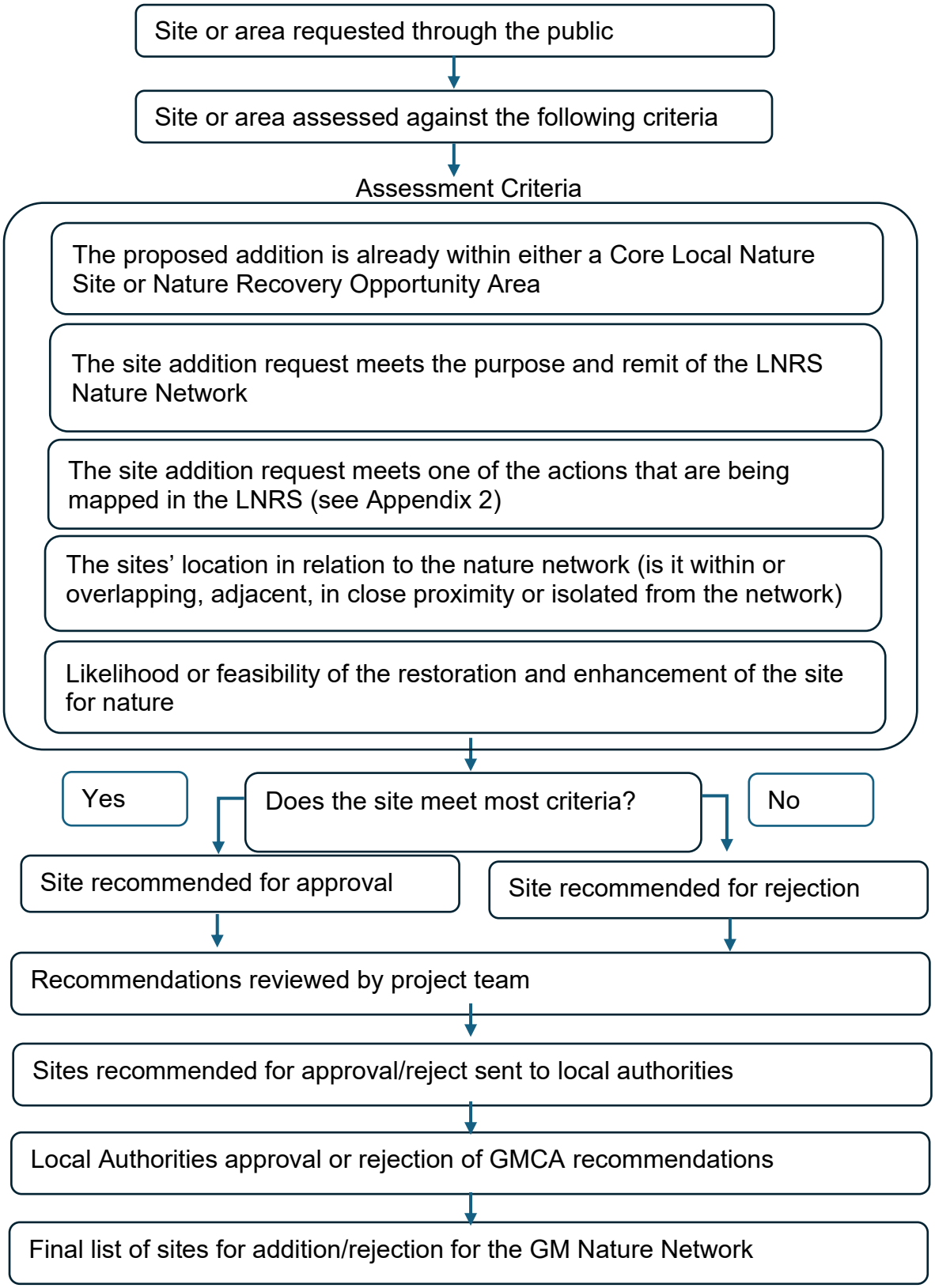


Figure 6. Assessment process for requested site additions received through the public consultation.

Step 7. Finalisation of the maps and creation of online access

Once amendments to the Nature Network had been undertaken, the revised nature network maps were then shared with the LNRS Steering Group and Officers Group for a final review period and then finalised.

An online GIS webpage was created to enable interactive engagement with the maps by the public and wider stakeholders and hosted on the GMCA website.

Appendix 2d – Longlist species

Taxon Group	Scientific Name	Common Name(s)	Red List inclusion status (CR, EN, NT, VU)	Other list status IF applicable	Local significance	Habitat assemblages (choose all that apply)	Primary Habitat assemblage
Bird	Podiceps nigricollis	Black-necked Grebe	Endangered (EN)			Rivers-Canals-Waterbodies | Lowland Wetlands-Mosslands	Rivers-Canals-Waterbodies
Bird	Botaurus stellaris	Bittern	Vulnerable (VU)	UK BAP-Section41		Lowland Wetlands-Mosslands	Lowland Wetlands-Mosslands
Bird	Tadorna tadorna	Shelduck	Endangered (EN)			Lowland Wetlands-Mosslands	Lowland Wetlands-Mosslands
Bird	Anas crecca	Teal		GB red data/list	Rare breeder	Lowland Wetlands-Mosslands	Lowland Wetlands-Mosslands
Bird	Spatula querquedula	Garganey	Endangered (EN)			Lowland Wetlands-Mosslands	Lowland Wetlands-Mosslands
Bird	Spatula clypeata	Shoveler		GB red data/list	Rare breeder	Lowland Wetlands-Mosslands	Lowland Wetlands-Mosslands
Bird	Aythya ferina	Pochard	Vulnerable (VU)			Lowland Wetlands-Mosslands	Lowland Wetlands-Mosslands
Bird	Circus aeruginosus	Marsh Harrier		GB red data/list	Rare breeder	Lowland Wetlands-Mosslands | Grassland-Cropland	Lowland Wetlands-Mosslands
Bird	Circus cyaneus	Hen Harrier	Endangered (EN)			Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath

Taxon Group	Scientific Name	Common Name(s)	Red List inclusion status (CR, EN, NT, VU)	Other list status IF applicable	Local significance	Habitat assemblages (choose all that apply)	Primary Habitat assemblage
Bird	Accipiter gentilis	Goshawk	Near Threatened (NT)			Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Bird	Falco tinnunculus	Kestrel	Vulnerable (VU)			Grassland-Cropland	Grassland-Cropland
Bird	Falco columbarius	Merlin	Endangered (EN)			Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Bird	Falco subbuteo	Hobby	Near Threatened (NT)			Lowland Wetlands-Mosslands | Woodlands-Hedgerows-Trees	Lowland Wetlands-Mosslands
Bird	Perdix perdix	Grey Partridge	Vulnerable (VU)	UK BAP-Section41		Grassland-Cropland | Upland Moorland-Bogs-Heath	Grassland-Cropland
Bird	Coturnix coturnix	Quail	Endangered (EN)			Grassland-Cropland	Grassland-Cropland
Bird	Haematopus ostralegus	Oystercatcher	Vulnerable (VU)			Rivers-Canals-Waterbodies | Grassland-Cropland | Urban (inc gardens)	Rivers-Canals-Waterbodies
Bird	Charadrius hiaticula	Ringed Plover	Near Threatened (NT)			Rivers-Canals-Waterbodies | Urban (inc gardens)	Rivers-Canals-Waterbodies
Bird	Pluvialis apricaria	Golden Plover			Scarce breeder, declining	Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Bird	Vanellus vanellus	Lapwing	Vulnerable (VU)	UK BAP-Section41		Lowland Wetlands-Mosslands | Grassland-Cropland | Upland Moorland-Bogs-Heath	
Bird	Calidris alpina	Dunlin	Vulnerable (VU)			Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Bird	Gallinago gallinago	Snipe		GB red data/list	Scarce breeder	Lowland Wetlands-Mosslands | Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath

Taxon Group	Scientific Name	Common Name(s)	Red List inclusion status (CR, EN, NT, VU)	Other list status IF applicable	Local significance	Habitat assemblages (choose all that apply)	Primary Habitat assemblage
Bird	Scolopax rusticola	Woodcock	Vulnerable (VU)			Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Bird	Numenius arquata	Curlew	Endangered (EN)	UK BAP-Section41		Grassland-Cropland | Lowland Wetlands-Mosslands | Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Bird	Tringa totanus	Redshank	Vulnerable (VU)			Lowland Wetlands-Mosslands | Upland Moorland-Bogs-Heath	Lowland Wetlands-Mosslands
Bird	Actitis hypoleucos	Common Sandpiper	Near Threatened (NT)			Rivers-Canals-Waterbodies	Rivers-Canals-Waterbodies
Bird	Larus argentatus	Herring Gull		UK BAP-Section41	Declining	Urban (inc gardens)	Urban (inc gardens)
Bird	Sterna hirundo	Common Tern	Near Threatened (NT)			Rivers-Canals-Waterbodies	Rivers-Canals-Waterbodies
Bird	Cuculus canorus	Cuckoo	Vulnerable (VU)	UK BAP-Section41		Upland Moorland-Bogs-Heath | Grassland-Cropland	Upland Moorland-Bogs-Heath
Bird	Asio flammeus	Short-eared Owl	Endangered (EN)			Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Bird	Tyto alba	Barn Owl		W&C/Protected	Quality indicator	Grassland-Cropland | Upland Moorland-Bogs-Heath	Grassland-Cropland
Bird	Streptopelia turtur	Turtle Dove	Critically Endangered (CR)	UK BAP-Section41		Grassland-Cropland	Grassland-Cropland
Bird	Caprimulgus europaeus	Nightjar		UK BAP-Section41	Rare breeder	Lowland Wetlands-Mosslands | Woodlands-Hedgerows-Trees	Lowland Wetlands-Mosslands
Bird	Apus apus	Swift	Endangered (EN)			Urban (inc gardens)	Urban (inc gardens)

Taxon Group	Scientific Name	Common Name(s)	Red List inclusion status (CR, EN, NT, VU)	Other list status IF applicable	Local significance	Habitat assemblages (choose all that apply)	Primary Habitat assemblage
Bird	Alcedo atthis	Kingfisher	Vulnerable (VU)			Rivers-Canals-Waterbodies	Rivers-Canals-Waterbodies
Bird	Picus viridis	Green Woodpecker	Near Threatened (NT)			Grassland-Cropland | Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Bird	Dryobates minor	Lesser Spotted Woodpecker	Endangered (EN)			Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Bird	Alauda arvensis	Skylark		GB red data/list	Quality indicator	Grassland-Cropland | Upland Moorland-Bogs-Heath	
Bird	Hirundo rustica	Swallow	Vulnerable (VU)			Grassland-Cropland	Grassland-Cropland
Bird	Delichon urbicum	House Martin	Near Threatened (NT)			Urban (inc gardens)	Urban (inc gardens)
Bird	Motacilla flava	Yellow Wagtail	Near Threatened (NT)	UK BAP-Section41		Grassland-Cropland | Lowland Wetlands-Mosslands	Grassland-Cropland
Bird	Motacilla cinerea	Grey Wagtail	Near Threatened (NT)			Rivers-Canals-Waterbodies	Rivers-Canals-Waterbodies
Bird	Cinclus cinclus	Dipper	Near Threatened (NT)			Rivers-Canals-Waterbodies	Rivers-Canals-Waterbodies
Bird	Phoenicurus ochruros	Black Redstart	Vulnerable (VU)			Urban (inc gardens)	Urban (inc gardens)
Bird	Saxicola rubetra	Whinchat	Near Threatened (NT)			Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Bird	Oenanthe oenanthe	Wheatear	Endangered (EN)			Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath

Taxon Group	Scientific Name	Common Name(s)	Red List inclusion status (CR, EN, NT, VU)	Other list status IF applicable	Local significance	Habitat assemblages (choose all that apply)	Primary Habitat assemblage
Bird	Turdus viscivorus	Mistle Thrush	Near Threatened (NT)			Woodlands-Hedgerows-Trees | Urban (inc gardens)	Woodlands-Hedgerows-Trees
Bird	Phylloscopus sibilatrix	Wood Warbler	Vulnerable (VU)	UK BAP-Section41		Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Bird	Turdus torquatus	Ring Ouzel	Vulnerable (VU)	UK BAP-Section41		Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Bird	Locustella naevia	Grasshopper Warbler		UK BAP-Section41	Quality indicator	Lowland Wetlands-Mosslands | Upland Moorland-Bogs-Heath	
Bird	Acrocephalus schoenobaenus	Sedge Warbler	Near Threatened (NT)			Lowland Wetlands-Mosslands | Grassland-Cropland	Lowland Wetlands-Mosslands
Bird	Muscicapa striata	Spotted Flycatcher	Near Threatened (NT)	UK BAP-Section41		Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Bird	Ficedula hypoleuca	Pied Flycatcher	Near Threatened (NT)			Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Bird	Poecile montanus	Willow Tit	Endangered (EN)	UK BAP-Section41		Woodlands-Hedgerows-Trees | Lowland Wetlands-Mosslands	Lowland Wetlands-Mosslands
Bird	Corvus frugilegus	Rook	Near Threatened (NT)			Grassland-Cropland | Woodlands-Hedgerows-Trees	Grassland-Cropland
Bird	Sturnus vulgaris	Starling	Vulnerable (VU)	UK BAP-Section41		Grassland-Cropland | Urban (inc gardens)	Grassland-Cropland
Bird	Passer domesticus	House Sparrow		UK BAP-Section41	Quality indicator	Urban (inc gardens) | Grassland-Cropland	Urban (inc gardens)
Bird	Passer montanus	Tree Sparrow	Vulnerable (VU)	UK BAP-Section41		Grassland-Cropland	Grassland-Cropland

Taxon Group	Scientific Name	Common Name(s)	Red List inclusion status (CR, EN, NT, VU)	Other list status IF applicable	Local significance	Habitat assemblages (choose all that apply)	Primary Habitat assemblage
Bird	Fringilla coelebs	Chaffinch	Endangered (EN)			Grassland-Cropland | Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Bird	Chloris chloris	Greenfinch	Endangered (EN)			Grassland-Cropland | Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Bird	Linaria flavirostris	Twite	Endangered (EN)			Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Bird	Linaria cannabina	Linnet		GB red data/list	Quality indicator	Grassland-Cropland | Upland Moorland-Bogs-Heath	Grassland-Cropland
Bird	Acanthis flammea cabaret	Lesser Redpoll		GB red data/list	Quality indicator	Woodlands-Hedgerows-Trees | Upland Moorland-Bogs-Heath	Woodlands-Hedgerows-Trees
Bird	Emberiza citrinella	Yellowhammer		GB red data/list	Scarce breeder	Grassland-Cropland	Grassland-Cropland
Bird	Emberiza calandra	Corn Bunting	Near Threatened (NT)			Grassland-Cropland	Grassland-Cropland
Amphibian	Bufo bufo	Common Toad	Near Threatened (NT)			Rivers-Canals-Waterbodies | Lowland Wetlands-Mosslands	Lowland Wetlands-Mosslands
Amphibian	Triturus cristatus	Great Crested Newt		UK BAP-Section41	Quality indicator	Rivers-Canals-Waterbodies | Lowland Wetlands-Mosslands	Lowland Wetlands-Mosslands
Reptile	Vipera berus	Adder	Near Threatened (NT)			Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Reptile	Anguis fragilis	Slow-worm		UK BAP-Section41		Grassland-Cropland | Lowland Wetlands-Mosslands	Grassland-Cropland
Reptile	Natrix helvetica	Grass snake		UK BAP-Section41		Lowland Wetlands-Mosslands	Lowland Wetlands-Mosslands

Taxon Group	Scientific Name	Common Name(s)	Red List inclusion status (CR, EN, NT, VU)	Other list status IF applicable	Local significance	Habitat assemblages (choose all that apply)	Primary Habitat assemblage
Reptile	Zootoca vivipara	Common (Viviparous) lizard		UK BAP-Section41		Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Terrestrial mammal	Arvicola amphibius	Water vole	Endangered (EN)			Rivers-Canals-Waterbodies | Lowland Wetlands-Mosslands	Rivers-Canals-Waterbodies
Terrestrial mammal	Sciurus vulgaris	Red Squirrel	Endangered (EN)	UK BAP-Section41		Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Terrestrial mammal	Erinaceus europaeus	Hedgehog	Vulnerable (VU)	UK BAP-Section41		Urban (inc gardens) | Woodlands-Hedgerows-Trees | Grassland-Cropland	Urban (inc gardens)
Terrestrial mammal	Muscardinus avellanarius	Hazel Dormouse	Vulnerable (VU)	UK BAP-Section41		Woodlands-Hedgerows-Trees | Grassland-Cropland	Woodlands-Hedgerows-Trees
Terrestrial mammal	Micromys minutus	Harvest Mouse	Near Threatened (NT)	UK BAP-Section41		Grassland-Cropland | Lowland Wetlands-Mosslands	Grassland-Cropland
Terrestrial mammal	Lepus timidus	Mountain Hare	Near Threatened (NT)	UK BAP-Section41		Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Terrestrial mammal	Martes martes	Pine Marten		UK BAP-Section41		Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Terrestrial mammal	Mustela putorius	Polecat		UK BAP-Section41		Woodlands-Hedgerows-Trees | Lowland Wetlands-Mosslands | Grassland-Cropland | Urban (inc gardens)	Lowland Wetlands-Mosslands
Terrestrial mammal	Lepus europaeus	Brown Hare		UK BAP-Section41		Grassland-Cropland | Upland Moorland-Bogs-Heath	Grassland-Cropland
Terrestrial mammal (bat)	Pipistrellus nathusii	Nathusius' pipistrelle bat	Near Threatened (NT)		GM Rare	Rivers-Canals-Waterbodies | Woodlands-Hedgerows-Trees |	Rivers-Canals-Waterbodies

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						Lowland Wetlands-Mosslands-Ponds	
Terrestrial mammal (bat)	Eptesicus serotinus	Serotine bat	Vulnerable (VU)		GM Rare	Grassland-Cropland | Woodlands-Hedgerows-Trees | Urban (inc gardens)	Grassland-Cropland
Terrestrial mammal (bat)	Barbastella barbastellus	Barbastelle bat	Vulnerable (VU)	UK BAP-Section41	GM feasible	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Terrestrial mammal (bat)	Nyctalus noctula	Noctule / Nyctalus bat		UK BAP-Section41		Woodlands-Hedgerows-Trees | Grassland-Cropland	Grassland-Cropland
Terrestrial mammal (bat)	Pipistrellus pygmaeus	Soprano pipistrelle bat		UK BAP-Section41		Urban (inc gardens)	Urban (inc gardens)
Terrestrial mammal (bat)	Plecotus auritus	Brown long-eared bat		UK BAP-Section41		Woodlands-Hedgerows-Trees | Grassland-Cropland | Urban (inc gardens)	Woodlands-Hedgerows-Trees
Terrestrial mammal (bat)	Rhinolophus hipposideros	Lesser horseshoe bat		UK BAP-Section41	GM feasible	Woodlands-Hedgerows-Trees | Rivers-Canals-Waterbodies	Woodlands-Hedgerows-Trees
Lepidoptera - butterfly	Satyrium w-album	White-letter Hairstreak	Endangered (EN)	UK BAP-Section41		Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - butterfly	Lasiommata megera	Wall	Near Threatened (NT)	UK BAP-Section41		Grassland-Cropland | Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Lepidoptera - butterfly	Erynnis tages	Dingy Skipper	Vulnerable (VU)	UK BAP-Section41		Grassland-Cropland | Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - butterfly	Coenonympha pamphilus	Small Heath	Vulnerable (VU)	UK BAP-Section41		Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Lepidoptera - butterfly	Coenonympha tullia	Large Heath	Endangered (EN)	UK BAP-Section41		Lowland Wetlands-Mosslands	Lowland Wetlands-Mosslands

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Lepidoptera - butterfly	Speyeria aglaja	Dark Green Fritillary	Near Threatened (NT)			Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Lepidoptera - butterfly	Lycaena phlaeas	Small Copper			Scarce	Grassland-Cropland | Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Lepidoptera - butterfly	Polyommatus icarus	Common Blue			Scarce	Grassland-Cropland	Grassland-Cropland
Lepidoptera - moth	Micropterix aureatella				NW declining	Lowland Wetlands-Mosslands-Ponds	Lowland Wetlands-Mosslands-Ponds
Lepidoptera - moth	Hepialus humuli	Ghost Moth		UK BAP-Section41	NW declining	Grassland-Cropland	Grassland-Cropland
Lepidoptera - moth	Trifurcula cryptella			GB red data/list	Nationally Scarce A	Grassland-Cropland	Grassland-Cropland
Lepidoptera - moth	Trifurcula eurema			GB red data/list	provRedDB3	Grassland-Cropland	Grassland-Cropland
Lepidoptera - moth	Pseudopostega crepusculella			GB red data/list	Nationally Scarce B	Lowland Wetlands-Mosslands-Ponds	Lowland Wetlands-Mosslands-Ponds
Lepidoptera - moth	Nematopogon pilella			GB red data/list	Nationally Scarce A	Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Lepidoptera - moth	Incurvaria praelatella				NW declining	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - moth	Lampronia fuscatella			GB red data/list	Nationally Scarce B	Lowland Wetlands-Mosslands-Ponds	Lowland Wetlands-Mosslands-Ponds

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Lepidoptera - moth	Diplodoma laichartingella				NW declining	Lowland Wetlands-Mosslands-Ponds	Lowland Wetlands-Mosslands-Ponds
Lepidoptera - moth	Nemaxera betulinella			GB red data/list	Nationally Scarce B	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - moth	Psychoides verhuella				NW declining	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - moth	Caloptilia alchimiella				NW declining	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - moth	Glyphipterix haworthana				NW declining	Lowland Wetlands-Mosslands-Ponds	Lowland Wetlands-Mosslands-Ponds
Lepidoptera - moth	Denisia albimaculea			GB red data/list	provRedDB3	Urban (inc gardens)	Urban (inc gardens)
Lepidoptera - moth	Pleurota bicostella				NW declining	Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Lepidoptera - moth	Amphisbatis incongruella			GB red data/list	Nationally Scarce A	Lowland Wetlands-Mosslands-Ponds	Lowland Wetlands-Mosslands-Ponds
Lepidoptera - moth	Exaeretia allisella			GB red data/list	Nationally Scarce A	Grassland-Cropland	Grassland-Cropland
Lepidoptera - moth	Agonopterix carduella			GB red data/list	Nationally Scarce B	Grassland-Cropland	Grassland-Cropland
Lepidoptera - moth	Agonopterix subpropinquella				NW declining	Grassland-Cropland	Grassland-Cropland

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Lepidoptera - moth	Aproaerema cinctella			GB red data/list		Grassland-Cropland	Grassland-Cropland
Lepidoptera - moth	Monochroa suffusella			GB red data/list	pRDB3	Lowland Wetlands-Mosslands-Ponds	Lowland Wetlands-Mosslands-Ponds
Lepidoptera - moth	Gelechia cuneatella			GB red data/list	pRDB1	Lowland Wetlands-Mosslands-Ponds	Lowland Wetlands-Mosslands-Ponds
Lepidoptera - moth	Teleiodes luculella				NW declining	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - moth	Pseudotelphusa paripunctella			GB red data/list	Nationally Scarce B	Lowland Wetlands-Mosslands-Ponds	Lowland Wetlands-Mosslands-Ponds
Lepidoptera - moth	Coleophora siccifolia			GB red data/list	Nationally Scarce B	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - moth	Coleophora orbitella			GB red data/list	Nationally Scarce B	Lowland Wetlands-Mosslands-Ponds	Lowland Wetlands-Mosslands-Ponds
Lepidoptera - moth	Coleophora currucipennella			GB red data/list	pRDB3	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - moth	Elachista rufocinerea				NW declining	Grassland-Cropland	Grassland-Cropland
Lepidoptera - moth	Elachista freyerella				NW declining	Grassland-Cropland	Grassland-Cropland
Lepidoptera - moth	Chrysoclista linneella			GB red data/list	Nationally Scarce B	Urban (inc gardens)	Urban (inc gardens)

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Lepidoptera - moth	Chrysoclista lathamella			GB red data/list	pRDB2	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - moth	Stathmopoda pedella			GB red data/list		Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - moth	Hellinsia lienigianus			GB red data/list	Nationally Scarce B	Grassland-Cropland	Grassland-Cropland
Lepidoptera - moth	Philedone gerningana				NW declining	Lowland Wetlands-Mosslands-Ponds	Lowland Wetlands-Mosslands-Ponds
Lepidoptera - moth	Archips xylosteana				NW declining	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - moth	Archips rosana				NW declining	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - moth	Clepsis senecionana				NW declining	Lowland Wetlands-Mosslands-Ponds	Lowland Wetlands-Mosslands-Ponds
Lepidoptera - moth	Neosphaleroptera nubilana				NW declining	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - moth	Eana osseana				NW declining	Lowland Wetlands-Mosslands-Ponds	Lowland Wetlands-Mosslands-Ponds
Lepidoptera - moth	Eana incanana				NW declining	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees

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Lepidoptera - moth	Acleris holmiana				NW declining	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - moth	Eulia ministrana				NW declining	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - moth	Hysterophora maculosana				NW declining	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - moth	Gynnidomorpha alismana			GB red data/list	Nationally Scarce B	Rivers-Canals-Waterbodies	Rivers-Canals-Waterbodies
Lepidoptera - moth	Hedya ochroleucana				NW declining	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - moth	Phiaris schulziana				NW declining	Lowland Wetlands-Mosslands-Ponds	Lowland Wetlands-Mosslands-Ponds
Lepidoptera - moth	Epinotia trigonella				NW declining	Lowland Wetlands-Mosslands-Ponds	Lowland Wetlands-Mosslands-Ponds
Lepidoptera - moth	Dichrorampha sedatana			GB red data/list	Nationally Scarce B	Grassland-Cropland	Grassland-Cropland
Lepidoptera - moth	Cossus cossus	Goat Moth		UK BAP-Section41	NW declining	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - moth	Synanthedon culiciformis	Large Red-belted Clearwing		GB red data/list	Nationally Scarce	Lowland Wetlands-Mosslands-Ponds	Lowland Wetlands-Mosslands-Ponds

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Lepidoptera - moth	Synanthedon vespiformis	Yellow-legged Clearwing		GB red data/list	Nb	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - moth	Synanthedon tipuliformis	Currant Clearwing		GB red data/list	Nb	Urban (inc gardens)	Urban (inc gardens)
Lepidoptera - moth	Cryptoblabes bistriga				NW declining	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - moth	Apomyelois bistriatella			GB red data/list		Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Lepidoptera - moth	Anania terrealis			GB red data/list		Grassland-Cropland	Grassland-Cropland
Lepidoptera - moth	Crambus hamella			GB red data/list		Lowland Wetlands-Mosslands-Ponds	Lowland Wetlands-Mosslands-Ponds
Lepidoptera - moth	Agriphila latistria				NW declining	Grassland-Cropland	Grassland-Cropland
Lepidoptera - moth	Watsonalla binaria	Oak Hook-tip		UK BAP-Section41	NMRS Atlas - VU	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - moth	Lasiocampa quercus	Oak Eggar			NW declining	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - moth	Idaea muricata	Purple-bordered Gold		GB red data/list	Nationally Scarce	Lowland Wetlands-Mosslands-Ponds	Lowland Wetlands-Mosslands-Ponds
Lepidoptera - moth	Orthonama vittata	Oblique Carpet		UK BAP-Section41		Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees

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Lepidoptera - moth	Epirrhoe galiata	Galium Carpet		UK BAP-Section41		Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Lepidoptera - moth	Mesoleuca albicillata	Beautiful Carpet			NW declining	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - moth	Pelurga comitata	Dark Spinach		UK BAP-Section41	NMRS Atlas - VU	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - moth	Entephria caesiata	Grey Mountain Carpet		UK BAP-Section41		Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Lepidoptera - moth	Hydriomena ruberata	Ruddy Highflyer			NW declining	Lowland Wetlands-Mosslands-Ponds	Lowland Wetlands-Mosslands-Ponds
Lepidoptera - moth	Cidaria fulvata	Barred Yellow			NW declining	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - moth	Electrophaes corylata	Broken-barred Carpet			NW declining	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - moth	Eulithis testata	Chevron			NW declining	Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Lepidoptera - moth	Eulithis populata	Northern Spinach			NW declining	Grassland-Cropland	Grassland-Cropland
Lepidoptera - moth	Eulithis mellinata	Spinach		UK BAP-Section41	NMRS Atlas - VU	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - moth	Dysstroma citrata	Dark Marbled Carpet			NW declining	Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath

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Lepidoptera - moth	Odezia atrata	Chimney Sweeper			NW declining	Grassland-Cropland	Grassland-Cropland
Lepidoptera - moth	Perizoma bifaciata	Barred Rivulet			NW declining	Grassland-Cropland	Grassland-Cropland
Lepidoptera - moth	Perizoma albulata	Grass Rivulet			NW declining	Grassland-Cropland	Grassland-Cropland
Lepidoptera - moth	Pasiphila debiliata	Bilberry Pug		GB red data/list	Nationally Scarce	Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Lepidoptera - moth	Eupithecia inturbata	Maple Pug			NMRS Atlas - EN	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - moth	Eupithecia linariata	Toadflax Pug			NMRS Atlas - NT	Grassland-Cropland	Grassland-Cropland
Lepidoptera - moth	Eupithecia pusillata	Juniper Pug			NMRS Atlas - VU	Urban (inc gardens)	Urban (inc gardens)
Lepidoptera - moth	Eupithecia tripunctaria	White-spotted Pug			NMRS Atlas - NT	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - moth	Eupithecia valerianata	Valerian Pug		GB red data/list	Nb	Lowland Wetlands-Mosslands-Ponds	Lowland Wetlands-Mosslands-Ponds
Lepidoptera - moth	Eupithecia icterata	Tawny Speckled Pug			NMRS Atlas - NT	Grassland-Cropland	Grassland-Cropland
Lepidoptera - moth	Eupithecia succenturiata	Bordered Pug			NMRS Atlas - NT	Grassland-Cropland	Grassland-Cropland
Lepidoptera - moth	Carsia sororiata	Manchester Treble-bar		GB red data/list	Nb	Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Lepidoptera - moth	Chesias legatella	Streak		UK BAP-Section41		Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees

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Lepidoptera - moth	Macaria wauaria	V-Moth		UK BAP-Section41	NMRS Atlas - EN	Urban (inc gardens)	Urban (inc gardens)
Lepidoptera - moth	Ennomos quercinaria	August thorn		UK BAP-Section41		Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - moth	Ennomos erosaria	September Thorn		UK BAP-Section41	NMRS Atlas - NT	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - moth	Theria primaria	Early Moth			NMRS Atlas - VU	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - moth	Dyscia fagaria	Grey Scalloped Bar			NMRS Atlas - NT	Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Lepidoptera - moth	Perconia strigillaria	Grass Wave			NW declining	Lowland Wetlands-Mosslands-Ponds	Lowland Wetlands-Mosslands-Ponds
Lepidoptera - moth	Parasemia plantaginis	Wood Tiger			NW declining	Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Lepidoptera - moth	Arctia caja	Garden Tiger		UK BAP-Section41	NMRS Atlas - NT	Grassland-Cropland	Grassland-Cropland
Lepidoptera - moth	Hypenodes humidalis	Marsh Oblique-barred		GB red data/list	Nb	Lowland Wetlands-Mosslands-Ponds	Lowland Wetlands-Mosslands-Ponds
Lepidoptera - moth	Parascotia fuliginaria	Waved Black		GB red data/list	Nb	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - moth	Diloba caeruleocephala	Figure of Eight		UK BAP-Section41	NMRS Atlas - EN	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees

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Lepidoptera - moth	Acronicta menyanthidis	Light Knot-grass			NW declining	Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Lepidoptera - moth	Acronicta rumicis	Knot Grass		UK BAP-Section41		Grassland-Cropland	Grassland-Cropland
Lepidoptera - moth	Cucullia absinthii	Wormwood		GB red data/list	Nationally Scarce	Grassland-Cropland	Grassland-Cropland
Lepidoptera - moth	Cucullia umbratica	Shark			NW declining	Grassland-Cropland	Grassland-Cropland
Lepidoptera - moth	Stilbia anomala	Anomalous		UK BAP-Section41	NMRS Atlas - VU	Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Lepidoptera - moth	Amphipyra tragopoginis	Mouse Moth		UK BAP-Section41	NMRS Atlas - VU	GM Wide	GM Wide
Lepidoptera - moth	Allophyes oxyacanthae	Green-brindled Crescent		UK BAP-Section41		Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - moth	Celaena haworthii	Haworth's Minor		UK BAP-Section41		Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Lepidoptera - moth	Gortyna flavago	Frosted Orange			NW declining	Grassland-Cropland	Grassland-Cropland
Lepidoptera - moth	Hydraecia petasitis	Butterbur		GB red data/list	Nationally Scarce	Lowland Wetlands-Mosslands-Ponds	Lowland Wetlands-Mosslands-Ponds
Lepidoptera - moth	Apamea lithoxylaea	Light Arches			NW declining	Grassland-Cropland	Grassland-Cropland
Lepidoptera - moth	Litoligia literosa	Rosy Minor		UK BAP-Section41	NMRS Atlas - NT	Grassland-Cropland	Grassland-Cropland
Lepidoptera - moth	Cirrhia gilvago	Dusky-lemon Sallow		UK BAP-Section41	NMRS Atlas - NT	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees

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Lepidoptera - moth	Agrochola lychnidis	Beaded Chestnut			NMRS Atlas - NT	Grassland-Cropland	Grassland-Cropland
Lepidoptera - moth	Anchoscelis litura	Brown-spot Pinion		UK BAP-Section41	NMRS Atlas - NT	Grassland-Cropland	Grassland-Cropland
Lepidoptera - moth	Anchoscelis helvola	Flounced Chestnut		UK BAP-Section41		Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Lepidoptera - moth	Xylena solidaginis	Golden-rod Brindle		GB red data/list	Nationally Scarce	Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Lepidoptera - moth	Brachylomia viminalis	Minor Shoulder-knot		UK BAP-Section41	NMRS Atlas - NT	Lowland Wetlands-Mosslands-Ponds	Lowland Wetlands-Mosslands-Ponds
Lepidoptera - moth	Aporophyla lueneburgensis	Northern Deep-brown Dart			NW declining	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - moth	Dasypolia templi	Brindled Ochre		UK BAP-Section41	NMRS Atlas - NT	Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Lepidoptera - moth	Mniotype adusta	Dark Brocade		UK BAP-Section41		Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Lepidoptera - moth	Orthosia populeti	Lead-coloured Drab			NW declining	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lepidoptera - moth	Orthosia opima	Northern Drab			NW declining	Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Lepidoptera - moth	Tholera cespitis	Hedge Rustic		UK BAP-Section41	NMRS Atlas - VU	Grassland-Cropland	Grassland-Cropland
Lepidoptera - moth	Tholera decimalis	Feathered Gothic		UK BAP-Section41		Grassland-Cropland	Grassland-Cropland

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Lepidoptera - moth	Anarta myrtilli	Beautiful Yellow Underwing			NW declining	Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Lepidoptera - moth	Hecatera bicolorata	Broad-barred White			NMRS Atlas - NT	Urban (inc gardens)	Urban (inc gardens)
Lepidoptera - moth	Mythimna conigera	Brown-line Bright-eye			NW declining	Grassland-Cropland	Grassland-Cropland
Lepidoptera - moth	Euxoa nigricans	Garden Dart		UK BAP-Section41	NMRS Atlas - VU	Grassland-Cropland	Grassland-Cropland
Lepidoptera - moth	Diarsia dahlii	Barred Chestnut		UK BAP-Section41		Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Lepidoptera - moth	Rhyacia simulans	Dotted Rustic			NW declining	Grassland-Cropland | Lowland Wetlands-Mosslands-Ponds | Urban (inc gardens)	Grassland-Cropland
Lepidoptera - moth	Graphiphora augur	Double Dart		UK BAP-Section41	NMRS Atlas - NT	Lowland Wetlands-Mosslands-Ponds	Lowland Wetlands-Mosslands-Ponds
Lepidoptera - moth	Xestia castanea	Neglected Rustic		UK BAP-Section41		Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Lepidoptera - moth	Xestia agathina	Heath Rustic		UK BAP-Section41		Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Odonata	Aeshna isoceles	Norfolk Hawker	Endangered (EN)		Rare	Lowland Wetlands-Mosslands | Rivers-Canals-Waterbodies	Lowland Wetlands-Mosslands
Odonata	Chalcolestes viridis	Willow Emerald Damselfly			Rare	Lowland Wetlands-Mosslands | Rivers-Canals-Waterbodies	Lowland Wetlands-Mosslands

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Odonata	Cordulegaster boltonii	Golden-ringed Dragonfly			Rare	Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Odonata	Erythromma najas	Red-eyed Damselfly			Rare	Rivers-Canals-Waterbodies	Rivers-Canals-Waterbodies
Odonata	Erythromma viridulum	Small Red-eyed Damselfly			Rare	Rivers-Canals-Waterbodies	Rivers-Canals-Waterbodies
Odonata	Orthetrum coerulescens	Keeled Skimmer			Rare	Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Odonata	Sympetrum sanguineum	Ruddy Darter			Declining	Rivers-Canals-Waterbodies | Lowland Wetlands-Mosslands	Lowland Wetlands-Mosslands
Odonata	Sympetrum fonscolombii	Red-veined Darter				Lowland Wetlands-Mosslands	Lowland Wetlands-Mosslands
Odonata	Leucorrhinia dubia	White-faced Darter	Endangered (EN)			Lowland Wetlands-Mosslands	Lowland Wetlands-Mosslands
Hymenoptera - bee	Bombus bohemicus	Gypsy/Ashton's cuckoo bee			Rare	Upland Moorland-Bogs-Heath | Grassland-Cropland	Upland Moorland-Bogs-Heath
Hymenoptera - bee	Bombus monticola	Bilberry bumblebee			Uncommon indicator	Upland Moorland-Bogs-Heath | Grassland-Cropland	Upland Moorland-Bogs-Heath
Hymenoptera - bee	Bombus jonellus	Heath bumblebee			Uncommon indicator	Upland Moorland-Bogs-Heath | Grassland-Cropland | Urban (inc gardens)	Upland Moorland-Bogs-Heath
Hymenoptera - bee	Andrena ruficrus	Northern mining bee		GB red data/list		Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath

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Hymenoptera - bee	Andrena tarsata	Tormentil mining bee		UK BAP-Section41		Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Hymenoptera - bee	Colletes cunicularius	Early Colletes		GB red data/list		Grassland-Cropland | Upland Moorland-Bogs-Heath	Grassland-Cropland
Hymenoptera - bee	Xylocopa violacea	Violet carpenter bee			GM notable	Urban (inc gardens) | Woodlands-Hedgerows-Trees	Urban (inc gardens)
Hymenoptera - bee	Chelostoma florisomne	Large scissor bee			GM notable	Woodlands-Hedgerows-Trees | Grassland-Cropland	Woodlands-Hedgerows-Trees
Hymenoptera - bee	Coelioxys elongata	Dull-vented sharp-tailed bee			GM notable	Urban (inc gardens)	Urban (inc gardens)
Hymenoptera - bee	Coelioxys inermis	Shiny-vented sharp-tailed bee			GM notable	Urban (inc gardens)	Urban (inc gardens)
Hymenoptera - bee	Andrena barbilabris	Sandpit mining bee			GM notable	Grassland-Cropland	Grassland-Cropland
Hymenoptera - bee	Andrena minutula	Common mini miner			GM notable	Grassland-Cropland | Woodlands-Hedgerows-Trees | Urban (inc gardens)	Grassland-Cropland
Hymenoptera - bee	Lasioglossum fratellum	Smooth faced furrow bee			GM notable	Upland Moorland-Bogs-Heath | Grassland-Cropland	Upland Moorland-Bogs-Heath
Hymenoptera - bee	Lasioglossum leucopus	White footed furrow bee			GM notable	GM Wide	GM Wide
Hymenoptera - bee	Lasioglossum minutissimum	Least furrow bee			GM notable	Grassland-Cropland | Urban (inc gardens)	Grassland-Cropland
Hymenoptera - bee	Sphecodes ephippius	Bare saddled blood bee			GM notable	Upland Moorland-Bogs-Heath | Woodlands-Hedgerows-Trees | Grassland-Cropland	Upland Moorland-Bogs-Heath
Hymenoptera - bee	Sphecodes puncticeps	Sickle jawed blood bee			GM notable	GM Wide	GM Wide

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Hymenoptera - wasp	Dolichovespula saxonica	Saxon wasp		GB red data/list		Woodlands-Hedgerows-Trees | Urban (inc gardens)	Urban (inc gardens)
Hymenoptera - wasp	Gorytes laticinctus			GB red data/list		Grassland-Cropland	Grassland-Cropland
Hymenoptera - wasp	Stigmus pendulus			GB red data/list		Urban (inc gardens) | Woodlands-Hedgerows-Trees	Urban (inc gardens)
Hymenoptera - wasp	Vespula rufa	Red wasp			GM notable	Upland Moorland-Bogs-Heath | Grassland-Cropland | Urban (inc gardens)	Upland Moorland-Bogs-Heath
Hymenoptera - wasp	Dolichovespula media	Median wasp		GB red data/list	GM notable	Urban (inc gardens) | Lowland Wetlands-Mosslands-Ponds	Urban (inc gardens)
Hymenoptera - wasp	Ancistrocerus oviventris				GM notable	GM Wide	GM Wide
Hymenoptera - wasp	Ancistrocerus nigricornis				GM notable	Urban (inc gardens) | GM Wide	Urban (inc gardens)
Hymenoptera - wasp	Mimesa equestris				GM notable	Grassland-Cropland	Grassland-Cropland
Hymenoptera - wasp	Pemphredon inornata				GM notable	Woodlands-Hedgerows-Trees | Urban (inc gardens)	Woodlands-Hedgerows-Trees
Hymenoptera - wasp	Psenulus pallipes				GM notable	Woodlands-Hedgerows-Trees | GM Wide	Woodlands-Hedgerows-Trees
Hymenoptera - wasp	Cerceris rybyensis				GM notable	Grassland-Cropland	Grassland-Cropland
Hymenoptera - wasp	Cerceris arenaria				GM notable	Grassland-Cropland	Grassland-Cropland
Hymenoptera - wasp	Crossocerus dimidiatus				GM notable	GM Wide	GM Wide
Hymenoptera - wasp	Crossocerus leucostomus				GM rare	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees

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Hymenoptera - wasp	Lindenius albilabris				GM notable	Grassland-Cropland	Grassland-Cropland
Hymenoptera - wasp	Oxybelus uniglumis				GM notable	Grassland-Cropland	Grassland-Cropland
Hymenoptera - wasp	Trypoxylon attenuatum				GM notable	Woodlands-Hedgerows-Trees | Grassland-Cropland	Woodlands-Hedgerows-Trees
Hymenoptera - wasp	Argogorytes mystaceus				GM notable	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Hymenoptera - wasp	Nysson spinosus				GM notable	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Hymenoptera - wasp	Anoplius nigerrimus				GM notable	Grassland-Cropland | Lowland Wetlands-Mosslands-Ponds	Grassland-Cropland
Hymenoptera - wasp	Priocnemis perturbator				GM notable	Woodlands-Hedgerows-Trees | Grassland-Cropland	Woodlands-Hedgerows-Trees
Hymenoptera - wasp	Pseudomalus violaceus			GB red data/list	GM rare	Urban (inc gardens) | Lowland Wetlands-Mosslands-Ponds	Urban (inc gardens)
Hymenoptera - wasp	Vespa crabro	European hornet			GM notable	Woodlands-Hedgerows-Trees | Urban (inc gardens)	Woodlands-Hedgerows-Trees
Hymenoptera - brachonid	Rogas pulchripes			GB red data/list	GM sole UK record	Lowland Wetlands-Mosslands-Ponds	Lowland Wetlands-Mosslands-Ponds
Hymenoptera - ichneumonid	Agriotypus armatus				GM notable	Rivers-Canals-Waterbodies	Rivers-Canals-Waterbodies
Hymenoptera - ant	Formica fusca				GM notable	Woodlands-Hedgerows-Trees | Upland Moorland-Bogs-Heath | Urban (inc gardens)	Woodlands-Hedgerows-Trees

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Hymenoptera - ant	Lasius flavus	Yellow Meadow Ant			GM notable	Grassland-Cropland | Urban (inc gardens)	Grassland-Cropland
Hymenoptera - ant	Lasius mixtus				GM notable	Grassland-Cropland	Grassland-Cropland
Hymenoptera - ant	Lasius umbratus				GM notable	Grassland-Cropland | Woodlands-Hedgerows-Trees | Urban (inc gardens)	GM Wide
Hymenoptera - ant	Myrmica lobicornis				GM notable	Upland Moorland-Bogs-Heath | Grassland-Cropland	Upland Moorland-Bogs-Heath
Hymenoptera - ant	Temnothorax nylanderi				GM notable	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Diptera	Angioneura acerba			GB red data/list		Lowland Wetlands-Mosslands	Lowland Wetlands-Mosslands
Diptera	Anticheta obliviosa		Vulnerable (VU)			Woodlands-Hedgerows-Trees | Lowland Wetlands-Mosslands-Ponds	Woodlands-Hedgerows-Trees
Diptera	Botanophila biciliaris			GB red data/list		Lowland Wetlands-Mosslands	Lowland Wetlands-Mosslands
Diptera	Cliorismia rustica	Southern silver stiletto-fly		UK BAP-Section41	Now Least Concern?	Rivers-Canals-Waterbodies	Rivers-Canals-Waterbodies
Diptera	Ectinocera borealis			GB red data/list		Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Diptera	Erioptera verralli			GB red data/list		Lowland Wetlands-Mosslands	Lowland Wetlands-Mosslands

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Diptera	Fannia atripes			GB red data/list		Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Diptera	Gonomyia abbreviata			GB red data/list		Rivers-Canals-Waterbodies | Woodlands-Hedgerows-Trees	Rivers-Canals-Waterbodies
Diptera	Helina pubescens			GB red data/list		Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Diptera	Hemyda vittata		Vulnerable (VU)			Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Diptera	Herina paludum			GB red data/list		Grassland-Cropland	Grassland-Cropland
Diptera	Heteromeringia nigrimana			GB red data/list		Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Diptera	Homoneura interstincta			GB red data/list		Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Diptera	Lispocephala brachialis			GB red data/list		Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Diptera	Nephrotoma crocata			GB red data/list		Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Diptera	Paradelphomyia ecalcarata		Vulnerable (VU)			Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Diptera	Phaonia canescens			GB red data/list		Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees

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Diptera	Phryxe magnicornis			GB red data/list		Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Diptera	Phylidorea heterogyna		Endangered (EN)			Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Diptera	Prionocera subserricornis		Vulnerable (VU)			Lowland Wetlands-Mosslands-Ponds	Lowland Wetlands-Mosslands-Ponds
Diptera	Rhipidia uniseriata			GB red data/list		Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Diptera	Sargus cuprarius			GB red data/list		Woodlands-Hedgerows-Trees | Grassland-Cropland	Woodlands-Hedgerows-Trees
Diptera	Scenopinus niger			GB red data/list		Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Diptera	Scleroprocta pentagonalis			GB red data/list		Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Diptera	Subclytia rotundiventris			GB red data/list		Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Diptera	Tipula grisescens			GB red data/list		Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Diptera	Triogma trisulcata			GB red data/list		Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Diptera	Trypeta zoe		Endangered (EN)			Grassland-Cropland	Grassland-Cropland

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Coleoptera	Cryptocephalus decemmaculatus		Endangered (EN)	UK BAP-Section41		Lowland Wetlands-Mosslands	Lowland Wetlands-Mosslands
Coleoptera	Hydroporus longicornis		Near Threatened (NT)	GB red data/list		Lowland Wetlands-Mosslands	Lowland Wetlands-Mosslands
Coleoptera	Trinodes hirtus		Near Threatened (NT)	GB red data/list		Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Coleoptera	Helophorus tuberculatus		Vulnerable (VU)	GB red data/list		Lowland Wetlands-Mosslands | Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Coleoptera	Atomaria puncticollis			GB red data/list		Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Coleoptera	Clambus pallidulus			GB red data/list		Woodlands-Hedgerows-Trees | Lowland Wetlands-Mosslands	Lowland Wetlands-Mosslands
Coleoptera	Gracilia minuta			GB red data/list		Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Coleoptera	Hypopycna rufula			GB red data/list		Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Coleoptera	Plectophloeus erichsoni			GB red data/list		Woodlands-Hedgerows-Trees | Lowland Wetlands-Mosslands	Lowland Wetlands-Mosslands
Coleoptera	Orchestes testaceus			UK BAP-Section41		Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Hygrophila	Omphiscola glabra		Near Threatened (NT)	UK BAP-Section41		Lowland Wetlands-Mosslands	Lowland Wetlands-Mosslands

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Plecoptera	Rhabdiopteryx acuminata		Vulnerable (VU)	GB red data/list		Lowland Wetlands-Mosslands	Lowland Wetlands-Mosslands
Orthoptera	Metrioptera brachyptera	Bog Bush Cricket			GM scarce	Lowland Wetlands-Mosslands	Lowland Wetlands-Mosslands
Bony fish (Actinopterygii)	Anguilla anguilla	European Eel	Critically Endangered (CR)	UK BAP-Section41		Rivers-Canals-Waterbodies	Rivers-Canals-Waterbodies
Bony fish (Actinopterygii)	Cottus gobio	Bullhead		Habitat/Bird Dir		Rivers-Canals-Waterbodies	Rivers-Canals-Waterbodies
Bony fish (Actinopterygii)	Salmo salar	Atlantic Salmon	Endangered (EN)	UK BAP-Section41		Rivers-Canals-Waterbodies	Rivers-Canals-Waterbodies
Bony fish (Actinopterygii)	Salmo trutta	Brown/Sea Trout	Vulnerable (VU)	UK BAP-Section41		Rivers-Canals-Waterbodies	Rivers-Canals-Waterbodies
Bony fish (Actinopterygii)	Thymallus thymallus	Grayling		Habitat/Bird Dir		Rivers-Canals-Waterbodies	Rivers-Canals-Waterbodies
Bony fish (Actinopterygii)	Carassius carassius	Crucian carp			GM notable	Rivers-Canals-Waterbodies	Rivers-Canals-Waterbodies
Jawless fish (Agnatha)	Lampetra planeri	Brook Lamprey		Habitat/Bird Dir		Rivers-Canals-Waterbodies	Rivers-Canals-Waterbodies
Crustacean	Austropotamobius pallipes	White-clawed crayfish	Endangered (EN)	UK BAP-Section41		Rivers-Canals-Waterbodies	Rivers-Canals-Waterbodies
Fungus	Agrocybe elatella	Marsh Fieldcap	Near Threatened (NT)			Lowland Wetlands-Mosslands	Lowland Wetlands-Mosslands

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Fungus	Boletus aereus	Bronze Bolete	Near Threatened (NT)			Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Fungus	Boletus moravicus	Tawny Bolete	Vulnerable (VU)			Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Fungus	Boletus bubalinus	Ascot Hat				Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Fungus	Boletus declivitatum					Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Fungus	Cantharellus friesii	Orange Chanterelle		UK BAP-Section41		Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Fungus	Cotylidia pannosa	Woolly Rosette		UK BAP-Section41		Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Fungus	Hericium erinaceus	Bearded tooth		UK BAP-Section41		Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Fungus	Hygrophorus pudorinus	Blushing Waxycap		UK BAP-Section41		Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Fungus	Leccinum cyaneobasileucum					Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Fungus	Leccinum duriusculum	Slate Bolete	Near Threatened (NT)			Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Fungus	Porphyrellus porphyrosporus	Dusky Bolete	Near Threatened (NT)			Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees

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Fungus	Rubinoboletus rubinus	Crimson Bolete	Vulnerable (VU)			Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Fungus	Cuphophyllus colemannianus	Toasted Waxcap	Vulnerable (VU)			Grassland-Cropland	Grassland-Cropland
Fungus	Cuphophyllus flavipes	Yellow Foot Waxcap	Vulnerable (VU)			Grassland-Cropland	Grassland-Cropland
Fungus	Cuphophyllus lepidopus	Scalyfoot Waxcap	Vulnerable (VU)			Grassland-Cropland	Grassland-Cropland
Fungus	Cuphophyllus lacmus	Grey Waxcap	Vulnerable (VU)			Grassland-Cropland	Grassland-Cropland
Fungus	Cuphophyllus radiatus	Slender Waxcap	Vulnerable (VU)			Grassland-Cropland	Grassland-Cropland
Fungus	Gliophorus reginae	Jubilee Waxcap	Vulnerable (VU)			Grassland-Cropland	Grassland-Cropland
Fungus	Gloioxanthomyces vitellinus	Glistening Waxcap	Endangered (EN)			Grassland-Cropland	Grassland-Cropland
Fungus	Hygrocybe citrinovirens	Citrine Waxcap	Vulnerable (VU)			Grassland-Cropland	Grassland-Cropland
Fungus	Hygrocybe coccineocrenata	Bog Waxcap	Near Threatened (NT)			Grassland-Cropland	Grassland-Cropland
Fungus	Hygrocybe helobia	Garlic Waxcap	Near Threatened (NT)			Grassland-Cropland	Grassland-Cropland
Fungus	Hygrocybe lepida	Goblet Waxcap	Vulnerable (VU)			Grassland-Cropland	Grassland-Cropland
Fungus	Hygrocybe mucronella	Bitter Waxcap	Vulnerable (VU)	UK BAP-Section41		Grassland-Cropland	Grassland-Cropland
Fungus	Hygrocybe punicea	Crimson Waxcap	Vulnerable (VU)			Grassland-Cropland	Grassland-Cropland
Fungus	Hygrocybe quieta	Oily Waxcap	Vulnerable (VU)			Grassland-Cropland	Grassland-Cropland

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Fungus	Hygrocybe splendidissima	Splendid Waxcap	Vulnerable (VU)			Grassland-Cropland	Grassland-Cropland
Fungus	Neohygrocybe nitrata	Nitrous Waxcap	Vulnerable (VU)			Grassland-Cropland	Grassland-Cropland
Fungus	Porpolomopsis calyptriformis	Pink Waxcap	Vulnerable (VU)			Grassland-Cropland	Grassland-Cropland
Fungus	Clavaria flavipes	Straw Club		GB red data/list		Grassland-Cropland	Grassland-Cropland
Fungus	Clavaria incarnata	Skinny Club		GB red data/list		Grassland-Cropland	Grassland-Cropland
Fungus	Clavaria zollingeri	Violet Coral	Vulnerable (VU)			Grassland-Cropland	Grassland-Cropland
Fungus	Entoloma porphyrophaeum	Lilac Pinkgill	Vulnerable (VU)			Grassland-Cropland	Grassland-Cropland
Fungus	Entoloma prunuloides	Mealy Pinkgill	Vulnerable (VU)	UK BAP-Section41		Grassland-Cropland	Grassland-Cropland
Fungus	Microglossum olivaceum	Olive Earthtongue		UK BAP-Section41		Grassland-Cropland	Grassland-Cropland
Fungus	Squamanita paradoxa	Powdercap strangler			Turn Slack clough	Grassland-Cropland	Grassland-Cropland
Fungus	Squamanita pearsonii				Only records in England	Grassland-Cropland	Grassland-Cropland
Fungus	Camarophyllopsis atrovelutina				Turn Slack clough	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lichen	Arrhenia peltigerina		Near Threatened (NT)			Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lichen	Aspergillus glaucus		Near Threatened (NT)			Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees

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Lichen	Cladonia portentosa			Habitat/Bird Dir		Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lichen	Cladonia rangiferina			Habitat/Bird Dir		Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lichen	Collema tenax		Near Threatened (NT)			Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lichen	Fuscidea cyathoides		Near Threatened (NT)			Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lichen	Polycoccum peltigerae		Near Threatened (NT)			Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lichen	Stereocaulon dactylophyllum		Near Threatened (NT)			Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lichen	Stereocaulon vesuvianum		Near Threatened (NT)			Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Lichen	Trichonectria hirta		Near Threatened (NT)			Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Vascular Plants	Anacamptis morio	Green-winged orchid	Near Threatened (NT)			Grassland-Cropland	Grassland-Cropland
Vascular Plants	Andromeda polifolia	Bog-Rosemary	Near Threatened (NT)			Lowland Wetlands-Mosslands	Lowland Wetlands-Mosslands
Vascular Plants	Briza media	Quaking-grass	Near Threatened (NT)			Grassland-Cropland	Grassland-Cropland

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Vascular Plants	Campanula rotundifolia	Harebell	Near Threatened (NT)			Grassland-Cropland	Grassland-Cropland
Vascular Plants	Carex echinata	Star Sedge	Near Threatened (NT)			Lowland Wetlands-Mosslands	Lowland Wetlands-Mosslands
Vascular Plants	Carex vesicaria	Bladder-Sedge	Vulnerable (VU)			Rivers-Canals-Waterbodies	Rivers-Canals-Waterbodies
Vascular Plants	Carlina vulgaris	Carline Thistle	Near Threatened (NT)			Grassland-Cropland	Grassland-Cropland
Vascular Plants	Drosera rotundifolia	Common Sundew	Near Threatened (NT)			Lowland Wetlands-Mosslands	Lowland Wetlands-Mosslands
Vascular Plants	Empetrum nigrum	Hermaphrodite Crowberry	Vulnerable (VU)			Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Vascular Plants	Epipactis palustris	Marsh Helleborine	Near Threatened (NT)			Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Vascular Plants	Erica cinerea	Bell Heather	Near Threatened (NT)			Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Vascular Plants	Erica tetralix	Cross-leaved Heath	Near Threatened (NT)			Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Vascular Plants	Galeopsis speciosa	Bee Hemp-Nettle	Vulnerable (VU)			Grassland-Cropland	Grassland-Cropland
Vascular Plants	Genista anglica	Petty Whin	Near Threatened (NT)			Lowland Wetlands-Mosslands	Lowland Wetlands-Mosslands

Taxon Group	Scientific Name	Common Name(s)	Red List inclusion status (CR, EN, NT, VU)	Other list status IF applicable	Local significance	Habitat assemblages (choose all that apply)	Primary Habitat assemblage
Vascular Plants	Gentiana pneumonanthe	Marsh Gentian	Near Threatened (NT)			Lowland Wetlands-Mosslands	Lowland Wetlands-Mosslands
Vascular Plants	Gentianella amarella	Autumn Gentian	Near Threatened (NT)			Grassland-Cropland	Grassland-Cropland
Vascular Plants	Geranium sanguineum	Bloody Crane's-bill	Near Threatened (NT)			Grassland-Cropland	Grassland-Cropland
Vascular Plants	Hottonia palustris	Water-Violet	Vulnerable (VU)			Lowland Wetlands-Mosslands	Lowland Wetlands-Mosslands
Vascular Plants	Hydrocharis morsus-ranae	Frogbit	Vulnerable (VU)			Lowland Wetlands-Mosslands	Lowland Wetlands-Mosslands
Vascular Plants	Hydrocotyle vulgaris	Marsh Pennywort	Near Threatened (NT)			Lowland Wetlands-Mosslands	Lowland Wetlands-Mosslands
Vascular Plants	Hypopitys monotropa	Yellow bird's nest	Endangered (EN)			Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Vascular Plants	Jacobaea aquatica	Marsh Ragwort	Near Threatened (NT)			Lowland Wetlands-Mosslands	Lowland Wetlands-Mosslands
Vascular Plants	Knautia arvensis	Field Scabious	Near Threatened (NT)			Grassland-Cropland	Grassland-Cropland
Vascular Plants	Lathyrus linifolius	Bitter Vetch	Near Threatened (NT)			Grassland-Cropland	Grassland-Cropland
Vascular Plants	Luronium natans	Floating Water-plantain	Near Threatened (NT)			Rivers-Canals-Waterbodies	Rivers-Canals-Waterbodies

Taxon Group	Scientific Name	Common Name(s)	Red List inclusion status (CR, EN, NT, VU)	Other list status IF applicable	Local significance	Habitat assemblages (choose all that apply)	Primary Habitat assemblage
Vascular Plants	Lysimachia thyrsiflora	Tufted Loosestrife	Critically Endangered (CR)			Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Vascular Plants	Melampyrum pratense	Common Cow-wheat	Near Threatened (NT)			Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Vascular Plants	Myrica gale	Bog Myrtle	Near Threatened (NT)			Lowland Wetlands-Mosslands	Lowland Wetlands-Mosslands
Vascular Plants	Myriophyllum verticillatum	Whorled Water-milfoil	Vulnerable (VU)			Rivers-Canals-Waterbodies	Rivers-Canals-Waterbodies
Vascular Plants	Oxalis acetosella	Wood-sorrel	Near Threatened (NT)			Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Vascular Plants	Pedicularis sylvatica	Lousewort	Vulnerable (VU)			Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Vascular Plants	Plantago media	Hoary Plantain	Near Threatened (NT)			Grassland-Cropland	Grassland-Cropland
Vascular Plants	Populus nigra	Black poplar			GM notable	Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Vascular Plants	Potamogeton compressus	Grass-wrack Pondweed	Endangered (EN)			Rivers-Canals-Waterbodies	Rivers-Canals-Waterbodies
Vascular Plants	Pyrola rotundifolia	Round-leaved Wintergreen	Near Threatened (NT)			Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Vascular Plants	Ranunculus aquatilis	Water-crowfoot			GM notable	Rivers-Canals-Waterbodies	Rivers-Canals-Waterbodies

Taxon Group	Scientific Name	Common Name(s)	Red List inclusion status (CR, EN, NT, VU)	Other list status IF applicable	Local significance	Habitat assemblages (choose all that apply)	Primary Habitat assemblage
Vascular Plants	Salix repens	Creeping Willow	Near Threatened (NT)			Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Vascular Plants	Stellaria nemorum	Wood Stitchwort	Data Deficient (DD)			Woodlands-Hedgerows-Trees	Woodlands-Hedgerows-Trees
Vascular Plants	Stratiotes aloides	Water-soldier	Near Threatened (NT)			Rivers-Canals-Waterbodies	Rivers-Canals-Waterbodies
Vascular Plants	Succisa pratensis	Devil's-Bit Scabious	Near Threatened (NT)			Grassland-Cropland	Grassland-Cropland
Vascular Plants	Trichophorum caespitosum	Deergrass	Data Deficient (DD)			Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Vascular Plants	Trollius europeaus	Globe flower			GM notable	Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Vascular Plants	Umbilicus rupestris	Navelwort			Locally Scarce	Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Vascular Plants	Valeriana dioica	Marsh Valerian	Near Threatened (NT)			Upland Moorland-Bogs-Heath	Upland Moorland-Bogs-Heath
Vascular Plants	Viola tricolor	Wild Pansy	Near Threatened (NT)			Grassland-Cropland	Grassland-Cropland

GREATER MANCHESTER

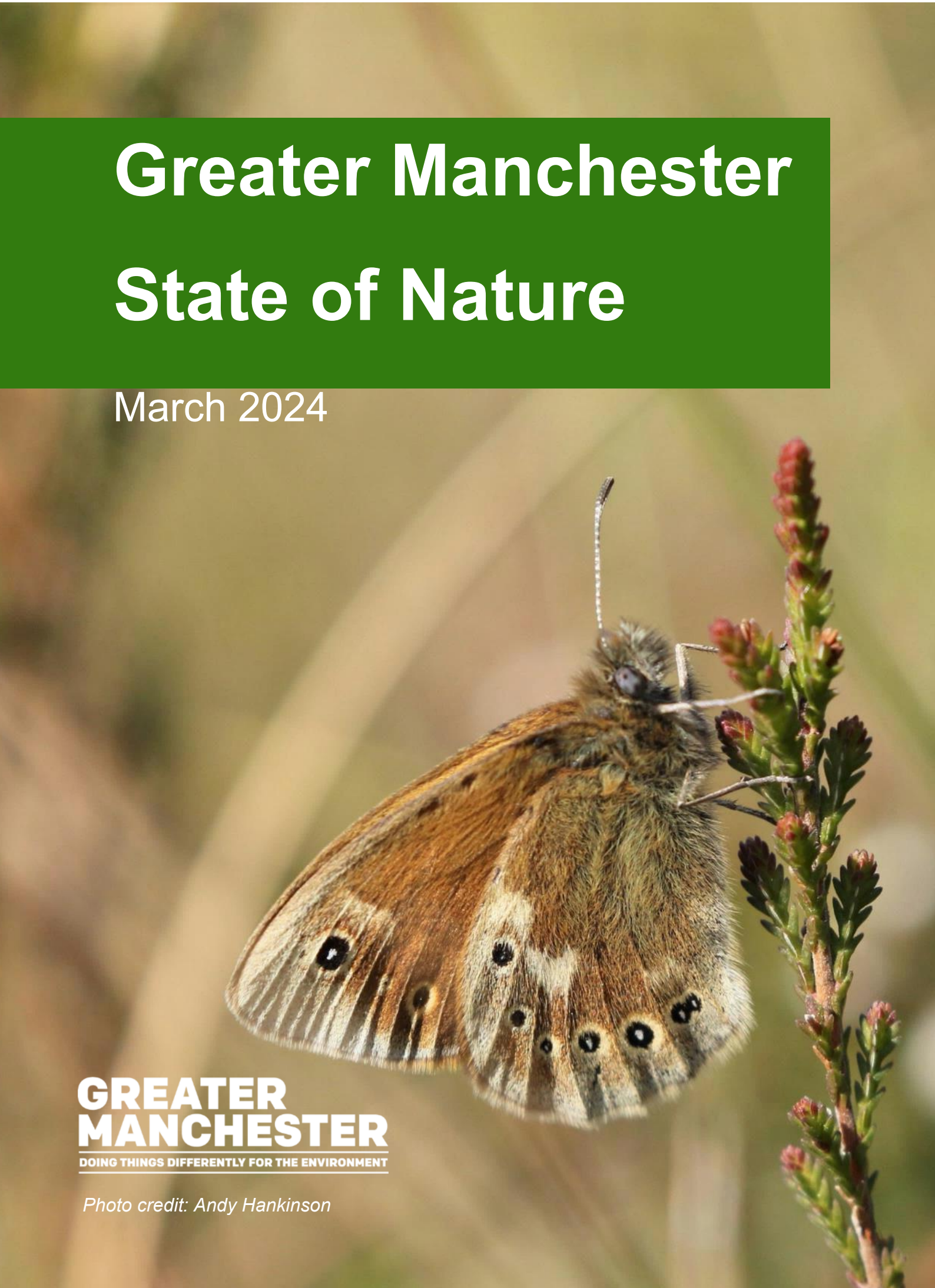
DOING THINGS DIFFERENTLY FOR THE ENVIRONMENT

Greater Manchester Local Nature Recovery Strategy

Appendix 3 – State of Nature

Greater Manchester State of Nature

March 2024



GREATER MANCHESTER

DOING THINGS DIFFERENTLY FOR THE ENVIRONMENT

Photo credit: Andy Hankinson

Our headline findings

Figure 7. Our headline findings

Introduction

What is the Greater Manchester State of Nature Report?

Greater Manchester's first State of Nature Report has been compiled to highlight the urgent challenges faced by nature across the city-region, reflected in the declaration of a biodiversity emergency in Greater Manchester in March 2022. The report covers trends in our wildlife and most important spaces for nature, the use of land and pressures on nature, the wider benefits we receive from nature and people's access to nature and engagement with it.

How was it created?

This report brings together available open-access local environmental data to report on some of the major trends in nature across our city-region. Where no local data are available, regional or national data have been included. A 'call for evidence' was also run during summer 2023, where anyone could submit relevant evidence regarding the state of nature.

Who compiled this report?

The Greater Manchester Combined Authority (GMCA), in collaboration with a range of partners, has compiled this report. In doing so, GMCA recognises that the data available on the state of nature is far from complete and that we need to understand more about the historic and current trends in species and habitat decline across Greater Manchester. GMCA will continue to work with partners to improve our understanding of these trends.

How will it be used?

The report will be used to help develop Greater Manchester's Local Nature Recovery Strategy, which will set out how we can all play our part in turning around the alarming and continuing decline in biodiversity in the city-region. GMCA hopes all those working with and with an interest in nature will be able to use this report to inform the action they can take to help nature recover.

Summary

In compiling Greater Manchester's first State of Nature report, we have sought to bring together openly available data which can provide insight across a range of environmental issues at a city-region scale.

Some of our headline findings are:

- Echoing national trends, key species of birds and mammals in Greater Manchester and the North West of England are declining. Individual bird species population show declines of up to 40% over the last 40 years and the abundance of once common mammals has dropped by between 20-40% since 1995.
- Our protected sites provide valuable refuges for nature but cover just 11% of Greater Manchester and are highly fragmented rather than forming a connected network for nature. Although recovering at present they are not in as good as condition as they could be.
- 80% of our water bodies have been heavily modified by human activities. Currently none of our rivers are in good ecological condition and we are far from meeting national targets for 75% of our waterbodies to reach this status.
- Our tree canopy covers 16% of Greater Manchester and significant efforts are being made to increase the number of trees being planted across the city-region. However, our existing woodlands could be much better managed for nature.
- Most residents surveyed considered it important or very important to live close to green space. However, an estimated third of Greater Manchester's population do not live within 15 minutes travel of a decent sized green space.
- Our natural environment provides us with a range of benefits, from improved health and wellbeing to carbon sequestration and reduced air pollution. Every year Greater Manchester residents benefit from around £1bn in free services from our natural environment.

In compiling this review, we recognise that the data we have available is far from complete and provides just a high-level snapshot into the Greater Manchester environment. We acknowledge the need to understand more about the historic and current trends in species and habitat decline across Greater Manchester. We will continue to work with our partners to improve our understanding of these trends.

Our wildlife

Over the last 50 years we have seen a drastic loss in global wildlife populations, with a reported decrease of 69% in their abundance[10]. Nationally, 1 in 6 UK species are now threatened with extinction and over the past 500 years, an estimated 200 species have likely been lost[11]. For mammals the threat is higher with 1 in 4 land mammals in the UK facing extinction[10,11]. UK populations of species of greatest concern have declined by 37% since the 1970s and wider populations have fallen by on average by 20%[11,12]. We do not have a comparable assessment for Greater Manchester, however local data show a similar decline.

Our birds

Bird populations are used to provide a good indication of the broad state of wildlife in the UK. Greater Manchester is home to many populations of birds. Mirroring national trends, we have seen some worrying declines in our bird populations[12].

---

[1] **World Wildlife Fund and Zoological Society of London (2022).** Living Planet Report 2022, WWF/ZSL. Available on the Living Planet Index website (external link).

[2] **Burns et al. (2023).** State of Nature 2023, The State of Nature Partnership. Available on the State of Nature website (external link).

[12] **British Trust for Ornithology (c1980 and c2010).** Breeding Bird Survey (Bird Atlas) c1980 & c2010 Data. Available on the British Trust for Ornithology website (external link).

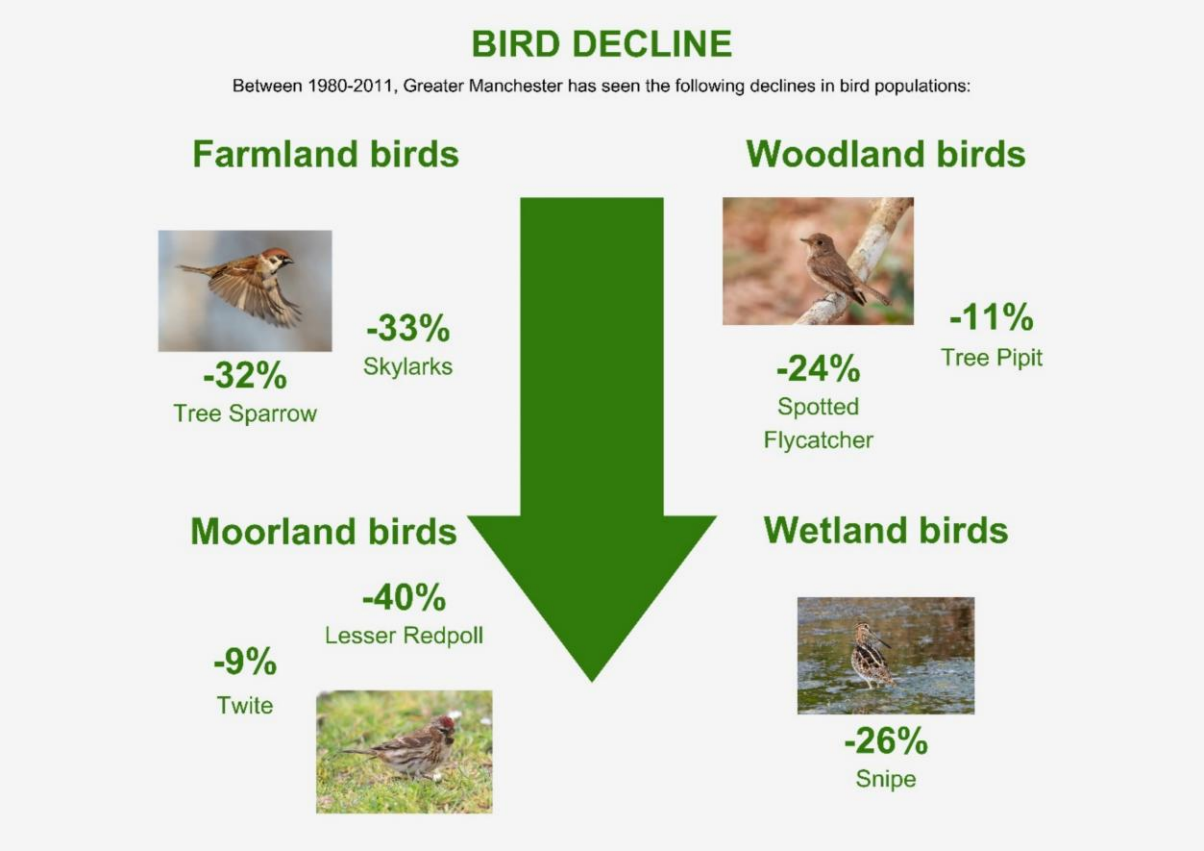


Figure 8. Bird decline

Our mammals

The population trends for mammals are relatively poorly known in Greater Manchester and we are reliant on data for the whole of the North West[13]. 25-year trends for the North West show us that we are losing once common species.

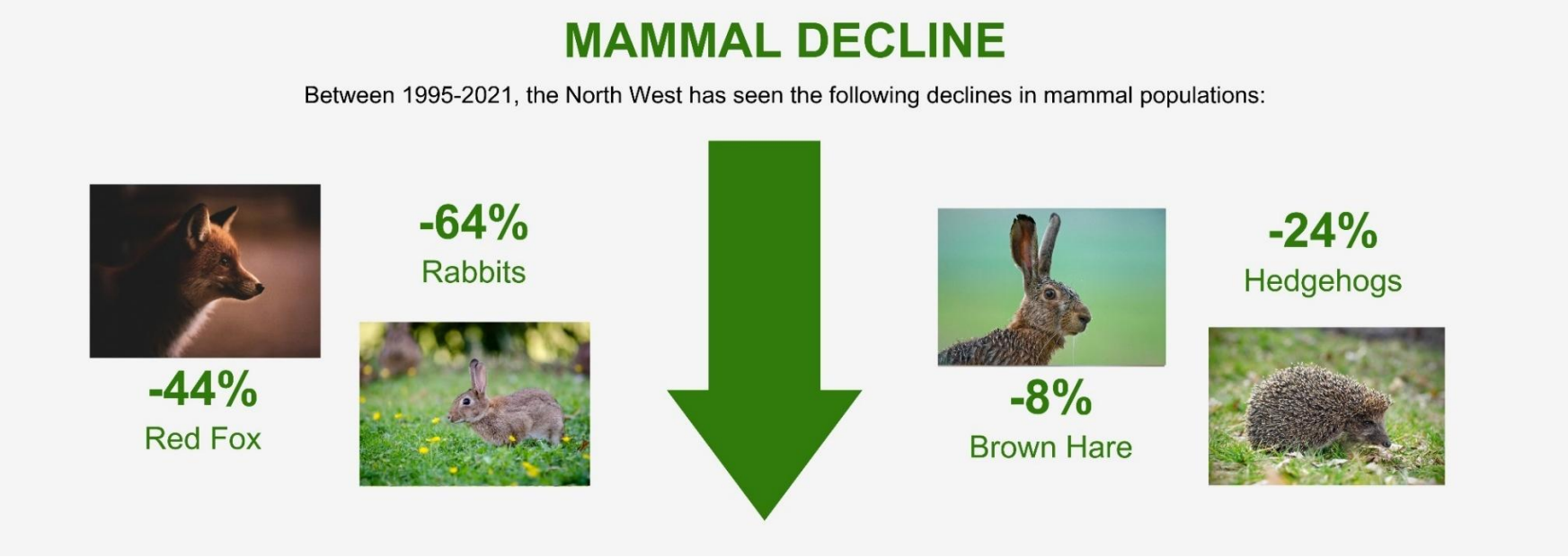


Figure 9. Mammal decline

[13] **British Trust for Ornithology (c1990 and c2021).** British Trust for Ornithology Mammal Survey Data. Available on the British Trust for Ornithology website (external link).

Species return

Across Greater Manchester there are also reasons to be optimistic that nature can recover and stories of species returning:

Otters

Between the 1950s and the 1970s the **Otter population** in the UK dwindled to near extinction. In recent years there have been increasingly regular sightings of Otters across Greater Manchester. Otters have now been sighted in over half of Greater Manchester's catchments[14]. A strong indication that they are now resident and increasing their distribution**.**

Fish

Our post-industrial legacy of poor water quality meant that the River Mersey and its tributaries were devoid of **fish populations** by the early 1970s. Surveys completed in 2018 found that fish and Mayflies have now returned to all areas of the river[15].

Butterflies

The Large Heath Butterfly, locally named as the **Manchester Argus Butterfly**, died out in Greater Manchester due to habitat loss and destruction. However successful reintroductions by the Great Manchester Wetlands Species Reintroduction project have introduced a new self-sustaining population on Astley Moss[16].

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[14] **Natural Course (2023).** Otters Return to Greater Manchester, Available on the Natural Course website (external link) and Greater Manchester Ecology Unit internal analysis.

[15] **Mersey Rivers Trust (2019).** Biological Change in the Rivers of the Mersey Catchment 1970-1994-2018.

[16] **Lancashire Wildlife Trust (2023).** Rare Manchester argus butterflies flourishing after reintroduction, The Wildlife Trust for Lancashire, Manchester and North Merseyside. Available on the Lancashire Wildlife Trust website (external link).

Birds

An iconic heathland and moorland species, **Nightjars** were lost as a breeding bird in Greater Manchester when its habitats on Chat Moss were destroyed. Following three years of peatland restoration efforts, Nightjars and other bird species are now beginning to return to Chat Moss[17].

Bog plants

Following successive reintroductions of specialised **bog plants** in recent years, tens of thousands now thrive on Greater Manchester's lowland peatlands, thanks to work of Lancashire Wildlife Trust and the North West Rare Plants Initiative. Sundew one of the UK's few native carnivorous plants can now be found on the mosslands, along with Lesser Bladderwort, Bog Asphodel and White Beak Sedge.

[17] **Lancashire Wildlife Trust (2023).** Nightjars return to Greater Manchester Peatlands. The Wildlife Trust for Lancashire, Manchester and North Merseyside. Available on the Lancashire Wildlife Trust website (external link).

Our spaces protected for nature

Nature reserves and protected wildlife sites provide wildlife with vital refuges. Safeguarded due to their value for nature, they benefit from limits on activities in and near them that might adversely affect wildlife. These sites vary in type, purpose and in the level protection they have, from national to local level designations.

Sites protected for nature

Since the 1980s there has been an increase in the number and area of new sites for nature conservation in Greater Manchester.

11% of land in Greater Manchester is now protected for nature through a variety of different designations[18]. In comparison 14% of Liverpool is designated[19] and 24% of

[18] Some of our protected sites for nature are covered by multiple different designations (i.e. they can be designated a SSSI, SAC and also as a LWS), whereas some have just one single designation (e.g. only a LWS).

[19] **Liverpool City Region Combined Authority (2022).** State of Nature Report for the Liverpool City Region. Available on the Liverpool City Region Combined Authority website (external link).

Designated sites cover approximately 41% of the Liverpool City Region area. This figure includes extensive marine intertidal habitats which form 66% of all designated sites in Liverpool City Region. To establish a comparable figure to Greater Manchester intertidal habitats have not been included. After the exclusion of intertidal habitats designated sites cover approximately 13.9% of Liverpool city region.

Lancashire. The total area of sites designated for nature has risen from around 5,000ha in the 1980s to over 14,000ha in 2019[20].

Highest level of protection, primarily for nature conservation	Area (ha)	Percentage of GM's total land area
Special Areas of Conservation and Special Protected Areas	4,093	3.2%
Sites of Special Scientific Interest (excluding above)	1,088	0.9%
National Nature Reserves (excluding above)	650	0.5%
Local Nature Reserves (excluding above)	1,750	1.4%

Designated for high biodiversity value but not fully protected	Area (ha)	Percentage of GM's total land area
Local Wildlife Sites (Sites of Biological Importance) (excluding above)	6,821	5.4%
Total	**14,402**	**11.3%**

Over the last decade, the positive trend of annual increase in the amount of our land protected for nature has plateaued.

[20] Internal officer analysis completed by Greater Manchester Combined Authority and Greater Manchester Ecology Unit. Analysis using a variety of datasets made available on data.gov (external link).

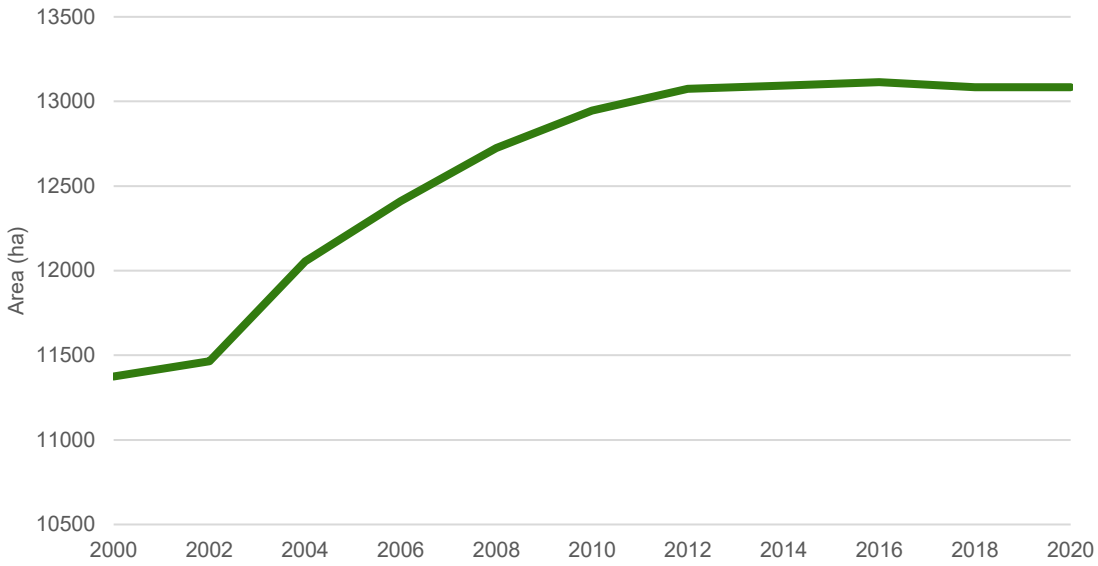

Figure 10. Total area of Local Wildlife Sites in Greater Manchester (ha)[20]

Although new sites have been designated – for example the Flashes of Wigan and Leigh National Nature Reserve (external website) and the Local Nature Reserve at Kenworthy Woods in Manchester (external website) – some sites, or parts of sites, are also being lost due to lack of appropriate management and land use change[20]. The annual losses and gains over the last decade are shown below. Over the past decade the total area of sites selected as Local Wildlife Sites has remained stagnant.

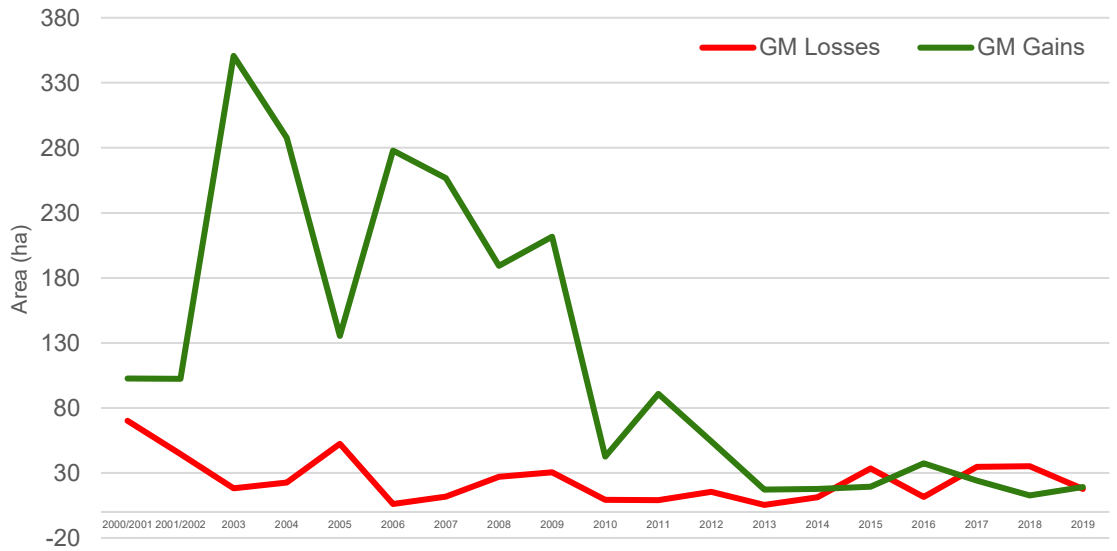

Figure 11. Annual losses and gains in the area of Local Wildlife Sites in Greater Manchester (ha)[20]

Condition of sites protected for nature

The fact that areas of protected sites are being lost highlights the need for their appropriate management, to ensure they are best condition possible for nature. We know more about the condition of sites that are designated at a European (SAC and SPA) and national (SSSI and NNR) level than we do about those designated locally (LNR and LWS).

Condition of our Sites of Special Scientific Interest (SSSIs)

National goals target 50% of our most protected sites (our SSSIs) to have actions on track to achieve "favourable" condition by 2028 and that 75% of sites should reach "favourable" condition by 2042[21]. In Greater Manchester, all Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) are also designated as SSSIs, so this target applies to all of these sites (5,831ha).

At present in Greater Manchester:

- 75% of sites "unfavourable – recovering"
- 19% of sites "unfavourable – no change"
- 0.08% of sites "destroyed"
- 0.06% of sites "unfavourable – declining"

At present only 5% of these sites (less than 300ha) are in "favourable" condition, with a further 75% in "unfavourable – recovering" condition[22].

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[21] **Department for Environment, Food and Rural Affairs (2023**). Environmental Improvement Plan 2023 – First Revisions of the 25-year Environment Plan, DEFRA. Available on the Assets Publishing Service website (external link).

[22] **Natural England (2023)**. Sites of Special Scientific Interest Units (England), Natural England Open Data Publication. Available on the Natural England website (external link).

Compared to national and North West level trends, Greater Manchester has:

- Significantly fewer of these sites in “favourable” condition.
- More sites in “unfavourable – recovering” and “unfavourable – no change” condition.
- Significantly fewer sites in “unfavourable – declining” condition.

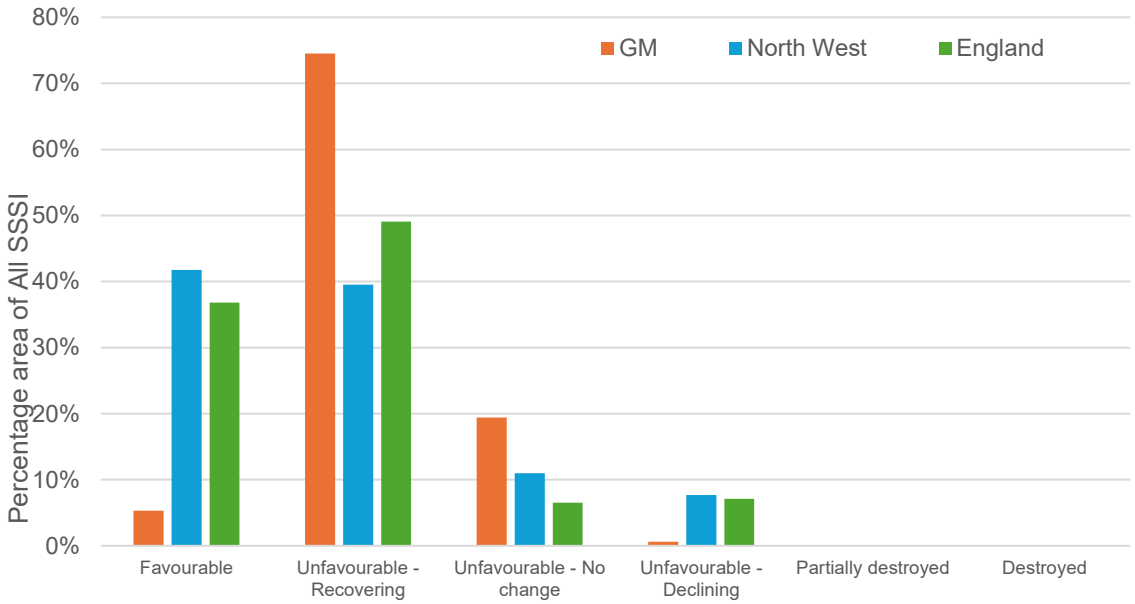

Figure 12. Condition of Sites of Special Scientific Interest in Greater Manchester, North West and England[22]

Since 2000, most of our SSSI sites have improved and have moved towards being managed for recovery rather than remaining “unfavourable – no change”. The proportion of sites in decline has dropped from near 20% to under 1%.

However, these improvements have not been universal across all habitat types:

- **Our grasslands, woodlands and bog** have largely improved towards “favourable” or “unfavourable – recovering” condition.
- **Our water ways, open and standing water** have largely regressed from “favourable” to “unfavourable – recovering” condition.

Connectedness of sites protected for nature

Even for those sites that are in good condition, when looked at as a network, they are still highly fragmented, meaning there are large distances between them, and they are not well-connected.

At a national level, a review of protected sites for nature concluded that, although important, they do not comprise a coherent and resilient ecological network[23]. Many sites are too small, with loss of habitats so great that the area remaining protected is not enough to halt the loss in biodiversity[24]. Instead, there needs to be more sites, that are bigger and in better condition, and that are more joined up.

This is likely to be even more pertinent for a city-region like Greater Manchester, where these sites are more fragmented and under greater pressure than in less urbanised areas. In Greater Manchester there is an absence of nature corridors, beyond the upland moors, the canal and river corridors and woodlands, as shown in the map on the next page.

[23] **Lawton et al. (2010).** Making Space for Nature: a review of England's wildlife sites and ecological network. Report to Defra. Available on the National Archives website (external link).

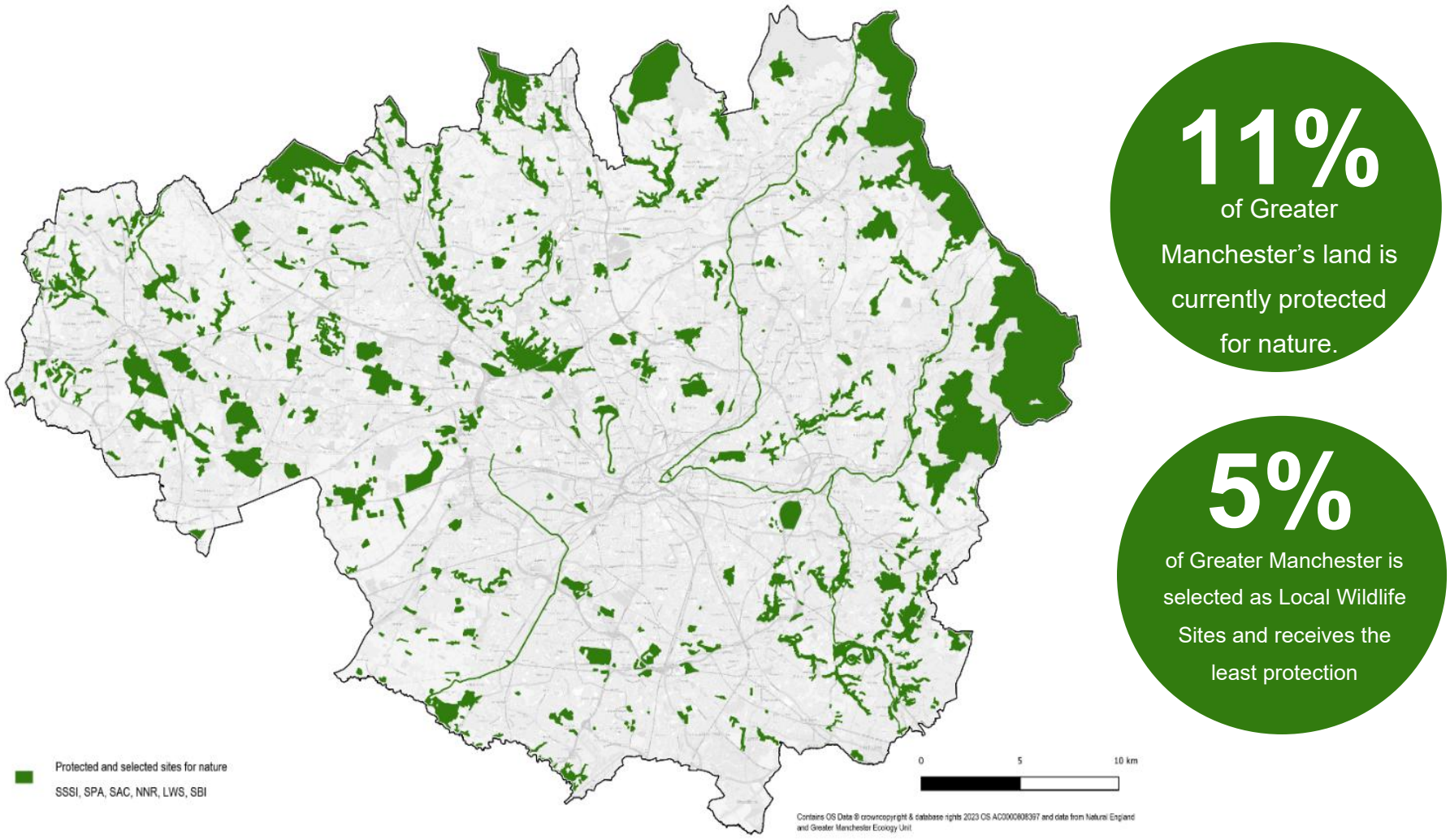

Figure 13. Greater Manchester sites selected or designated for nature conservation[20]

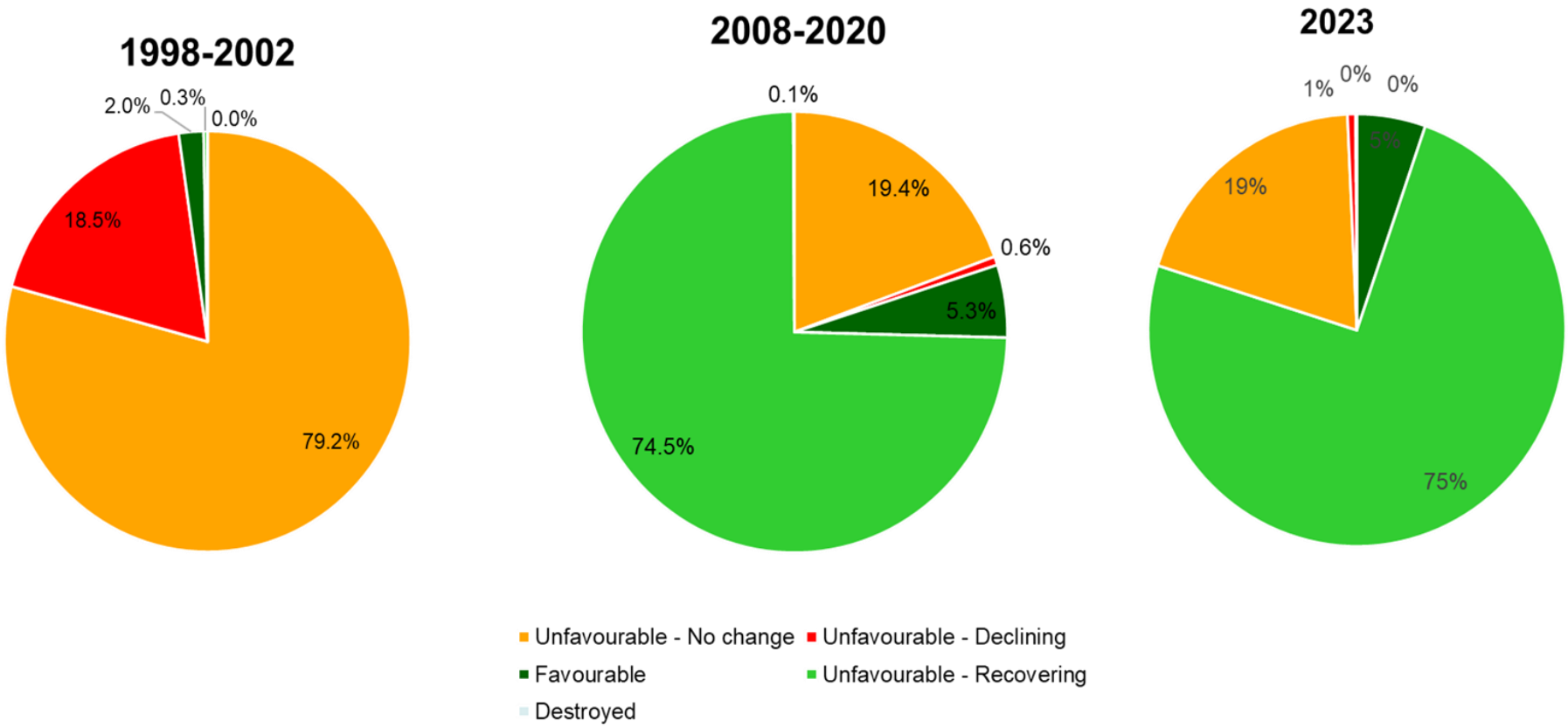

Figure 14. Historic Sites of Special Scientific Interest condition across Greater Manchester[22]

Our land, water and networks for nature

Nature in Greater Manchester is not just confined to our protected sites and nature reserves. A variety of habitats are found outside these sites, from our upland moorlands to woodlands and from our grasslands to our rivers, canals and wetlands[25].

The key networks for nature in our wider landscape include our:

- Trees and woodlands
- Rivers and waterways
- Peatlands

Habitat type	Percentage of GM's total land cover[25]
Woodlands *(including broadleaved, coniferous and plantations)*	9%
Grasslands *(from grazing or farmed grasslands, as well as amenity grasslands and semi-natural grasslands)*	30%
Urban and suburban areas	46%
Heath and heather grasslands	5%
Arable croplands	4%
Wetlands *(bog, marsh and fen)*	4%
Waterways and waterbodies	1%

[25] **Marston et al. (2022).** Land Cover Map 2021 (10m classified pixels, GB). NERC EDS Environmental Information Data Centre. Available on the Environmental Information Data Centre website (external link).

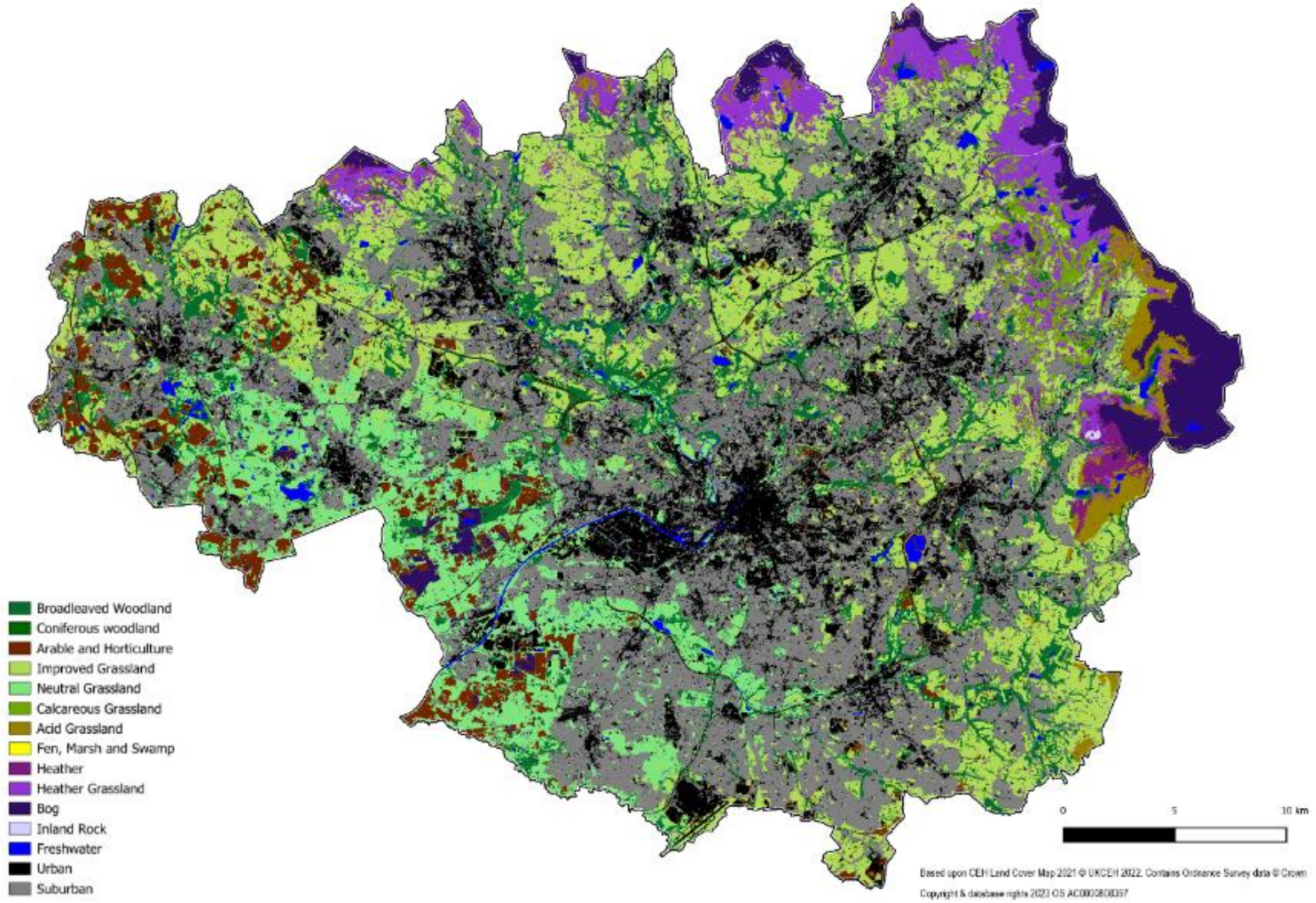

Figure 15. Land cover and habitats in Greater Manchester[25]

Our trees and woodlands

Trees and woodlands provide spaces for nature across Greater Manchester. Our Greater Manchester Trees and Woodland Strategy[44] provides an in-depth picture of the trees and woodlands present across our city-region and the benefits they deliver.

Trees benefit us all by greening our roads and streets, capturing air pollutants and carbon, helping manage rainwater and providing shade during heatwaves. During heatwaves our tree cover can cool the temperature of the environment at significant scale, primarily through transpiration reducing air temperatures. Studies have found that in Manchester, inner-city areas with fewer trees and green spaces were 3.12°C hotter than those with more tree cover and plant life during 2022's hottest day on record[26].

Over the last decade we have seen a significant rise in tree planting with City of Trees working to plant 1 million trees by 2024, supported by multiple partners across the city-region[27]. However, the management of much of our existing woodland remains under resourced and there is huge potential for our woodlands to better support biodiversity.

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[26] **Friends of the Earth (2023)**. Maps showing city cooling by trees and greenspace. Available on the Friends of the Earth website (external link).

[27] **Greater Manchester Combined Authority (2023).** Greater Manchester's Natural Environment, NE1: Plant one million trees by 2024. Available on Gm tableau website (external link).

Figure 16. Woodland and trees in Greater Manchester

16%
of Greater Manchester's land is covered by tree canopy[44]

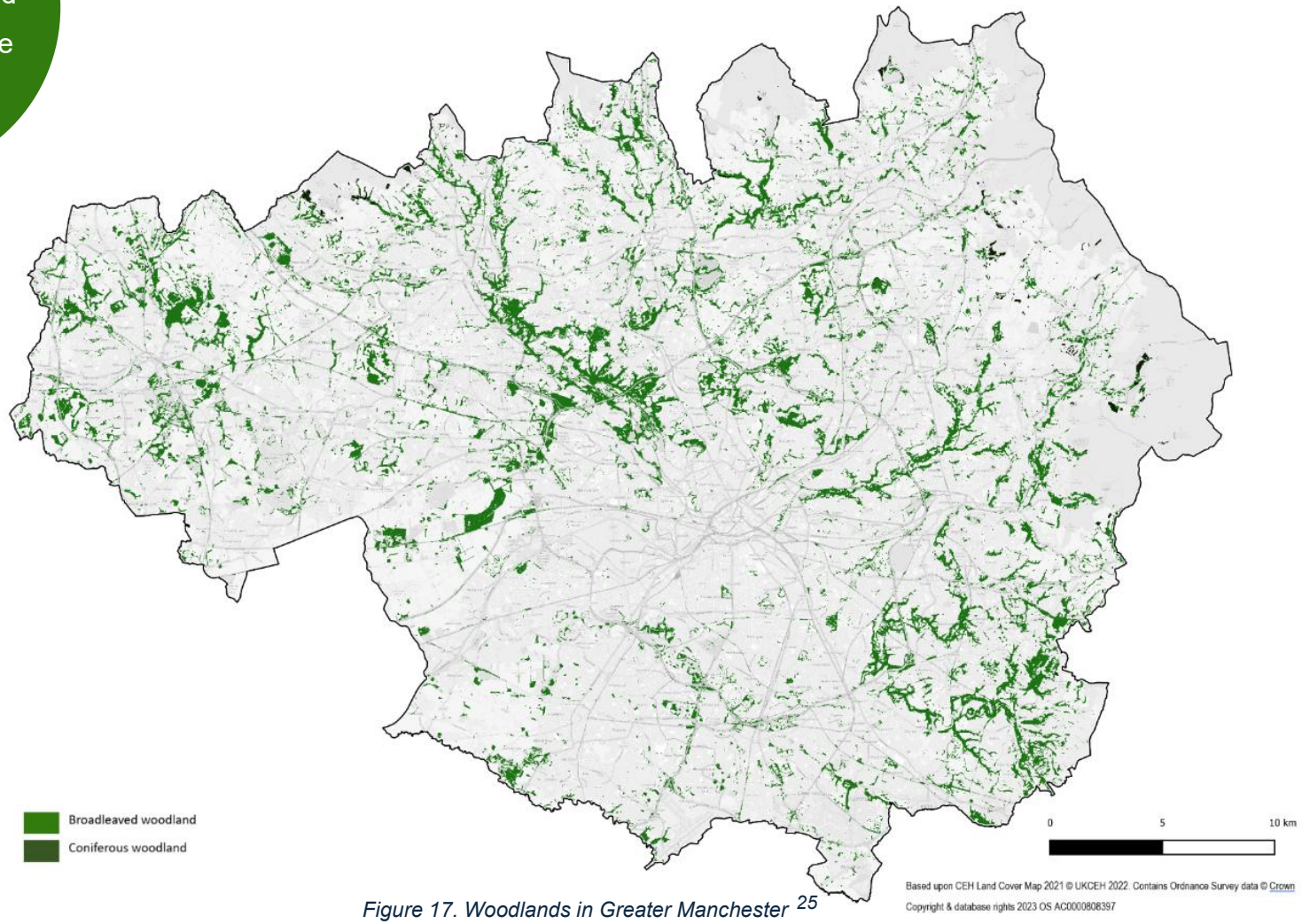

Figure 17. Woodlands in Greater Manchester [25]

Our rivers and canals

There are over 884km of rivers across Greater Manchester, along with streams and brooks. Split into 73 rivers with eight main river catchments, the majority of the water in Greater Manchester drains into the Irish Sea via the River Mersey and a much smaller portion (from the North West of the city-region) flows to the sea via the River Douglas. These rivers flow alongside nearly 400ha of lakes and nearly 160km of canals.

The vast majority, 80%, of our rivers, streams and brooks have been significantly changed by human activity[28]. Just over 112km of our rivers are estimated to have been "culverted" – meaning that they have been buried, built over, and now run below our streets, highways and buildings, in artificial channels or even pipes. There are thought to be over 1,000 obstacles and barriers to species movement in our rivers, which fragment our aquatic habitat and restrict fish movement[29].

Despite improvements over the last 40 years, using internationally accepted standards[30], none of Greater Manchester's rivers or canals are in good ecological status and invasives species are increasingly problematic.

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[28] Environment Agency and GMCA officer analysis, based on data available on the catchment data explorer website (external link).

[29] **The Rivers Trust (2021).** River Obstacles. Available on the Rivers Trust website (external link).

[30] The **Water Framework Directive**, introduced by the European Commission in 2023, standardised the way river condition is measured across Europe.

11% of our rivers and canals are in poor or bad condition, and all of our assessed lakes are in poor or moderate condition. This means that none of Greater Manchester's waterbodies meet the best ecology that they can achieve, even when accounting for human activities continuing.

Ecological status - Rivers and Canals	Greater Manchester	North West England	England
Bad	2%	3%	3%
Poor	9%	13%	19%
Moderate	89%	84%	62%
Good	0%	0%	16%

Nationally, a target to restore 75% of waterbodies to good ecological status by 2043 has been set. The trend over recent years has been for a greater proportion of waterbodies to be classified as "moderate" in Greater Manchester. Taking these into "good" status will be challenging to achieve, not only due to pollution but also due to the heavily modified nature of Greater Manchester's waterbodies.

100km

of Greater Manchester's rivers have been buried or built over.

1,000

river obstacles and barriers to species movement in Greater Manchester's rivers.

GREATER MANCHESTER

DOING THINGS DIFFERENTLY FOR THE ENVIRONMENT

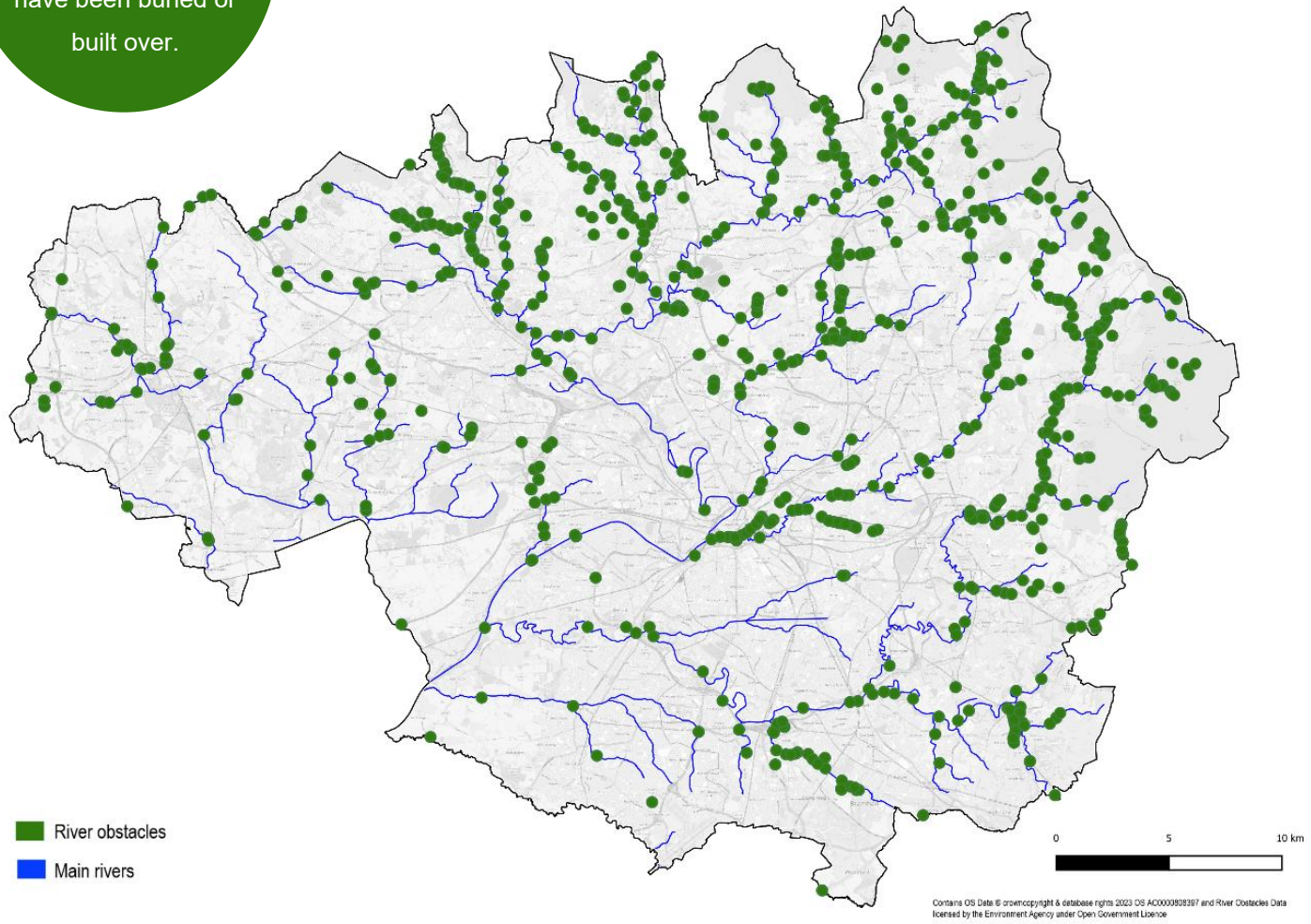

Figure 18. River Obstacles on Greater Manchester's Main Rivers[29]

Our peatlands

When in good condition, peatlands can be carbon-rich wetlands, which are naturally waterlogged and provide important habitats for mammals, birds, insects, and plants. In addition to the wildlife they support, peatlands can provide a range of other benefits, particularly for carbon storage, flood risk management and water quality enhancements.

Large parts of Greater Manchester sit on top of peaty soils, with 15,500ha in the uplands and 5,000ha in lowland areas[32].

However, only 44% of our peaty soils (deep and shallow peat soils) are in positive management (either being protected and/or via an agri-environment scheme). Due to their poor condition our degraded peatlands are emitting an estimated 187,525 tonnes CO2-equivelent per year [31,32].

Upland Peat

In the uplands, large tracts of peatlands have been subject to drainage, and unsustainable grazing and management.

- Only 10% of upland peatlands are in good condition.
- 66% needing improvement.
- 24% in poor condition.

Our upland peatlands are emitting around 60,000 tonnes CO2 equivalent per year, rather than locking more carbon away[31,32].

[31] **Smart et al. (2020).** England Peat Strategy: Greater Manchester Peat Pilot Report for Defra. Natural England.

[32] **Natural England (2020).** England Peat Strategy: Greater Manchester Combined Authority Peat Pilot Report for Defra, Defra.

Lowland Peat

In the lowlands, large tracts of lowland peatlands were drained during the 19th/20th century, peat soils removed or converted to agricultural uses.

- Intensive agriculture (turf production, cropland, intensive grassland), covers 55% of our previous lowland peatlands.
- Research indicates that degraded lowland peatlands are emitting around 130,000 tonnes of CO2 equivalent per year.

60,000

tonnes approx. CO_2 equivalent per year emitted from upland peatlands, rather than being locked away.

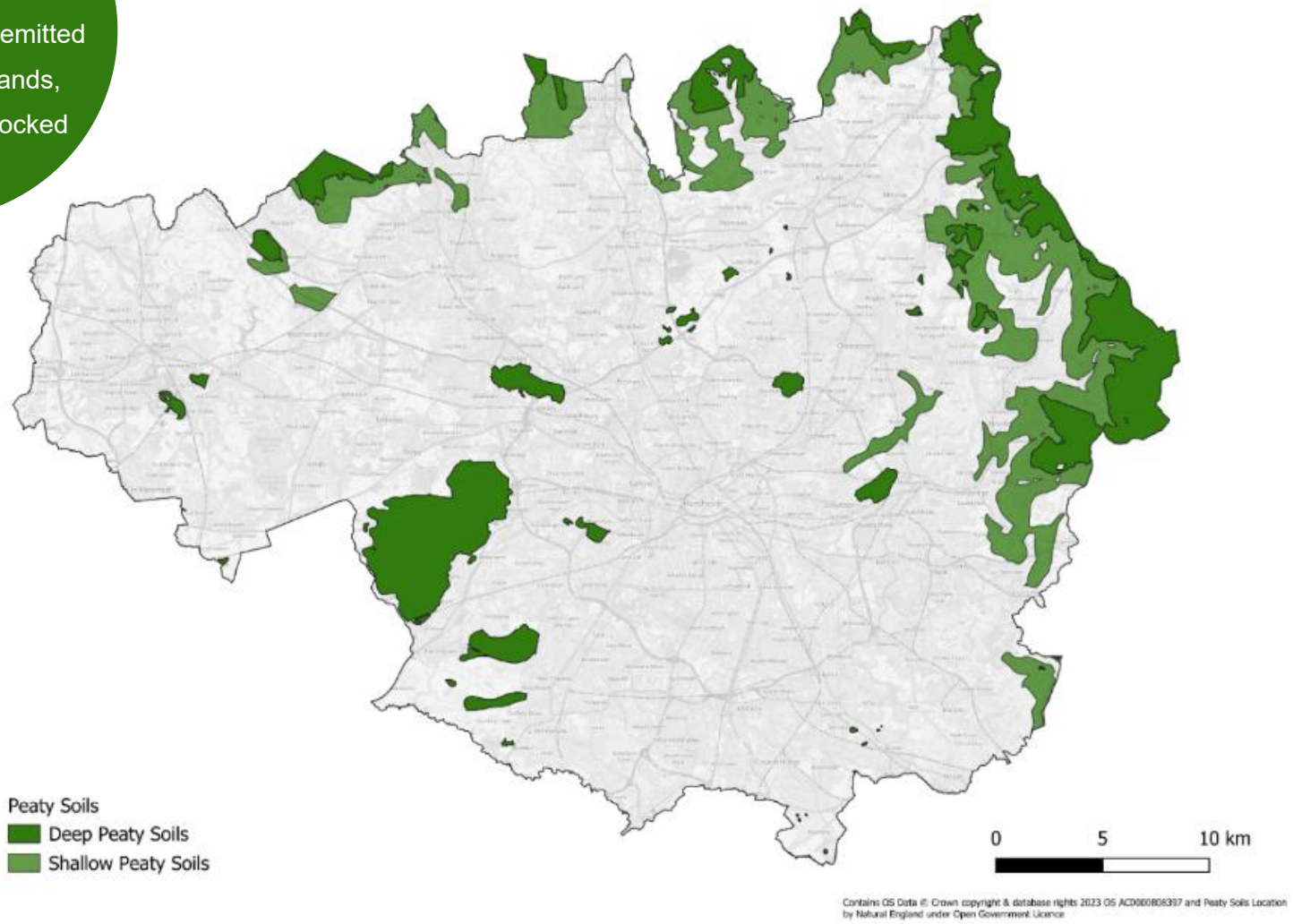

Figure 19. Peat soils across Greater Manchester[31]

Our land use

Land across Greater Manchester is used for a variety of different purposes and owned by a range of different people, from larger landowners (e.g., developers and farmers) to local councils and individual homeowners:

- Alongside our urban areas, agricultural and rural land makes up an estimated 30% of our land[33]. Uptake of grants for nature-friendly farming is thought to be lower in Greater Manchester than surrounding areas.
- Our residential gardens account for 15% of our land use[33]. These can be fantastic urban refuges for nature. However, research by the Manchester Metropolitan University has revealed that in Manchester only 50% of the average garden is greenspace[34].
- Amenity and leisure spaces, such as public parks, school grounds, and sports pitches make up nearly 20% of Greater Manchester. We have some fantastic new green spaces in our city centres. However, since 2017, we have also seen a year-on-year decline in the number of our parks holding green flag status.
- Our transport network, including pavements, roads, highways, streets and motorways makes up 13% of the city-region. These areas often have potential to also act as highways or corridors for wildlife.
- Buildings and commercial areas, from residential houses to industrial warehouse and skyscrapers cover an estimated 9% of Greater Manchester.
- Water ways and water bodies, including the River Mersey and River Irwell, reservoirs, lakes and ponds cover 2% of the city-region. Many of these have been heavily modified, built over and even buried or piped through our urban areas.

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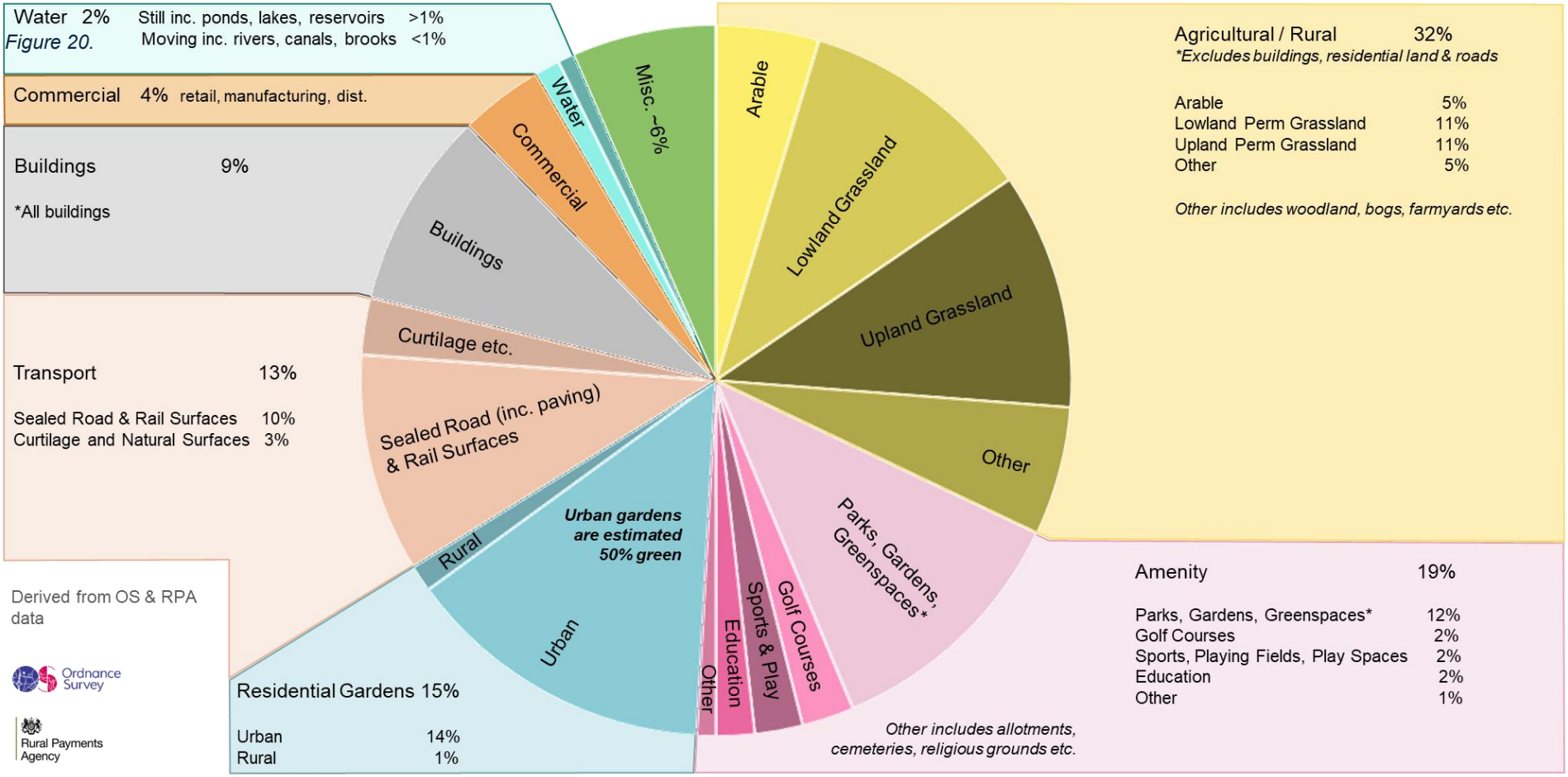
[33] **Greater Manchester Ecology Unit and Greater Manchester Combined Authority** internal analysis completed based on a variety of datasets from the Ordnance Survey and the Rural Payments Agency.

[34] **Manchester Metropolitan University (2016)** Research Summary – My Back Yard. Overview available on the Manchester Metropolitan University website (external link).

Main land uses across Greater Manchester



Main land uses across Greater Manchester

Our access to nature

The number of people living and working in Greater Manchester has grown rapidly. Over 2.8 million people now call the city-region home and the population could reach 3 million by the 2050s. Many Greater Manchester residents value having access to nature near where they live and are concerned about the environment:

- On average **93% of Greater Manchester** residents surveyed over a 10-year period think that having open greenspace close to where they live is important[35].
- A recent survey[36] of Greater Manchester residents found that together the state of the environment generally and the threat of climate change ranked as the **4th top national concern**. Other top concerns include the cost of living, the quality of the NHS service and the state of the economy.
- Although access to nature is clearly valued, only just over 50% of Greater Manchester residents are thought to be regularly accessing green spaces[35].

[35] **Natural England (2009-2019)**. Monitor of Engagement with the Natural Environment, Natural England 2009-2019.

Data reported is the average for GM respondents over the 10 years between 2009-2019.

[36] **Public First Survey (2023).** Climate Emergency Perception and Behaviours in Greater Manchester. Commissioned by GMCA/TFGM. Overview available on the Greater Manchester Combined Authority website.

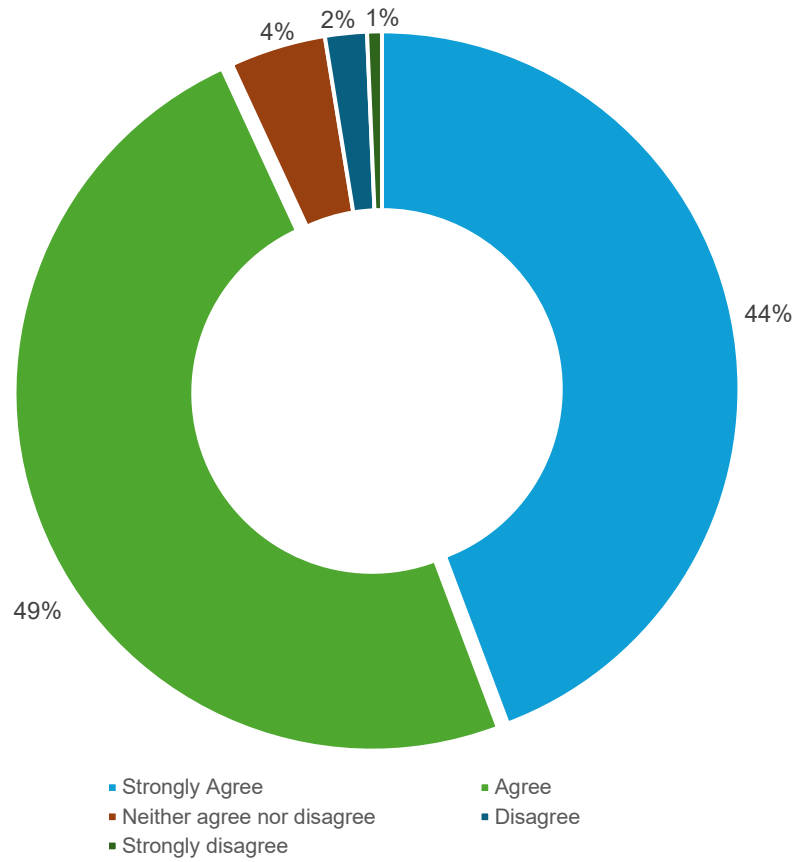


Figure 21. Residents' views on whether having open access to green spaces is important to them in Greater Manchester[35]

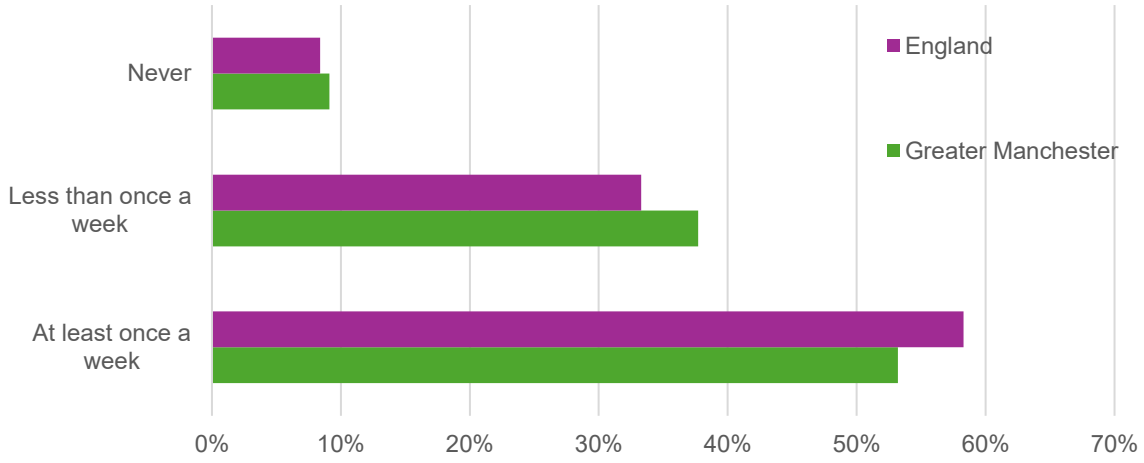


Figure 22. Greater Manchester residents reporting visits to green space[35]

What stops Greater Manchester residents spending time in nature?

A survey of just over 1,000 Greater Manchester residents reported that they were put off spending time in nature due to[37]:

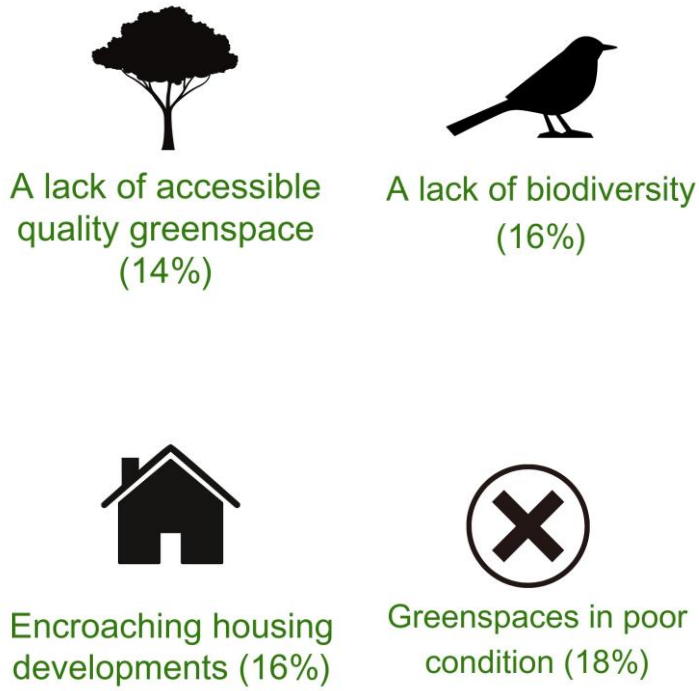


Figure 23. Blockages to spending time in nature

Equal access to green space

One factor causing low visits to greenspace is that many people do not have access to nature near to where they live or work.

An estimated third of Greater Manchester's population do not live within 15 minutes of green space

[37] **GMCA (2021).** Nature Recovery Survey, GM Consult. Available on the GM Consult website.

National greenspace standards[38],[39] have been set to ensure everyone has access to good quality public green and blue spaces close to home. Across Greater Manchester many people still do not have access to local green spaces near to where they live or work.

- Only an estimated 40% of our population live close (within 200m) of a small greenspace (0.5ha or bigger)[40].
- Only an estimated 30% of our population live within 300m of a 2ha green space.

Accessible green space standard	Definition	Achieving standard	Not achieving standard
Doorstep	≥0.5ha within 200m	39%	61%
Local	≥2ha within 300m	29%	71%
Neighbourhood	≥10ha within 1km	56%	44%
Wider Neighbourhood	≥20ha within 2km	77%	23%
District	≥100 ha within 5km	73%	27%
Subregional	≥500ha within 10km	55%	45%

[38] **Natural England (2023).** National Green Infrastructure Standards. Available on the Natural England website (external link).

[39] **DEFRA (2023)**. National Environmental Improvement Plan 2023, DEFRA. Available on the GOV.UK website (external link).

[40] **Greater Manchester Combined Authority** internal analysis completed by combining data from Natural England ANGST standard maps (external link) and Office for National Statistics population estimates (external link).

Access to nature across Greater Manchester is also unequal. The national greenspace standards, shows how access to greenspace varies across each Local Authority area.

Figure 24. Greenspace standard per Local Authority[40]

Echoing national trends[41], people experiencing multiple inequalities in Greater Manchester tend to live in areas with less greenspace, compared to more affluent areas[42]. Assessment of local trends also suggests that generally those experiencing

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[41] **The Ramblers' Association (2021).** The grass isn't greener for everyone: Why access to green space matters, Ramblers. Available on the Ramblers' Association website (external link).

The Ramblers' Association report shows that the richest 20% of areas in England have 5 times the greenspace of the most deprived areas.

[42] **Lindley et al. (2020)**. Nature and Ageing Well in Towns and Cities: Why the natural environment matters for healthy ageing. Available on the GHIA website (external link).

racial inequalities are also nearly twice as likely to live in areas with the least greenspace.

Pressures on nature

Nature is under pressure in several different ways, including:

- Competing demands for the use of land.
- Pressure on water and waterbodies
- Pathogens and diseases

These, and other pressures, are already being exacerbated by the impacts of climate change.

Pressures on land use

Land in Greater Manchester is limited and is under increasing demand to meet a variety of needs. These include: to provide homes, commercial space, transport and utilities for the city-region; to support energy generation, carbon sequestration (e.g., tree planting and peatland restoration) and climate adaptation (e.g., nature-based solutions); for food growing and recreation.

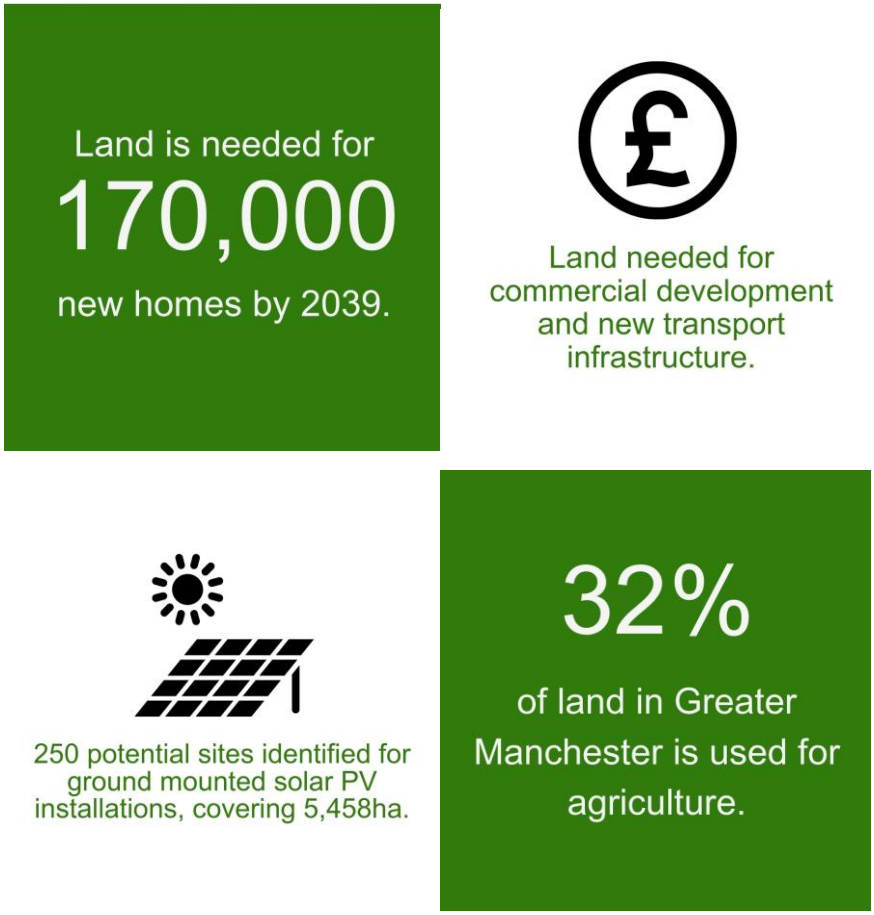

Figure 25. Pressures on land use

Pressures on water and waterbodies

Water in Greater Manchester is under pressure from a range of sources. Over 20% of the water in most Greater Manchester rivers has been discharged from a Wastewater Treatment Works. For some rivers this is as high as 60-80%. Across Greater Manchester our waterways are under pressure from:

Heavy modification of waterbodies due to human activities.

Greater Manchester has 793 combined sewer overflows, that spilt an estimated

21,391

times in 2022 for an average of over 4 and a half hours per spill.

The use of fertilisers and pesticides in agriculture.

20%

reduction in water consumption per person needed by 2038 to achieve sustainable water abstraction levels.

Japanese Knotweed found on

11%

of riverbanks

...with Giant Hogweed across 4% and Himalayan Balsam across 100%.

Diffuse pollution from urban areas including runoff from roads, and from emerging forms of contaminations such as micro plastics.

Figure 26. Pressures on water and waterbodies

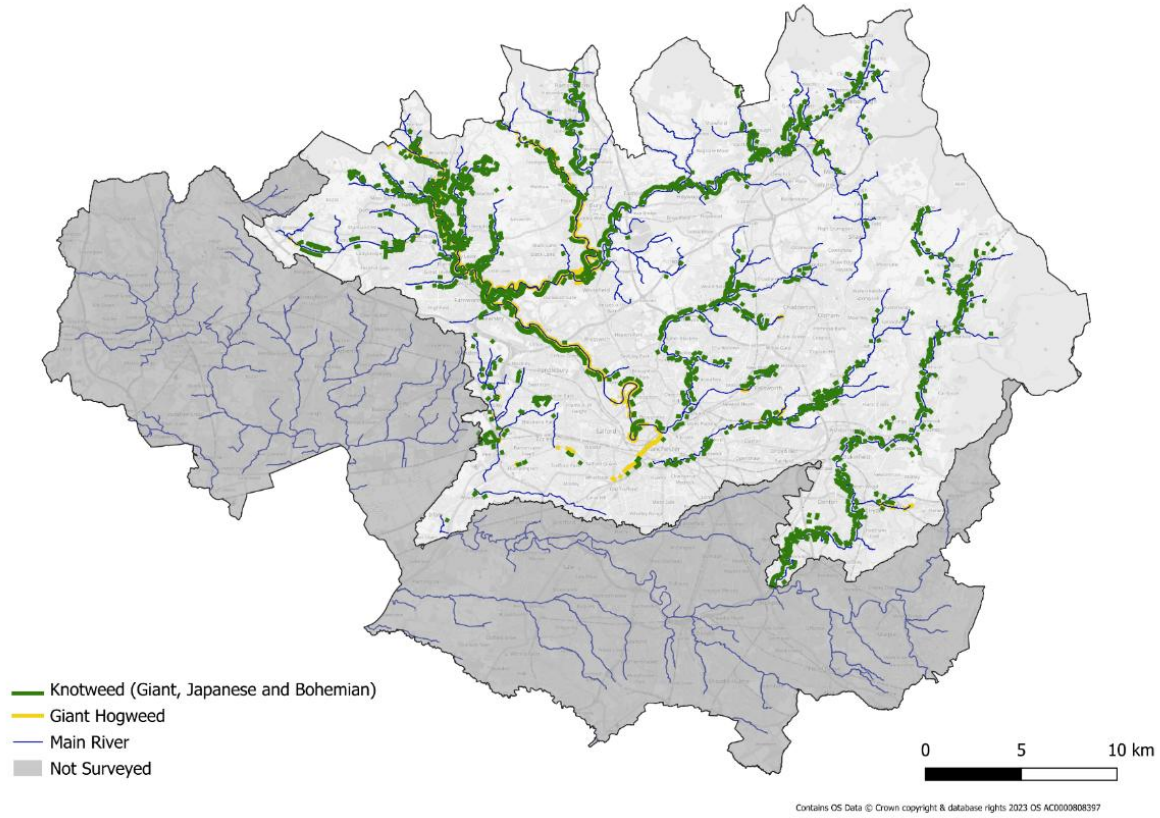

Figure 27. Invasive species within the River Tame and River Irwell Catchments[43]

Pathogens and diseases

As well as invasive plant species, microorganisms that cause disease pose a threat to wildlife and ecosystems. The most significant of these currently affecting Greater Manchester and the rest of the UK is ash dieback.

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[43] **Greater Manchester Combined Authority (2023).** River Tame INNS Survey 2023. Available on the Natural Course Website (external link). **Greater Manchester Combined Authority (2022) River Irwell INNS Survey (2022).** Available on the Natural Course Website (external link).

Ash dieback is expected to lead to the decline and death of the majority (c. 80%) of Ash trees in the UK. It is present across Greater Manchester – European Ash is the fourth most common tree species across the city-region, with around 900,000 Ash trees at risk from the disease. Ash trees can be large in stature and provide a significant quantity of ecosystem services to Greater Manchester; their replacement should they perish would be costly, estimated at over £350m[44]. There are 953 species in the UK associated with Ash trees in some way, including 106 species which are highly or completely dependent on Ash trees[45].

Figure 28. Ash dieback in Greater Manchester

Other diseases, like avian influenza, may emerge to pose threats to wildlife (in that instance, to birds). And climate change is likely to increase risk of the introduction and spread of pathogens.

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[44] **City of Trees (2020)**. All our Trees – Greater Manchester's Tree and Woodland Strategy. Available on the City of Trees website (external link).

[45] **Mitchell et al. (2014)**. Ash dieback in the UK: A review of the ecological and conservation implications and potential management options. Biological Conservation. Available on the Science Direct website (external link).

Climate change

Climate change has already impacted biodiversity in Greater Manchester as species shift northwards. As temperatures increase, climate zones will move northwards at 5km per year by 2050 – equivalent to moving from the south to north of Greater Manchester in 8 years, a process which took 800 years at the end of the last ice age[46].

Risk assessments for species in England show that more species are expected to increase their ranges rather than decrease. However, upland habitat species in the north and east of the city-region are particularly vulnerable to climate change due to northwards and upwards range contraction. Given the importance of uplands to water management and carbon storage, this may have knock on impacts.

These effects will be exacerbated further by the projected increase in hazardous fire weather conditions in summer, meaning greater risk of wildfires in the uplands and possible extension of the wildfire season into late summer and early autumn[47].

- The North West of England has the highest number of wildfire incidents compared to any other region in England. Over 55,635 wildfires occurred in the North West of England between 2009-2021. The North West region also had the greatest area of land burn by wildfires, over 45,000ha[48].
- Greater Manchester already experiences the greatest area burnt by wildfires, over 30,000ha, in England. In comparison, Lancashire experiences around 11,000ha of burnt land[48].

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[46] **Environment Agency, Chief Scientist's Group (2022)**. Working with Nature – Chief scientist's Group Report. Available on the GOV.UK website (external link).

[47] **Perry et al. (2022).** Past and future trends in fire weather for the UK. Nat. Hazards Earth Syst. Sci., 22, 559–575, 2022. Available on the DOI website (external link).

[48] **Forestry Commission (2023).** Wildfire Statistics for England 2020-21. Available on the Assets Publishing Service website (external link).

The wider benefits of nature

Our natural environment provides us with a range of other benefits. It is particularly important to our health and wellbeing, especially in urban areas where residents might not have regular access to nature.

The Greater Manchester Natural Capital Accounts[49] measure the benefits provided by the city-region's natural assets to its businesses, public services and residents.

These benefits include:

[49] **GMCA and the Environment Agency (2019).** The Value of Greater Manchester's Natural Capital. Available on the Greater Manchester Combined Authority website.

Figure 29. Wider benefits of nature

In total we receive an estimated £1bn in benefits from our natural environment each year. However, these benefits are under threat given the array of challenges set out in this report and the continued decline in biodiversity we are seeing.

Annex A. Abbreviations and Acronyms

Abbreviation or Acronym	Definition
CO_2	Carbon dioxide
GM	Greater Manchester
GMCA	Greater Manchester Combined Authority
LNRS	Local Nature Recovery Strategy
NW	North West England
NNR	National Nature Reserves
SSSI	Special Site of Scientific Interest
SAC	Special Area of Conservation
SPA	Special Protected Areas
LWS	Local Wildlife Site
SBI	Site of Biological Interest

Annex B. Greater Manchester Land Use

Land Use Type	Percentage of Greater Manchester	Land Use Sub-Type	Percentage of Greater Manchester
Agricultural/Rural*	32%	Arable	5%
		Lowland permanent grassland	11%
		Upland permanent grassland	11%
		Other*	5%
Amenity	19%	Parks, gardens, greenspaces*	12%
		Golf courses	2%
		Sports, playing fields, play spaces	2%
		Education	2%
		Other*	1%
Residential Gardens	15%	Urban	14%
		Rural	1%
Transport	13%	Sealed road and rail surfaces	10%
		Curtilage and Natural surfaces	3%
Buildings*	9%		
Commercial*	4%		
Water	2%	Still water including ponds, lakes, reservoirs	>1%
		Moving water inc. rivers, canals, brooks	<1%
Misc	~6%		

* Agricultural/Rural excludes buildings, residential land and roads
* Other agricultural areas includes woodland, bogs, farmlands etc
* Amenity parks, gardens and greenspaces includes allotments, cemeteries, religious grounds
* Commercial includes retain, manufacturing and distribution

Annex C. Invasive species within the River Tame and River Irwell Catchments

River	Kilometres of riverbank covered by Japanese Knotweed	Kilometres of riverbank covered by Giant Hogweed
River Irwell	109	45
River Tame	14	0.3
Total	123	45.3

GREATER MANCHESTER

DOING THINGS DIFFERENTLY FOR THE ENVIRONMENT

Greater Manchester Local Nature Recovery Strategy

Appendix 4 – Stakeholder engagement undertaken

Introduction

Stakeholder engagement has been a crucial part of developing the Greater Manchester Local Nature Recovery Strategy (hereafter LNRS) and ensuring we get it right for the residents and businesses of Greater Manchester. This appendix provides a brief overview of some of the stakeholder engagement undertaken as part of the preparation and development of the strategy.

All the engagement work undertaken, and the feedback we received, was used to inform the drafting of the strategy and the key components within the strategy – such as the headline aims, targets, priorities, actions and the Nature Network.

General engagement

During the development of the LNRS, GMCA has consistently provided updates through various communication materials and channels to increase awareness across a range of key stakeholders.

These general engagement activities included:

- Posting around 30 social media updates across platforms like LinkedIn, X (formerly known as Twitter), Instagram, and Facebook to keep residents and local organisations informed about the strategy.
- Releasing several press releases at key milestones in the strategy's development, such as the initial launch, which garnered nearly 400 views.
- Producing and promoting regular newsletters on the development of the key aspects of the strategy, reaching over 30,000 people. These newsletters and delegate mailers averaged 2,000 views each.
- Publishing a series of articles on 'Local Nature Champions' to highlight individuals in Greater Manchester who are already contributing to nature recovery and informing people on the wider work on local nature recovery in the city-region. These pieces, which supported the broader goals of the LNRS, attracted an average of around 1,500 views each.

- Publishing a series of project blogs that detailed key milestones in the strategy's progress, with each blog receiving an average of 350 views each.
- Publishing a ‘State of Nature’ report, the first of its kind for Greater Manchester. This report offers an overview of the current condition of our key habitats and species across the city region, serving as an evidence base for the strategy. At the time of publication, it has been downloaded over 2,500 times.

Public Consultation

GMCA ran a public consultation on the draft LNRS, from 15th November 2024 to 31st January 2025, which was open to all stakeholder groups. Residents and stakeholders could respond to the public consultation via a survey, available online via our GM consult webpage or paper copy, and by providing comments via email.

During the consultation period there were over 10,000 visits to the GMCA LNRS webpages. In total GMCA received 427 responses to the public consultation. The majority of these were from members of the public, for a full record of these see Appendix 9.

During this period, GMCA ran numerous engagement events to promote the public consultation:

- 10 in-person drop-in events in each of the local districts, with a total of over 180 attendees across these
- Sector specific events to engage hard to reach groups, including a youth event, business event, general webinar, water sector event and community group event
- A workshop for 125 attendees at the Green Summit in December 2024

Farmers, landowner and land manager engagement

Agricultural land covers an estimated 30% of Greater Manchester and will be critical to the delivery of local nature recovery. GMCA have worked to try to engage farmer and landowner representatives in the development of the strategy. The National Farmers Union (NFU) has been included as a member of the LNRS Steering Group and has inputted throughout the development of the strategy, alongside other members. Local farm cluster leads, including the Irwell Catchment Partnership, have played a crucial role in helping GMCA to engage with farmers and landowners.

Engagement with this sector included:

- Set up of an expert farmer engagement advisory group to ensure that the LNRS and engagement around the strategy would be useful to farmers. This has since become a permanent farmer and land manager engagement group for the Irwell catchment.
- In-person workshops held in January and February 2024 where farmers and landowners were invited to provide their perspectives on the most important and realistic priorities and actions for nature recovery.
- Development of dedicated resources and leaflets to inform farmers and landowners about the LNRS and the distribution of these via partners and the NFU.
- Interviews and farm visits to engage farmers on priorities and actions for the strategy undertaken by Groundwork Greater Manchester in March-April 2024.
- An online survey to complement in-person events and provide a means for a wider audience to provide their feedback on priorities for the strategy.
- Collaborating with the NFU on an in-person engagement event specifically for farmers and landowners during the public consultation period in January 2025.
- Targeted questions on the online public consultation survey for farmers and landowners.

Environmental Organisations and Charities

Environmental organisations and charities (eNGOs) already play a vital role in driving nature recovery across our city-region. These organisations possess extensive expertise on local species, habitats and key sites, and also the broader benefits that nature can offer - from enhancing public health and wellbeing to enriching the overall environment. Recognising the importance of these organisations, we have actively sought to engage with many of them throughout the development of our strategy.

The engagement with this sector included:

- Many of our largest eNGOs, for example City of Trees, Royal Horticultural Society, Groundwork Greater Manchester, Lancashire Wildlife Trust, were invited to be members of the LNRS Steering Group, and have played an active role in shaping the strategy development. This group met regularly over the last 18 months and as members of the Steering Group, these organisations have actively shaped the vision, aims, targets, priorities and actions within the strategy.
- We held individual meetings with key environmental organisations, such as the Mersey Rivers Trust and the Peak District National Park Authority, to discuss the development of the LNRS. They have also participated in the development of the strategy through our Steering Group.
- We distributed newsletters to a wider list of local eNGOs to keep them consistently informed about our progress with the strategy.
- We set up stalls at local events, such as the Greater Manchester Environment Fund (GMEF) Celebration Event, the Festival of Nature and the Natural Course celebration event, to promote the LNRS and key components such as our State of Nature report, the priorities and actions. Our ‘Plan for Nature’ survey also gathered feedback from members of the public and organisations. Further feedback from a range of eNGOs was also received via our public consultation.

- We held six individual habitat workshops where larger eNGOs provided feedback and suggested key habitat priorities to be included in the strategy. The feedback received in these workshops was taken into account and informed the priorities for each of the habitat types within the strategy.
- A survey was conducted with partners, including eNGOs, to gather their views and feedback on the draft priorities for the strategy. The survey provided them with the opportunity to agree with the proposed priorities or suggest amendments.
- A series of workshops focused on the opportunity maps were held, where eNGOs and other partners were invited to contribute to the mapping.
- Environmental organisations were regularly consulted as members of our Steering Group and Natural Capital Group, both of which were presented with various discussions on the LNRS and key updates.

Residents and Community Groups

Residents and community groups across Greater Manchester possess invaluable knowledge about their local areas. Recognising this, we prioritised consulting these groups throughout the development of our strategy.

The engagement with this sector included:

- We conducted a ‘Plan for Nature’ survey to enable extensive public feedback on priorities and actions within the strategy. This survey garnered over 800 responses, providing critical insights from the preferences of residents and community groups across Greater Manchester. You can read more about the feedback that we received in our dedicated report on the results (see appendix 5).
- We hosted a stall at public and community events, including Manchester’s first ever RHS Urban Show, the Manchester Festival of Nature, GM Moving Conference, Greater Manchester Environment Fund Celebration event and others. These stalls enabled us to raise awareness of the LNRS, engage

different audiences, and ensure their involvement and understanding of the strategy development.

- We regularly published blogs, newsletters, and features on local nature champions – individuals across Greater Manchester already making significant contributions to nature. These updates kept the public informed on key aspects of the strategy as it was developed.
- We conducted a public consultation to enable residents and community groups to provide further feedback on the draft strategy. We received over 400 responses and we have set out our responses to these in appendix 10.
- As part of the public consultation, we ran a dedicated community group event in December 2024, to provide community groups with an opportunity to speak directly to us in relation to the draft strategy.

Public Sector and Local Authorities Engagement

We have worked alongside all 10 local authorities of Greater Manchester and public bodies such as the Peak District National Park Authority, Environment Agency and Forestry Commission on the development of the strategy from a very early stage.

The engagement with this sector included:

- The setup of a local authority officer group, with representatives of all 10 local authorities. This group met regularly and were updated and consulted on key points of the strategy as it progressed.
- The setup of a steering group, which includes the Environment Agency, Forestry Commission and Peak District National Park Authority. This group met regularly and were updated and consulted on key points of the strategy as it progressed.
- We held six individual habitat workshops where the local authorities and other partner organisations on our Steering Group could provide feedback on key habitat priorities being developed for the strategy.

- We later conducted a survey allowing members of the Officer group and Steering Group to provide further feedback on the draft priorities and actions with the strategy. The survey provided them with the opportunity to agree with the proposed priorities or suggest amendments.
- We also conducted a series of workshops focused on the opportunity maps, where members of the Officer Group were invited to contribute.
- We held a webinar to help inform local authorities about the LNRS and the mapping process conducted for it, further informing districts on what the LNRS process would look like.
- We invited local authorities and public bodies to our annual Green Summit in 2023 and 2024, where we held presentations and sessions on the LNRS and provided engagement materials to use to promote the LNRS.
- We have presented to a range of local authorities individually on the LNRS, to inform them of how this could be incorporated into their local plans
- Natural England ran a dedicated workshops for NHS colleagues to inform them of the LNRS and how it should be used, and received feedback on priorities and actions compatible with their estate.

Businesses

Businesses and commercial organisations have a role to play in helping nature recover. With over 105,000 businesses within Greater Manchester[50] it is evident that they could take action for nature at larger scale. We have worked to try to engage businesses with the LNRS.

The engagement with this sector included:

- In summer 2024, we conducted a business roundtable hosted by the Better Business Network, to help inform business about the LNRS, learn more about

[50] https://www.greatermanchester-ca.gov.uk/media/1581/greater_manchester_key_facts_january_2016.pdf

what they currently do for nature and what their priorities and actions would be for the strategy.

- We presented on the LNRS at a number of different events, such as Pro-Manchester green transformations panel, to help further inform and engage businesses on the LNRS.
- We also held stalls at a variety of conferences to help engage and inform businesses and business owners about the LNRS.
- We co-hosted a dedicated session for businesses during the public consultation on the LNRS in partnership with Nature North and the Better Business Network in December 2024.

Developers and Planners

We have worked to engage planners and developers with the LNRS.

The engagement with this sector included:

- We presented on the LNRS to developers at a number of different events, such as the Northwest Housebuilders Federation meeting, a Planning and Advisory Service meeting and Royal Town Planning Institute events.
- We held a series of webinars, two of which were aimed at developers and urban regeneration professionals on the LNRS and what it means for their sector.

Utilities Providers

We have worked closely with utilities providers to help better inform the LNRS.

The engagement with this sector included:

- We have included representatives from key utilities providers, such as United Utilities, in our Steering Group, giving these representatives and providers across Greater Manchester the opportunity to feed into the strategy.

- We have conducted 1:1s with utilities providers, such as Electricity North West, to help inform and engage them on the LNRS and address any questions or concerns they may have about formulation or implementation of the strategy.
- We have regularly consulted Transport for Greater Manchester (TfGM), who are also a member of our Steering Group.

Social Housing Providers

Our engagement with social housing providers has allowed us to better inform a group who can help to deliver nature recovery on their estate.

The engagement with this sector included:

- A webinar hosted with social housing providers, where we presented information on the formulation and delivery of the LNRS.
- A representative from a social housing provider sits on our LNRS Steering Group.

Councillors

Councillors act as a first point of contact for many residents across Greater Manchester, often hearing about residents' concerns regarding the natural environment. We have engaged and informed councillors across Greater Manchester in a number of different ways.

The engagement with this sector included:

- We held a dedicated webinar on the LNRS for councillors, that aimed to further inform and engage councillors on what it could mean for their wards and learn more about what they were currently doing for nature recovery in their local areas.

- We have presented on the LNRS to key councillor groups including the Green City Region Board and the Planning and Housing Commission.
- We developed a members briefing to better inform councillors about the development of the LNRS.

Young people

We often struggle to engage young people. To try to reach more young people our engagement included:

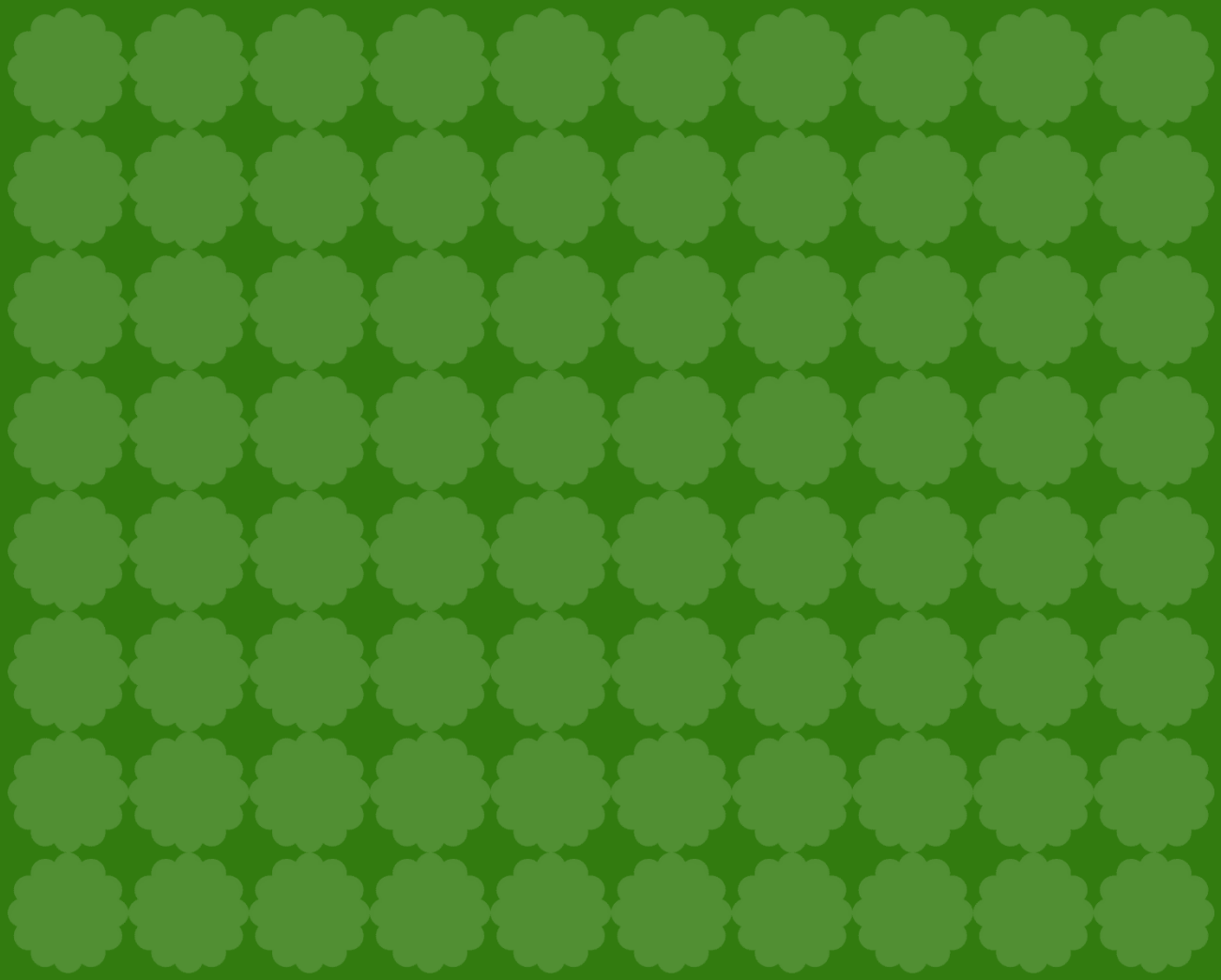
- A dedicated stall on the LNRS at the festival of nature
- Social media posts
- A dedicated youth engagement event on the LNRS during the public consultation, co-hosted with the University of Salford and Royal Horticultural Society, in January 2025.

GREATER MANCHESTER

DOING THINGS DIFFERENTLY FOR THE ENVIRONMENT

Greater Manchester Local Nature Recovery Strategy

Appendix 5 - ‘Plan for Nature’ Survey Report



Introduction

The primary focus of the Greater Manchester 'Plan for Nature' survey was to capture residents, organisations, businesses, farmers and landowners' views on the priorities and actions for nature recovery across Greater Manchester. Responses from the survey were used to inform the development of the aims, targets, priorities and actions in the Greater Manchester's Local Nature Recovery Strategy (LNRS). This is in line with DEFRA's requirement that all LNRS' undergo public engagement as part of their preparation[51] and the public survey is a key component of this process.

The survey included a range of quantitative and qualitative questions to gather respondents' views on various topics, from the perceived state of nature in Greater Manchester to the top actions individuals want to see in the strategy. It was hosted on GMCA's dedicated consultation homepage, GM Consult, which can be accessed at Greater Manchester Combined Authority - Citizen Space (gmconsult.org). GM Consult serves as the primary consultation page for residents across Greater Manchester.

The survey was also promoted on Greater Manchester Combined Authorities (GMCA) networks and newsletters and also by a range of partners organisations on our LNRS Steering Group and Officer Group, such as Natural England, The National Trust and local universities, as well as many more. Additionally, the survey was advertised at numerous events, including the RHS's first ever Urban Show held in Manchester, the GM Moving conference in Salford, and various roundtables targeting key groups like businesses. To enhance the survey's outreach, we utilised online promotion through blogs and social media posts. Additionally, we distributed leaflets containing a QR code that led users to GM Consult for them to complete the survey. For individuals with limited access to technology at events, we provided paper copies of the survey for them to fill out.

Overall, **the survey received a total of 804 responses**, including 799 online submissions and 5 paper responses collected at events where we had promoted the LNRS.

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[51] Local nature recovery strategies: the preparation process and contents government response and summary of responses (publishing.service.gov.uk)

The survey analysis varied based on the type of question. Qualitative questions underwent thematic analysis, where responses were grouped into categories based on their core themes, to identify common themes. These thematic categories were then used to create the final results presented in this report. All results were verified through a thorough checking process.

Main Questions

The following sections details the responses received to each of the main questions asked in the survey. These questions were asked to all respondents taking the survey, regardless of who they were responding as. The questions below vary in the information they are trying to collect but generally aimed to capture respondents' views on the state of nature across Greater Manchester, as well as the priorities and actions for wildlife and habitats that respondents would like to see feature in the strategy.

General Respondent Information

This section details responses to questions that gather general information from respondents, such as type of respondents they were and the local authority to which they live in. Both of these questions were mandatory and had a total of 804 responses.

1: Which of the following are you completing this form as?

The majority of respondents identified as 'members of the public,' accounting for just over 85% of the total respondents. In contrast, members and representatives of commercial organisations constituted the smallest proportion, with only 4 responses, representing 0.50% of the total respondents.

The table below includes the results for all respondents of the survey.

Option	Total number of respondents	Percent
Member of the public	686	85.32%
Community organisation (member or representative)	70	8.71%
Charitable organisation (member or representative)	24	2.99%
Other	15	1.86%
Farmer, landowner or land manager	5	0.62%
Commercial organisation (member or representative)	4	0.50%

2: Which local authority area do you live in (if you're responding on behalf of yourself) or work in (if you're responding on behalf of an organisation)?

Respondents could select from 10 districts within Greater Manchester or indicate if they were responding on behalf of an organisation, such as 'a Greater Manchester organisation,' 'a North West organisation,' 'a national organisation,' or choose 'prefer not to say'.

There was a relatively even distribution of responses across the local authorities. Despite the generally even spread of responses from the districts, Manchester had the highest number of responses, accounting for 27.49% of the final total. Bolton followed with 14.55%. Wigan had the fewest responses, with only 25 submissions, making up about 3.11% of the final total.

From an organisational perspective, Greater Manchester organisations contributed the most responses, but this still represented a very small portion of the overall results, accounting for only 1.24%.

Option	Total	Percent
Manchester	221	27.49%
Bolton	117	14.55%
Stockport	98	12.18%
Trafford	94	11.69%
Rochdale	51	6.34%
Bury	48	5.97%
Oldham	42	5.22%
Salford	41	5.10%
Tameside	40	4.97%
Wigan	25	3.11%
A Greater Manchester organisation	10	1.24%
Prefer not to say	9	1.12%
A national organisation	5	0.62%
A North West organisation	3	0.37%

Nature in Greater Manchester

This portion of the survey asked respondents to reflect on what they currently thought of the state of nature and wildlife across Greater Manchester. These questions were not mandatory, so there were differing levels of responses when compared to the previous section of mandatory questions.

3: What do you think about the current state of nature in Greater Manchester?

This question asked respondents to evaluate the current state of nature across Greater Manchester. Individuals were asked to categorise the state of nature as 'very poor,' 'poor,' 'moderate,' 'good,' 'very good,' or to opt out of answering since the question was not mandatory.

Overall, the state of nature across Greater Manchester was largely considered poor (42.27%) or very poor (15.09%) by respondents. Combined these two categories covered over half of all respondents (57.36%). The majority of other respondents considered the state of nature across Greater Manchester as moderate (37.91%). Only 4.11% considered it the state of nature good, and only 0.62% categorised it as very good.

This question had a total of 802 responses.

Option	Total	Percent
Poor	339	42.27%
Moderate	304	37.91%
Very poor	121	15.09%
Good	33	4.11%
Very good	5	0.62%
Not Answered	2	0.25%

4: What local actions already help support wildlife in your area?

This was the first qualitative question in the survey, garnering a total of 729 responses. Participants were given a free text box, resulting in a diverse range of submissions in both content and length. Each response underwent thematic analysis, where they were categorised, then rephrased and condensed for readability while maintaining the original intent. For instance, *"Litter picking activities and groups (e.g., parks and canal clean-ups)"* was categorised as *"Litter picking and clean-ups."*

Although there were 729 responses, using a free text box led to 1,197 specific mentions of different local actions in the final analysis. This discrepancy arose because some respondents included multiple themes in their answers, so each distinct theme was counted separately.

Below are the top 15 condensed local actions reported by respondents when asked about the actions that already support wildlife in their local areas. Community action was the most frequently mentioned, accounting for just over a quarter of all mentions (26%). Following community action were mentions of parks and public spaces that prioritise wildlife, tree planting, and efforts by various environmental groups and NGOs. Other local actions, such as public education and awareness, received fewer mentions.

Local action theme	Total	Percent
Community action, projects and volunteering	313	26%
Parks and public green and blue spaces that prioritise wildlife	168	14%
Tree planting	128	11%
Environmental NGOs or partnerships and local specialist nature groups	116	10%
Nature reserves and country parks that protect wildlife	102	9%
Activism and protection of greenspaces from development	87	7%
Litter picking and clean ups	76	6%

Wildflower meadows and wildflower verges	53	4%
Wildlife friendly private gardens and alley and feeding wildlife	52	4%
Building wildlife homes/refuges	36	3%
Green active travel routes and paths - well-made and maintained	35	3%
Creation of new greenspaces	34	3%
Reduced mowing / hedge cutting	32	3%
Public education and awareness	30	3%
Wildlife recording and monitoring	29	2%

Priority species

The next section of the survey focused on the types of wildlife and specific species that respondents would like to see more of across Greater Manchester.

5: What wildlife would you like to see more of?

Respondents were asked to rank groups of wildlife from the group they most wanted to see more of, to the group they least wanted to see. Wildlife was categorised into five groups:

- *Our most vulnerable wildlife*
- *Reintroduce lost wildlife*
- *Our most iconic wildlife*
- *Our most common wildlife*
- *Other*

Overall, "our most vulnerable wildlife" was the top-ranked category respondents wanted to see more of, followed by "reintroduce lost wildlife," "our most iconic wildlife," and "our most common wildlife." "Other" was the least ranked option.

There was a varied distribution of rankings across each category, as some respondents chose to rank only their top 3 or even just their top choice instead of all five. This variation is explored further below.

Our most vulnerable wildlife

Our most vulnerable wildlife received 789 responses, with more than two-thirds of respondents ranking it as the top group they would like to see more of (63.93%). This group includes species that are most at risk across Greater Manchester, such as (Willow Tit).

Rankings of ‘our most vulnerable wildlife’	Total	Percent
1	514	63.93%
2	122	15.17%
3	57	7.09%
4	25	3.11%
5	71	8.83%
Not Answered	15	1.87%

Our most iconic wildlife

Our most iconic wildlife includes species that are emblematic to local communities. This group received 778 responses, with most participants ranking it as the third group they would like to see more of in Greater Manchester. Just over a third (36.44%) placed it third. Responses for this group were more scattered, with the majority of respondents ranking it as the second, third, and fourth most important group.

Rank of ‘our most iconic wildlife’	Total	Percent
1	31	3.86%
2	223	27.74%
3	293	36.44%
4	202	25.12%
5	29	3.61%
Not Answered	26	3.32%

Reintroduction of lost wildlife

The reintroduction of lost wildlife received a total of 777 responses and made reference to the wildlife that we would like to see return to Greater Manchester (e.g. Beavers or red squirrels). Similarly to the previous group, responses were quite scattered, with the majority of respondents ranking it as either the second (31.59%) or fourth (25.62%) most important group.

Ranks of ‘reintroduce lost wildlife’	Total	Percent
1	74	9.20%
2	254	31.59%
3	190	23.63%
4	206	25.62%
5	53	6.59%
Not Answered	27	3.36%

Our most common wildlife

This group referred to the wildlife that is already most commonly seen around Greater Manchester, such as (e.g. foxes, rabbits or magpies). The rankings for this group were relatively evenly distributed, but it was most commonly placed fourth by respondents, with 33.58% ranking it there.

Rank of ‘our most common wildlife’	Total	Percent
1	74	9.20%
2	162	20.15%
3	204	25.37%
4	270	33.58%
5	66	8.21%
Not Answered	28	3.48%

Other wildlife

The final group allowed respondents to select "other" if they wanted to suggest an alternative group not listed. This option received the fewest responses, with a total of 645, indicating that 19.78% of respondents chose not to answer this part of the question. "Other" was most commonly ranked fifth, with over half of the respondents (56.59%) placing it in this position.

The option to suggest other wildlife is followed by the next question, which allows respondents to specify a particular species.

Rank of 'other'	Total	Percent
1	79	9.83%
2	18	2.24%
3	27	3.36%
4	66	8.21%
5	455	56.59%
Not Answered	159	19.78%

6: If you would like to suggest a specific species, please let us know in the box below.

Following the ranking question regarding the groups of wildlife, respondents had the option to suggest a specific species they wanted to see conserved.

This question received a total of 451 responses. The number of suggestions varied, with some respondents suggesting multiple species in one answer. Each suggestion was counted individually, resulting in over 161 different species listed and a total of 725 individual responses.

Respondents provided varying levels of detail in their suggestions. To maintain the integrity of their answers, general suggestions like "birds" were kept separate from more specific ones like "willow tits." Additionally, a miscellaneous category was created for responses that did not suggest a species but mentioned something entirely different that could not be categorised.

Hedgehogs were the most frequently suggested species, comprising 15% of the final results, with over 100 specific mentions. This was significantly higher than the second most suggested species, bees, which received 25 mentions. Below is a table of the top 15 suggested species from the survey, though it should be noted that there were a vast number of different suggestions.

Top 15 suggested species	Total	Percent
Hedgehogs	108	15%
Bees	35	5%
Beavers	34	5%
Birds	34	5%
Badgers	28	4%
Miscellaneous	27	4%
Swifts	24	3%
Bats	21	3%
Otters	21	3%
Owls	18	2%
Insects	17	2%
Willow Tits	16	2%
Butterflies	15	2%
Water Voles	15	2%
Red Squirrel	14	2%

Envisioning a more nature friendly Greater Manchester

As part of developing Greater Manchester's Local Nature Recovery Strategy (LNRS), this question sought to capture residents' visions for the future. Respondents were asked to provide three words that describe what they would like to see in a greener Greater Manchester:

7: Tell us three words that describe what you would like a more nature-friendly Greater Manchester to look like.

The question included three free text boxes and received approximately 2,231 responses. Some respondents provided more than three words, resulting in a total of 2,254 suggestions.

These responses underwent thematic analysis, grouping them based on common themes. For example, many respondents expressed a desire for a "greener" Greater Manchester, leading to the creation of a "Green" category for suggestions related to increased greenery.

"Green" was the most frequently mentioned theme, followed by a strong desire for more wooded areas. Many respondents also emphasised the need for a "cleaner" Greater Manchester, with specific calls for less litter in green and blue spaces. There were frequent mentions of a more biodiverse city, with a variety of species thriving throughout the region, and a more natural environment with minimal human interference. Access was mentioned 135 times, with requests for more inclusive and accessible green and wilder spaces. Additionally, respondents indicated that Greater Manchester should be better protected, valued, and connected.

Top 10 suggested words	Total	Percent
Green	323	14%
Woodland	181	8%
Clean	177	8%
Biodiversity	152	7%
Natural	138	6%
Accessible	135	6%
Wild	102	5%
Protected	96	4%
Valued	68	3%
Connected	68	3%

Habitats across Greater Manchester

This section of the survey asked respondents to rank various habitat types across Greater Manchester from most important to least important for wildlife in their view. Respondents were asked to rank the following habitat types:

- *Trees, woodland and hedges*
- *Grasslands and croplands*
- *Rivers, canals, lakes and ponds*
- *Lowland, mossland and wetland*
- *Urban green spaces, gardens and parks*
- *Upland, moorland and heath*

Woodland emerged as the most valued habitat, with nearly half of respondents (43.28%) ranking it as the top priority. Uplands and grasslands were ranked as the least important habitats, though specific rankings will be detailed below.

8: Which of the following spaces do you think it is most important to support nature in Greater Manchester?

Trees, Woodlands and Hedges

Trees, woodlands, and hedges were ranked as the top habitat type, with just over 80% of respondents listing them as either the first, second, or third most important habitat.

Rank of trees, woodlands and hedges	Total	Percent
1	348	43.28%
2	179	22.26%
3	123	15.30%
4	66	8.21%
5	39	4.85%
6	36	4.48%
Not Answered	13	1.62%

Grasslands and Croplands

Grasslands and croplands were ranked significantly lower compared to woodlands, with the most common ranking being sixth (24.13%). Only 4.48% of respondents listed grasslands as their top priority habitat.

Rank of grasslands and croplands	Total	Percent
1	36	4.48%
2	97	12.06%
3	105	13.06%
4	166	20.65%
5	167	20.77%
6	194	24.13%
Not Answered	39	4.85%

Rivers, Canals, Lakes and Ponds

Rivers and waterbodies were ranked relatively higher compared to other habitat types, with most respondents placing them as either the second or third most important habitat.

Rank of rivers, canals, lakes and ponds	Total	Percent
1	107	13.31%
2	210	26.12%
3	213	26.49%
4	136	16.92%
5	91	11.32%
6	21	2.61%
Not Answered	26	3.23%

Lowland, Mossland and Wetlands

Lowlands, mosslands, and wetlands were most commonly ranked as the fourth or fifth most important habitat types, with nearly a quarter of respondents placing them in the fourth rank (24.38%).

Rank of lowland, mosslands and wetlands	Total	Percent
1	87	10.82%
2	116	14.43%
3	147	18.28%
4	196	24.38%
5	172	21.39%
6	62	7.71%
Not Answered	24	2.99%

Urban Green Spaces, Gardens and Parks

Urban green spaces showed the widest range of rankings, with the most common response being a rank of 6 (20.65%), while a notable number of respondents ranked them as the most important habitat (19.53%). This disparity may reflect varying quality of green spaces and parks across different districts.

Rank of urban green spaces	Total	Percent
1	157	19.53%
2	119	14.80%
3	112	13.93%
4	97	12.06%
5	134	16.67%
6	166	20.65%
Not Answered	19	2.36%

Upland, Moorland and Heath

Uplands were most commonly ranked as fourth, fifth, or sixth, with the most frequent placement being last, at 33.46%.

Rank of upland, moorland and heath	Total	Percent
1	54	6.72%
2	68	8.46%
3	88	10.95%
4	121	15.05%
5	176	21.89%
6	269	33.46%
Not Answered	28	3.48%

Envisioning the strategy

This part of the survey asked respondents to consider what they would like included in the strategy:

9: What are the top 5 actions you would like to see included in our strategy to help recover nature in Greater Manchester?

Respondents were asked to identify actions they would like to see in Greater Manchester's LNRS. The goal was to gather specific actions that could contribute to creating a more nature-friendly Greater Manchester.

The responses were analysed through a thematic analysis process. Suggestions were grouped into common themes and then rephrased and condensed for clarity. While most respondents provided five distinct actions or themes, some offered more or fewer suggestions.

The top suggested actions included the creation and restoration of green spaces, outdoor recreation areas, and nature reserves (16%). This was followed by the protection and enhancement of existing green and blue spaces (8%), as well as educational and awareness-raising initiatives (8%).

This question had 2,132 individual suggestions, which were initially grouped into 62 thematic categories and later condensed into 33 distinct categories. Below are the top 15 shortened suggestions.

Top 15 suggested actions	Total	Percent
Create and restore more green spaces, wildlife friendly outdoor recreation and spaces for nature (including nature reserves)	344	16%
Maintain, protect and enhance existing greenspaces and blue spaces and spaces for nature	175	8%
Education and awareness raising	158	8%
Less development and more protection of greenbelt or greenspace	145	7%

More tree planting and hedge planting and more new woodlands	135	6%
More wildflower meadows and verges	112	5%
Improve water quality	112	5%
Support community projects and community volunteering	107	5%
Less litter and cleaner areas	106	5%
More wildlife friendly development, regeneration and existing buildings	97	5%
Reduce pollution	88	4%
Increase habitat diversity	87	4%
Species specific support (e.g swift brick or conservation plans for certain species)	57	3%
Restore or create more waterways, canals, more ponds, natural flood management, wetlands or sustainable drainage schemes	50	2%
Reduce or ban pesticide use	45	2%

10: What action(s) could you take to help nature recover?

This question asks people to think about the actions they could personally take to aid the recovery of nature. This question acts as a follow up question from the previous question by helping respondents visualise the acts they could potentially take independently.

This question received 690 responses, totalling 745 specific actions mentioned. These responses were analysed thematically, resulting in 11 final categories of broader actions that individuals could take to support nature recovery.

The most frequently suggested action was managing one's home for wildlife, such as making private gardens more wildlife friendly. Volunteering was also prominently mentioned, with the second most common suggestion being volunteering for habitat

development and the third for litter picking or clean-up efforts. Recycling and reusing was much less frequently suggested and accounted for only 2% of the final results.

Below are the top 10 final suggestions.

Top 10 suggested actions	Total	Percent
Manage home for wildlife	181	24%
Volunteer - Habitat creation or improvement	108	14%
Volunteer - Maintenance / Clean ups	98	13%
Campaign more	71	10%
Sustainable travel modes	59	8%
Educating others	56	8%
Volunteer recording - Species surveys	54	7%
Donate to Conservation / Wildlife Charities	40	5%
Ethical Consumers	34	5%
Urban rewilding	28	4%

11: Is there anything else you would like to tell us to help inform the Local Nature Recovery Strategy?

Respondents were then given a final opportunity to feedback anything else they would like to see included in Greater Manchester's Local Nature Recovery Strategy.

This question had 488 answers and responses were again put into broader thematic categories, there were a diverse range of answers from respondents who each wanted to inform the strategy in a different way. Below are the top 11 suggestions of respondents that they would like to see inform the strategy.

Top 10 suggested actions	Total	Percent
LNRS must be high priority for Local Authority Planning teams	82	23%
Less development on greenspace and brownfield sites with high biodiversity	43	12%
Properly fund enforcement on new developments and corporate pollution	29	8%
Large communications campaign to encourage community participation	28	8%
Increase habitat coverage in urban areas (Green bus stops, planters, etc.)	27	8%
Support local authorities to improve biodiversity of parks and public land	26	7%
Educate local councilors on actions beneficial for biodiversity	25	7%
Include Nature-Based Solutions for climate adaptation	16	5%
Support in increasing participation and enabling community-led projects	15	4%
Leverage more private sector / innovative investment	14	4%
Prioritise less affluent areas of Greater Manchester for nature recovery	14	4%

Organisation Specific Questions

This section of the survey was exclusively for members or representatives of organisations. Only those respondents could answer the questions below. A total of 85 different organisations participated in our ‘Plan for Nature’ survey.

General Organisational Respondent Information

This section explores the questions within our ‘Plan for Nature’ survey that gathered general information from those responding as members or representatives of organisations.

12: What organisation are you a part of?

This question had a total of 98 responses, from community organisations, charitable organisations, and commercial organisations. Respondents could participate as either members or representatives of these categories.

Community organisations had the highest response rate in comparison to other types of organisations making up 71.43% of the final responses solely from organisations.

Option	Total	Percent
Community organisation (member or representative)	70	71.43%
Charitable organisation (member or representative)	24	24.49%
Commercial organisation (member or representative)	4	4.08%

13: Does your organisation own or manage land?

There were 95 responses to this question, which aimed to determine the land ownership status of organisations. This question was only applicable to those responding as a member or representative of an organisation.

The vast majority of organisations did not own their land, with just over 40% reporting land ownership.

Option	Total	Percent
Yes	44	44.90%
No	51	52.04%
Not Answered	3	3.06%

Benefits provided by nature and actions already undertaken by organisations

This section asked organisations about what benefits they thought they received from nature and gathered information about the actions already being taken by organisations to support nature.

14: How does local access to nature benefit your organisation?

This question had 84 responses, with 141 individual mentions of the benefits access to nature provides organisations. Responses were again analysed using the same process as previous questions, following the emergence of common themes from answers and which were then turned into categories. As there was a much smaller sample size there was only a total of 10 categories.

The top result were the health and wellbeing benefits access to nature provides to organisations with 24% of respondents listing this as a benefit. This was followed by the benefits access to nature provides for biodiversity (17%) and then finally the education and awareness opportunities it provides (14%). There was again a small 'miscellaneous' categories for responses provided that were not an answer to the question, however these made up a very small subsection of the results.

Option	Total	Percent
Health and wellbeing	36	24.65%
Biodiversity	25	17.61%
Education and awareness	20	14.08%
Community cohesion	18	12.68%
Nature is integral	15	10.56%
Supports projects	11	7.75%
Enjoyment/Aesthetics	9	6.34%
Miscellaneous	4	2.82%
Climate change mitigation	3	2.11%
Food growing	1	0.70%

15: Does your organisation already take action to support nature recovery locally?

This question aims to gather information on what actions organisations are already taking to help nature recover and what the most common actions which could be encouraged. This question had a total of 87 responses that resulted in 221 individual actions being counted across respondents' suggestions.

The top three actions recorded were general 'greening' including activities such as planting which made up 19% of the final results. This was followed by 'increasing biodiversity' which was mentioned 37 times followed by respondents generally stating 'projects' which were mentioned 25 times.

There was a total of 10 categories following the thematic analysis, including a 'miscellaneous' for responses that did not relate to the question.

Option	Total	Percent
Greening	42	19.00%
Increasing biodiversity	37	16.74%
Managing and monitoring	31	14.03%
Educating and raising awareness	30	13.57%
Projects	25	11.31%
Protecting and restoring	25	11.31%
Cleaning	18	8.14%
Miscellaneous	11	4.98%
Small actions	1	0.45%
Climate friendly practices	1	0.45%

What more could organisations do, and what support would they need?

This section addresses questions regarding additional actions organisations could take to aid nature recovery and the support they would need to implement these actions. It also tried to gather insights into potential barriers currently preventing organisations from taking action for nature.

16: What actions would your organisation like to see more of across the city region to better support nature?

A total of 85 organisations responded to this question, suggesting 159 specific actions. The discrepancy between the number of responses and specific actions is due to respondents proposing multiple measures they would like to see implemented across the city region to better support nature.

The most common action was more greenery and green projects across Greater Manchester that accounted for 16.35% of all mentions, followed by further protection (12.58%) and more joined up thinking (10.06%).

Option	Total	Percent
More green/green projects	26	16.35%
Protect	20	12.58%
Joined up thinking	16	10.06%
Education and awareness	13	8.18%
Conserve and consider biodiversity	12	7.55%
More funding	12	7.55%
Clear baselines and legislation	12	7.55%
Less interference (more natural)	10	6.29%
Cleaner	7	4.40%
Better support for volunteers	7	4.40%
Improve spaces	6	3.77%
Tackle invasives	4	2.52%
Better support for projects	4	2.52%
Natural solutions	3	1.89%
Safe	2	1.26%

17: What would help your organisation to take action for nature recovery?

This question received 84 responses, with a total of 120 actionable suggestions for promoting nature recovery, as some respondents provided multiple ideas. Suggestions that did not directly relate to the question were categorised as miscellaneous.

The most frequently mentioned suggestion was increased and better-managed funding, comprising nearly 20% of the responses. Through thematic analysis, 12 categories were identified based on the organisations' responses, similar to the analysis process used for previous questions. The least mentioned action was more volunteering opportunities, with only three mentions.

Below are the top ten suggestions from organisations.

Option	Total	Percent
Increased and better-managed funding	22	18.33%
Joined up thinking	19	15.83%
Education and Awareness	17	14.17%
Coordinated resources	13	10.83%
More support for volunteers and more volunteers	12	10.00%
Clear baselines and commitments	7	5.83%
Better protection	7	5.83%
Miscellaneous	6	5.00%
Help with project management	5	4.17%
Help with securing funding	5	4.17%

Farmers, Landowners and Land Managers Specific Questions

This section of the survey analyses the famers, landowners or land manager specific questions from the ‘Plan for Nature’ survey. There was a total of 5 respondents from this category, making up the smallest portion of respondents within any other group responding to the survey. None of the questions in this section were mandatory, meaning response rates varied from question to question.

Land information

The questions within this section contain information regarding respondents land they either own or manage.

18: In hectares, approximately how much land do you own or manage?

This question asked respondents how much specific land they owned or managed. This question was not mandatory and therefore only received 3 responses, which showed that the average respondents owned or managed around 490 hectares of land.

Respondent	Hectares of land owned or managed
1	750
2	710
3	11

19: Do you own or rent your land?

This question aimed to find out whether respondents own or rent their land. This question only had 3 total responses from farmers, landowners or land managers.

The majority of respondents owned their land, with the only other response being other or a non-response.

Option	Total	Percent
Own	2	40.00%
Other	1	20.00%
Not Answered	2	40.00%

20: What do you primarily use your land for?

This question sought to determine the primary uses of respondents' land. Due to the small sample size, each response has been recorded as a separate category. Only three respondents participated in this section, with some indicating multiple uses for their land, resulting in six total suggestions.

Public access was the most frequently mentioned use, accounting for over a third of the responses.

Option	Total	Percent
Conservation	1	12.50%
Public access	3	37.50%
Grazing	1	12.50%
Recreation	1	12.50%
Not Answered	2	25.00%

Actions Landowners and Managers already take and potential areas for increased effort

The questions in this section aim to gather information on the actions landowners and managers currently take to support nature and identify additional measures they could implement to further enhance and protect natural environments.

21: What actions do you already take on the land you own or manage that help support nature?

This question asked land owners and land managers about the actions they already take to help support nature, and received a total of 4 responses, resulting in 6 total different actions. The actions mentioned only formed three categories, with the most mentioned action being taken for nature was active ‘Nature Recovery’ with over 50% stating it in their answers. Engaging with their local communities and food growing made up the other mentioned actions,

Option	Total	Percent
Nature Recovery	4	57.14%
Engage with Communities	1	14.29%
Food Growing	1	14.29%
Not Answered	1	14.29%

22: Alongside your primary land use, what do you think you could do more of to enhance nature?

There were only two responses to this question, with one being categorised as miscellaneous since the respondent answered "all of the above," which could not be precisely categorised.

The most frequent response was no response at all. Among the actual responses received, the only respondent mentioned a need for more education and awareness raising, as well as increased investment.

Option	Total	Percent
Education and Awareness Raising	1	16.67%
Investment	1	16.67%
N/A	1	16.67%
Not Answered	3	50.00%

What Landowners and Managers Would Like to See Included in the Strategy

This section of the report aimed to understand what farmers, landowners, and managers would like to see included in the strategy, requesting specific suggestions and desired species.

23: Are there any particular actions you would like to see supported in our strategy to help nature recover?

This question aimed to gather information on the actions farmers, landowners and land managers would like to see included in the strategy.

There were three responses to this question, with each response detailing multiple actions, resulting in a total of 8 specific actions. The most frequently mentioned action was 'Education and Awareness,' which appeared in every response. Additionally, the responses included a range of other actions.

Option	Total	Percent
Education and Awareness	3	30.00%
Access Management	1	10.00%
Tackle Invasives	1	10.00%
Woodland Creation	1	10.00%
Support for Food Production	1	10.00%
Habitat Restoration	1	10.00%
Not Answered	2	20.00%

24: Are there any particular species you would like to recommend for inclusion in the strategy?

Similar to the question which asked general respondents about species suggestions, this question received a wide variety of responses. There was only a total of 2 responses for this question, however a total of 11 specific species mentioned in respondents' answers. Both respondents gave a number of different suggestions, and the table below details them all as there was no commonality within their answers.

Option	Total	Percent
Badgers	1	7.14%
Bilberry Bumble Bee	1	7.14%
Brown Hare	1	7.14%
Curlew	1	7.14%
Dragonflies	1	7.14%
Dunlin	1	7.14%
Golden Plover	1	7.14%
Great Crested Newts	1	7.14%
Green and Purple Hairstreak	1	7.14%
Pollinators	1	7.14%
Swifts	1	7.14%
Not Answered	3	21.43%

Respondent Information

This section of the report examines the demographics of the respondents who completed the survey. It provides insights into their age, gender, ethnic background, and disability status to better understand the profile of the survey sample.

It is important to note that none of the questions within this section of the survey were mandatory. Consequently, there are figures representing respondents who chose not to answer these questions. This choice is reflected in the data, where non-responses have been recorded as such.

Age

A total of 785 people responded to this part of the survey, with only 19 respondents choosing to not answer this question, offering a solid sample size to gauge the typical age of respondents. Age data was categorised into standard age groups, such as *'16-24'*. The most common age range of respondents was 45-54 years old, though there was a relatively even distribution among respondents aged 25-69.

Option	Total	Percent
Under 16	1	0.13%
16-24	18	2.25%
25-34	84	10.51%
35-44	126	15.77%
45-54	167	20.90%
55-59	90	11.26%
60-64	97	12.14%
65-69	91	11.39%
70-74	62	7.76%
75-79	40	5.01%
80-84	7	0.88%
85-89	2	0.25%
90+	0	0.00%
Not Answered	19	2.36%

Gender

There were 781 responses to this question. This question asked respondents to identify their gender, offering the following categories: 'a man (including a trans man)', 'a woman (including a trans woman)', 'non-binary', 'in another way', 'prefer not to say', and an option to not answer.

More than half of the respondents identified as a woman (including trans women), while around a third identified as a man (including trans men). Approximately 7% of respondents chose not to disclose their gender, making this the third largest category in the data.

Option	Total	Percent
A man (including trans man)	262	32.59%
A woman (including trans woman)	439	54.60%
Non-binary	13	1.62%
In another way	8	1.00%
Prefer not to say	59	7.34%
Not Answered	23	2.85%

Ethnic Background

Respondents were then asked to describe their ethnic background by selecting from a list of categories. This question received a total of 781 responses.

More than three-quarters of respondents identified as White, specifically English, Welsh, Scottish, Northern Irish, or British. Almost 5% identified as 'White – Other'. 5% of respondents chose the 'Prefer not to say' option, and 2% chose not to answer.

Option	Total	Percent
White - English, Welsh, Scottish, Northern Irish or British	657	81.72%
White - Irish	23	2.86%
White - Gypsy or Irish Traveller	0	0.00%
White - Roma	0	0.00%
White – Other	35	4.35%
Mixed or Multiple Ethnic Groups - White and Black Caribbean	3	0.37%
Mixed or Multiple Ethnic Groups - White and Black African	1	0.12%
Mixed or Multiple Ethnic Groups - White and Asian	3	0.37%
Mixed or Multiple Ethnic Groups - Any other mixed or multiple background	1	0.12%
Asian or Asian British - Indian	3	0.37%
Asian or Asian British - Pakistani	6	0.75%
Asian or Asian British - Bangladeshi	0	0.00%
Asian or Asian British – Chinese	3	0.37%
Asian or Asian British – Any other Asian background	2	0.25%
Black, Black British, Caribbean or African - Caribbean	1	0.12%
Black, Black British, Caribbean or African - African background,	0	0.00%
Black, Black British, Caribbean or African - Any other black, Black British or Caribbean	0	0.00%
Arab	1	0.12%
Other - Any other ethnic group	3	0.37%
Prefer not to say	43	5.35%
Not Answered	19	2.36%

Disability

This question asked respondents whether they had a disability, with options categorised by different types of disabilities. There were also 'Prefer not to say' and 'No answer' options. A total of 777 responses were recorded.

More than three-quarters of respondents reported not having a disability. The second most common response was 'Yes – other disability,' followed by 'mobility disability.'

Option	Total	Percent
No	614	76.37%
Yes - learning disability	12	1.49%
Yes - mental ill health	27	3.36%
Yes - mobility disability	39	4.85%
Yes - sensory disability	25	3.11%
Yes - other disability	48	5.97%
Prefer not to say	46	5.72%
Not Answered	27	3.36%

GREATER MANCHESTER

DOING THINGS DIFFERENTLY FOR THE ENVIRONMENT

Greater Manchester Local Nature Recovery Strategy

Appendix 6 – Detailed description of Greater Manchester landscapes and habitats

Greater Manchester's Landscapes

Greater Manchester's landscapes are described through its six National Character Areas. National Character Areas are areas that overlay all of England, 159 in total, which follow natural boundaries according to landscape, biodiversity, geodiversity and economic activity.

Each National Character Area is detailed below, with a map, description of the landscape, its habitats and species, key sites for nature, the wider benefits it provides, the pressures it faces and examples of successful nature recovery. A summary of the priority outcomes relating to each area is provided.

Mersey Valley

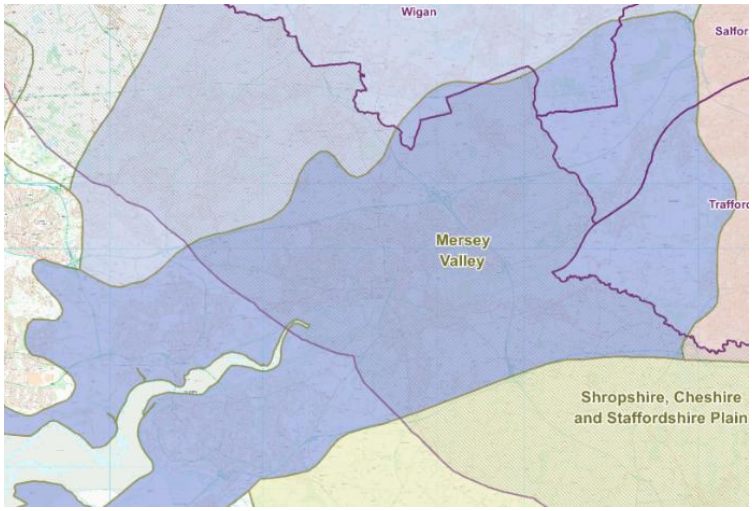

Figure 30. Map of Mersey Valley

This lowland area forms parts of western Salford, western Trafford and parts of south-eastern Wigan. The M62 and both Manchester to Liverpool railway lines cut across the area. Beyond Greater Manchester this area stretches west along key wetland habitats of the River Mersey to its estuary. The Manchester Ship Canal/River Mersey continue south-westwards to the wide Mersey estuary with intertidal mudflats/sand flats and salt marsh.

The area contains important lowland peatland across the Chat Moss area of Salford and Wigan. The peat here supports remaining internationally important lowland raised bog habitat including species such as common lizard, brown hare, black darter dragonfly and sundew plants. The high agricultural quality of this land has resulted in much of it being converted to farmland following drainage. Peat extraction has impacted significant areas of lowland raised bog which are now degraded.

Restoration and management are underway on a number of sites, with attempts being made to reintroduce bog-building sphagnum moss species and to manage water levels to aid their recovery.

Habitats and species

- **Mossland (lowland raised bog)** – there are remnant pockets of lowland raised bog, including the Manchester Mosses Special Area of Conservation (SAC), centring on a once extensive area of mossland.
- **Lowland farmland** – significant areas of former mossland have been reclaimed and converted to agriculture, mainly arable and improved grassland.
- **Rivers and streams** – the River Mersey, its major tributary the River Bollin, and several brooks cross the area from east to west.
- **Trees and woodland** – these are mainly associated with urban areas with some along watercourses as well as isolated woodland blocks, including ancient pasture and paddock woodland at Dunham Massey.
- **Urban areas** – significant areas of the former mossland have been reclaimed for development. The area is bisected in two by development along the River Mersey and Manchester Ship Canal, including the towns of Irlam, Partington, Caddishead and Carrington, which contain parks, green spaces and gardens.
- **Parkland** – country parks (particularly Dunham Massey) offer opportunities for people to enjoy the local natural environment.

Key sites for nature

The Mersey Valley is home to the Manchester Mosses Special Area of Conservation for its remnant pockets of lowland raised bog.

Astley and Bedford Mosses Site of Special Scientific Interest (SSSI) is one of the largest remaining fragments of Chat Moss, and despite being subject to some agriculture-related drainage and peat cutting, is still higher than the surrounding countryside with remaining areas of deep peat. It provides a range of habitats including modified mire communities, heathland, woodland and acidic grassland, all developed over the cut peat surface and subject to variations of wetness depending on the topography and drainage. It hosts cottongrass, deer grass and patches of mosses, along with tussocks of purple moor grass. It has areas of dense birch

woodland and grasslands. The site is important for birds, in particular wintering raptors such as hen harrier, short-eared owl and merlin, and it supports breeding species such as curlew and long-eared owl. The condition of the majority of this SSSI is *Unfavourable, Recovering* with one unit classified as *Favourable*. Encroachment of purple moor grass and birches needs to be managed to stop the site from 'scrubbing up' or becoming covered in trees, and drainage needs to be reduced to retain the wet moss characteristics and species.

Brookheys Covert SSSI is an unusual mixture of woodland and wetland habitats for Greater Manchester. It comprises well-established common (or English) oak, hazel, ash woodland with a large number of small pools. Beneath the main tree canopy is a diversity of species including hazel, holly, hawthorn, field roses, elder and honeysuckle. And underfoot is an array of woodland plants and flowers including bracken, bluebells and wood anemones. Pools, created by Marl-digging (historical digging of lime-rich subsoil for fertiliser), provide habitats for watery plants such as water and marsh horsetail, marsh marigold, pondweeds and water violet. Brookheys Covert is also a Nature Reserve and important for educational purposes. It is in *Favourable* condition – volunteers have helped to nearly eradicate invasive Himalayan balsam.

Dunham Park SSSI owned by the National Trust, and in *Favourable* condition, has been park-woodland since medieval times. The main tree species are common/English oak and beech with ash, common lime, elm, birch and some alder. A large number of the oak and beech trees are ancient, with some dating back to the 17th Century. It is one of few remaining sites in the UK and the only North West site with such a large number of ancient trees. All these trees provide a rich habitat for invertebrates including over 350 species of flies, and Dunham Park has national importance for its mature timber fauna – including the 181 species of dead wood beetle, including the very rare *Drophephylla grandiloqua*, that live there. The herd of fallow deer there support a rare forest dung beetle.

Local Wildlife Sites/Sites of Biological Importance include:

- Hope Carr Nature Reserve
- Carrington Moss
- Jack Lane Wellacre

- Davyhulme Millenium Park.

How nature helps

Lowland peat provides significant opportunities for:

- carbon sequestration to tackle climate change
- water management
- engaging people in the heritage of the landscape
- recreation and exercise in nature.

Pressures on habitats and species

As for other areas of the city-region, there are modern pressures on this landscape and its habitats from town, industry and transport development to meet the need for housing and industrial/employment sites.

But this area has been ravaged over time; Chat Moss spanning from Salford, Trafford and Wigan out to Cheshire and Warrington is a prime example of a lowland raised bog that has been largely lost to development, agriculture and peat extraction, starting in the 19th century with the growth of the city and the Liverpool Manchester railway. Only around 2% of the peat bog is in a near-natural state; many sites are in poor condition and bear the damage from peat extraction.

This has a knock-on effect on important species. Since 1998, corn bunting has declined over the ten-year period 2010-2019 from nine pairs to three. The loss has been even more dramatic over the 22-year period with 21 territories assessed in 1998.

Helping nature to recover

The work of the Lancashire Wildlife Trust and its volunteers and supporters aims to restore Astley Moss, SSSI, reintroducing sphagnum moss and blocking drains to rewet and restore this important site for birds, mammals and plants. At Caddishead and Little Woolden Moss, where peat extraction has caused significant damage, steps are progressing to restore the habitats through rewetting and recolonising moss and cotton grass. These sites provide multiple benefits to bird and mammal

species which are returning, storing carbon in the peat and provide public access to nature.

Part of the Mersey Rivers Trust, BEACON (Bollin Environmental Action and Conservation) is a group of people working towards controlling and eradicating invasive non-native species (INNS) and improving water quality within the Bollin catchment, which includes all the tributaries, meres, brooks and streams connected to the River Bollin. Volunteers have been trained in spraying giant hogweed and pulling up Himalayan balsam across the catchment area; over 40 volunteers are trained as River Guardians, they take water samples and carry out invertebrate kick sampling to identify pollution. Now trout has returned and migrating salmon are seen.

Lancashire Coal Measures

Situated in the north-west of Greater Manchester, Lancashire Coal Measures includes the town and surroundings of Wigan and neighbouring parts of Salford and Bolton. It is an area profoundly influenced by its geology and industrial past. Rocks from the Carboniferous Coal Measures underlie most of the area forming gentle hills and valleys.

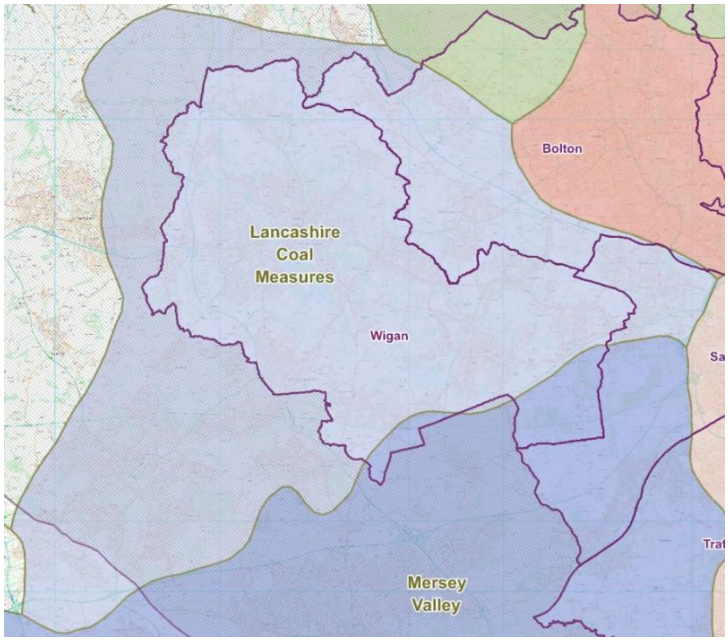

Figure 31. Map of Lancashire Coal Measures

The area is noted for its industrial heritage and individual flashes - wetlands formed as a result of ground subsidence associated with deep mining for coal. Former mines and spoil heaps have left a legacy of polluted sites but in recent decades conditions have improved and an area that was once heavily polluted has become important for people and wildlife.

Today, many of the former industrial areas have been reclaimed, resulting in a network of lowland wetland habitats and open water-bodies and ponds. This mosaic

of reedbed, open water, wet meadows, lowland fen and carr scrub supports an array of wetland specialist species such as bittern, willow tit, water vole and an array of invertebrates including 15 species of dragonfly. Surrounding this is a matrix of farmland that provides habitat for farmland birds and brown hare.

Habitats and species

- **Wetlands** – widespread ground subsidence, caused by coal mining activities, has resulted in the formation of subsidence flashes. These have created many areas of open water and wetlands, while scattered ponds and fragmented pockets of semi-natural habitat remain elsewhere with large populations of great crested newts.
- **Trees and Woodlands** – cover 10% of the area, and include ancient woodland. Community woodlands have been established on many post-industrial sites, and bring multiple benefits. This area is a national hotspot for willow tits.
- **Farmland pasture, lowland meadows and arable** – with associated farmland birds and brown hare.
- **Post-industrial landscape** – brownfield sites with willow scrub and willow tits.
- **Lowland raised bog habitats** – joining with the mosslands of the Salford and Wigan lowlands (see Mersey Valley).

Key Sites for Nature

Abram Flashes is the leading site for assemblages of breeding birds associated with lowland open waters and wet grassland in the Greater Manchester and Merseyside areas. The breeding waterfowl community includes mute swan, mallard, tufted duck, pochard, garganey, shoveler, gadwall and ruddy duck. Yellow wagtails and waders such as lapwing, snipe and redshank breed in the wet grassland, itself a nationally declining habitat. Reed bunting, reed warbler and sedge warbler are found in the swamp and fen. Hey Brook provides suitable conditions for species such as kingfisher and grey wagtail. The site is also locally important for wintering waterfowl which use the whole Wigan Flashes complex, and lower water levels, particularly in autumn, can provide valuable feeding and roosting habitat for migrant waders such as greenshank, ruff and dunlin.

Within the Hey Brook area, Bryn Marsh and Ince Moss is the leading example of swamp and tall fen vegetation in Greater Manchester and Merseyside as well as important populations of dragonflies and breeding birds.

Nearer Bolton, Red Moss is important for its peat forming vegetation and hydrology, including sphagnum moss and cotton grass, while Highfield Moss is noted for being a last remaining example of a raised mire, home to a rare flower – the marsh gentian.

Local Wildlife Sites/Sites of Biological Importance include several country parks and local nature reserves some of which together form a 9km wetlands habitat alongside the Leeds Liverpool Canal. These local sites include:

- Haigh Hall and Country Park
- Low Hall Park Nature Reserve
- Wigan Flashes (this includes Abram Flashes and Bryn Marsh and Ince Moss)
- Pennington Flash
- Hall Lee Bank Park.

Many of these sites, along with other sites such as Viridor Woods and Bickershaw Country Park, are now part of the Flashes of Wigan and Leigh National Nature Reserve.

How nature helps

Lowland peat and the flashes provide opportunities for:

- carbon sequestration to tackle climate change
- water management
- engaging people in the heritage of the landscape
- recreation and exercise in nature, particularly access to open space, nature reserves and parks.

Pressures on habitats and species

Nature in this area has historically been under pressure from dense population and industry, although its industrial past has shaped current habitats. Today it faces pressure from housing and industrial development.

Helping nature to recover

The Great Manchester Wetlands Partnership has been working since 2011 bringing together experts from over 20 organisations. It works together at a landscape scale for nature by restoring habitats, reintroducing lost species and engaging local communities with the wonderful wetland world on their doorstep.

Abram Flashes, SSSI in Wigan is being restored and is categorised as *Unfavourable, Recovering*, meaning it is being managed for nature recovery. Scrub is being cleared, ditches blocked and work carried out to provide clear areas of water. Invasive species such as Himalayan balsam are being tackled. Across other areas of the site, restoration is still needed to restore the wetlands and avoid over-grazing, and to tackle Himalayan balsam.

The Wigan Green Heart landscape recovery scheme has also been working to find ways to help nature recovery in the Flashes of Wigan and Leigh National Nature Reserve and surrounding sites through active management and the implementation of agri-environment schemes.

Southern Pennines

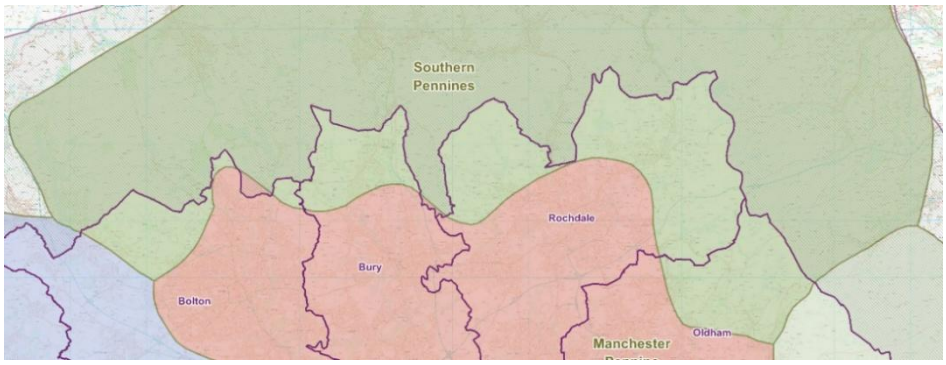

Figure 32. Map of Southern Pennines

This upland area takes in north-eastern Oldham, north-eastern and northern Rochdale and the northernmost parts of Bury and Bolton. The area is bordered by the towns of these three districts in its southern flank. Beyond that, this area extends to the similarly upland parts of the Dark Peak in the east.

The predominantly peat soils of this moorland area contain blanket bog, upland heathland and acid grassland. Cloughs, although small, have specialised flora, often containing a mix of dwarf shrubs with lichens and mosses. They can also contain a variety of native tree species such as oak, birch and rowan. Waterbodies provide

crucial ecological links in this area. Partially restored sections of the Rochdale Canal contain important habitats for plants growing in and by the water, including extensive colonies of the internationally scarce floating water plantain species, stands of water violet and a diversity of pondweeds.

The upland areas provide a mosaic of habitats that support a range of bird species, particularly merlin, golden plover, dunlin, twite, snipe, curlew, wheatear, whinchat, redshank, common sandpiper, ring ouzel and lapwing. Cloughs provide habitat for woodland birds including tree pipits, redstarts and pied flycatchers.

Streams and rivers provide crucial ecological links while reservoirs support wintering and breeding habitats for birds. Stone structures close to waterbodies also provide good sites for bat populations (e.g., Daubenton's bat).

Habitats and species

- **Blanket bog** – there is a large expanse of blanket bog (areas of deeper peat), although only small pockets of this have been restored. Much of this habitat has been degraded by overgrazing, burning and industrial pollution.
- **Upland heathland** - on shallower peat, heather dominated upland heathland covers significant areas but has been similarly degraded by agricultural land improvements.
- **Cloughs** – these are small valleys carved out by streams which make their way from the higher moorlands to the lowland areas. They can contain:
    - Flushes, where water seeps away, and where diverse plants and animals can be supported.
    - Woodland, supporting tree species, wildflowers and a range of wildlife (e.g. birds, bats and mammals).
- **Waterbodies** – streams and rivers (particularly the Irwell and Roch) provide a key ecological link to the lowlands. Reservoirs are also a feature of the area, as is the Rochdale canal.

Key sites protected for nature

South Pennine Moors SSSI, Special Area of Conservation and Special Protection Area (for birds) is a larger area extending from the east of Rochdale and Oldham further into the moorland of West Yorkshire. The moors are made up of extensive

blanket bog, with peat that is over 9,000 years old. They also feature upland dry heath with heather, and clough woodlands containing dwarf shrub, lichens and mosses edged by old sessile oak woods.

West Pennine Moors SSSI extends north from Horwich and Bolton and Ramsbottom into Lancashire, and supports an extensive mosaic of upland and upland-fringe habitats. Its nationally important features include blanket bogs, wet and dry heathlands and acid and lime-rich flushes. The moorland fringes in the Greater Manchester area of this SSSI include rush pastures and mire grasslands, acid grasslands and neutral hay meadows and pastures combined with wet and dry broadleaf woodlands and scrub. The grasslands and meadows are species-rich, benefitting from years of careful management with low or no nutrient inputs, a hay cut and grazing, or simply low intensity grazing. These grasslands support populations of nationally rare lady's-mantles.

Gale Clough and Shooterslee Wood, as part of West Pennine Moors SSSI, is semi-natural broad-leaved woodland and is the best example of a clough woodland on acid soils in the city-region. The upper reaches of the ravine support birch-oak woodland, and lower down is wetter woodland with alder and ash sheltering a scrub layer beneath of hazel, cherry, goat-rose and willows. Flushes give rush habitat growing from a moss carpet featuring a diversity of flowering plants. This is bordered by scrub heathland and acid grassland dominated by heather, bilberry and wavy-hair grass. Part of the site is *Favourable*, while part is *Unfavourable, No Change* due to the presence of large of beech trees.

Rochdale Canal SSSI and SAC features in this area (see below, Manchester Conurbation for more information).

Local Wildlife Sites/Sites of Biological Importance include:

- Hollingworth Lake, an important leisure and recreation area near to Rochdale
- Watergrove Reservoir
- Healy Dell
- Nader Valley
- Redisher Wood Local Nature Reserve
- Castleshaw Reservoirs.

How nature helps

Uplands provide significant opportunities for:

- carbon sequestration in peat and soils to tackle climate change
- water storage and management including reducing flood risk downstream in the urban areas.
- leisure and recreation in open spaces and around waterbodies.

Pressures on habitats and species

The Southern Pennine habitats and species are subject to some pressure from development nearer to the urban areas in the south, and increased tourism and recreational demand. Farmsteads continue to be sold off separately from the land, including the division of adjacent fields into equestrian facilities and paddocks. Many mills have been converted into other uses, including retail and housing. Grazing pressures are still present, farm size remains small and livestock numbers remain high, although they have dropped significantly since 2000. In places, drystone walls are collapsing through lack of maintenance and some intensification of grassland management has occurred. The semi-natural areas experience pressure from shooting, grazing, recreational access and development.

The Southern Pennines area is at risk of the impacts of climate change including:

- more frequent extreme weather events with heavy rain causing erosion, flooding and changes to water courses, causing or reactivating landslides.
- droughts making peatland habitats vulnerable to erosion or damage from wildfire.
- climate change could affect species migration and biodiversity, with ranges and climatic envelopes of its characteristic birds (listed above).
- plant diseases may spread more readily affecting moorland dwarf shrubs and trees.

Helping nature to recover

The peat on the South Pennine and West Pennine Moors (and the Dark Peak) have been described as possibly the most degraded upland landscape in Europe[52].

As well as projects to restore blanket bog (see Moors for the Future, Dark Peak section below), measures to stop human impact on the important peat in our uplands is underway. Operation Dragster is a police-backed scheme supported by local neighbourhood forums to deter and prevent illegal off-road activities from causing significant damage to the peat and disturbance to ground-nesting birds.

The Woodland Trust has acquired the 685 ha Smithills Estate, near Bolton, which is home to areas of valuable habitat, particularly moorland - which is part of the West Pennine Moors SSSI - along with clough woodland and important grassland. It is now working to ensure the land is managed appropriately and is creating a variety of habitats that will encourage wildlife to thrive and turn around the decline it has seen in recent years. A new landscape recovery scheme is also underway in the area, covering nearly 5000ha of the West Pennine Moors and surrounding land. The landscape recovery scheme is working to find ways to help nature recover across these moorlands.

[52] https://www.moorsforthefuture.org.uk/our-work/restoring-blanket-bog

Dark Peak

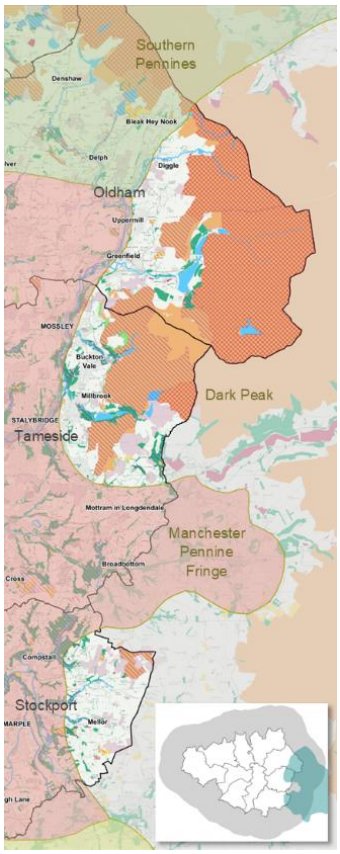

Figure 33. Map of Dark Peak

This upland area covers south-east Oldham and north-east Tameside. The towns of Stalybridge, Mossley, Greenfield and Diggle mark the western limit of this large area of moorlands, which extend beyond Greater Manchester across a large part of the higher and wilder parts of the Peak District National Park.

The predominantly peat soils of this moorland-dominated area contain the key habitats of blanket bog, upland heathland and acid grassland which naturally only support a limited diversity of species.

Cloughs (valleys), although small, have specialised plants – often with carpets of sphagnum bog moss and sedges. They can also contain a variety of native tree species such as oak, aspen, rowan, bird cherry and birch, as well as shrub species including hazel and bilberry, alongside woodland wildflowers. The upland areas provide a key habitat for birds including golden plover and dunlin. Blanket bog sees redshank and teal breed in small numbers while upland heath supports merlin, short eared owl, red grouse, curlew and twite. Acid grassland provides important habitats for upland birds such as curlew, lapwing, ring ouzel and snipe and for mammals such as brown hare. Cloughs provide habitat for woodland birds including tree pipits, redstarts and pied flycatchers.

Habitats and species

- **Blanket bog**– there is a large expanse of blanket bog (areas of deeper peat), although only small pockets of this have been restored, such as that at Dovestone. Much of this habitat has been degraded by overgrazing, burning and industrial pollution. It is recovering now but remains at risk of overgrazing, drainage and moorland fires.

- **Upland heathland** – on shallower peat, heather dominated upland heathland covers significant areas but has been similarly degraded by agricultural land improvements.
- **Cloughs** – these are small valleys carved out by streams which make their way from the higher moorlands to the lowland areas. They can contain:
    - Flushes, where water seeps away, and where diverse plants and animals can be supported.
    - Woodland, supporting tree species, wildflowers and a range of wildlife (e.g. birds, bats and mammals).
- **Acid grassland** – this is relatively common; although it is usually species poor, with purple moor-grass, it is a valuable habitat for upland birds including curlew and lapwing.

Key Sites for Nature

Nearly half of the entire Dark Peak area is designated as a Special Protection Area and Special Area of Conservation and covered by SSSIs. However, Greater Manchester's footprint in this landscape area is around the edges of these protected areas. The only SSSI in its area is the Huddersfield Narrow Canal with its array of rare plant and aquatic life, which continues through Manchester Conurbation and Manchester Pennine Fringe.

The Huddersfield Narrow Canal is an important example of a flowing water body with high levels of minerals and nutrients. Its main habitats present of standing and running water support tall herb fen and water-side plants, with a high diversity of aquatic plants, and stands of bulrush, bur reed, sweet flag, royal fern, perfoliate pond weed and (the nationally rare) grass wrack pond weed and floating water plantain. It also has the best occurrence of the fresh water sponge in the natural area. Sadly, the condition is *Unfavourable, No Change* indicating that there is no evidence of management for recovery.

Local Wildlife Sites/Sites of Biological Importance include:

- Dovestone Reservoir, RSPB reserve
- Alphin Pike and Buckden Moor
- Stalybridge Country Park.

How nature helps

Uplands provide significant opportunities for:

- carbon sequestration in peat and soils to tackle climate change
- water storage and management including reducing flood risk further downstream
- leisure and recreation in open spaces and around waterbodies.

Pressures on habitats and species

The Dark Peak habitats and species are subject to some pressure from development nearer to the urban areas, and increased tourism and recreational demand, while maintaining a sense of remoteness and tranquillity.

The Dark Peak area is at risk of the impacts of climate change including:

- more frequent extreme weather events with heavy rain causing erosion, flooding and changes to water courses, causing or reactivating landslides.
- droughts making peatland habitats vulnerable to erosion or damage from wildfire.
- climate change could affect species migration and biodiversity, with ranges and climatic envelopes of its characteristic birds (listed above).
- plant diseases may spread more readily affecting moorland dwarf shrubs and trees.

Helping nature to recover

At the RSPB Reserve at Dovestone Reservoir, conservation work has been carried out in partnership with the landowner (United Utilities), aiming to make the bog wetter again, blocking the gullies with stone and heather bales and revegetating the bare peat by planting sphagnum mosses with the help of local volunteers. This not only prevents peat being washed out into our drinking water but helps lock in carbon to tackle climate change. Vitally, it benefits breeding waders such as curlews, golden plovers, red grouse and dunlins whose numbers are now increasing at Dovestone in the restored areas.

While much of the conservation work is carried out on the higher moorlands, work is being carried out to make the moorland edges more diverse, with patches of trees, bilberry and heather, attractive to ring ouzels and other wildlife. Woodland management, planting wildflowers and creating wildlife ponds means that there is more wildlife for visitors to see around the main Dovestone trail too.

Moors for the Future work on Saddleworth Moor between 2012 and 2017 brought a severely degraded moorland landscape back to life by blocking gullies and re-vegetating bare peat to benefit wildlife and reduce flood risk in urban areas. Over 2,000 dams were installed, 8,500 bags of heather brash were spread to stabilise the peat and help establish growing conditions for moorland plants, lime spreading helped improve growing conditions for plug plants of heather, bilberry and cross leaved heath for plant diversity and 250,000 plugs of sphagnum were planted.

Manchester Pennine Fringe

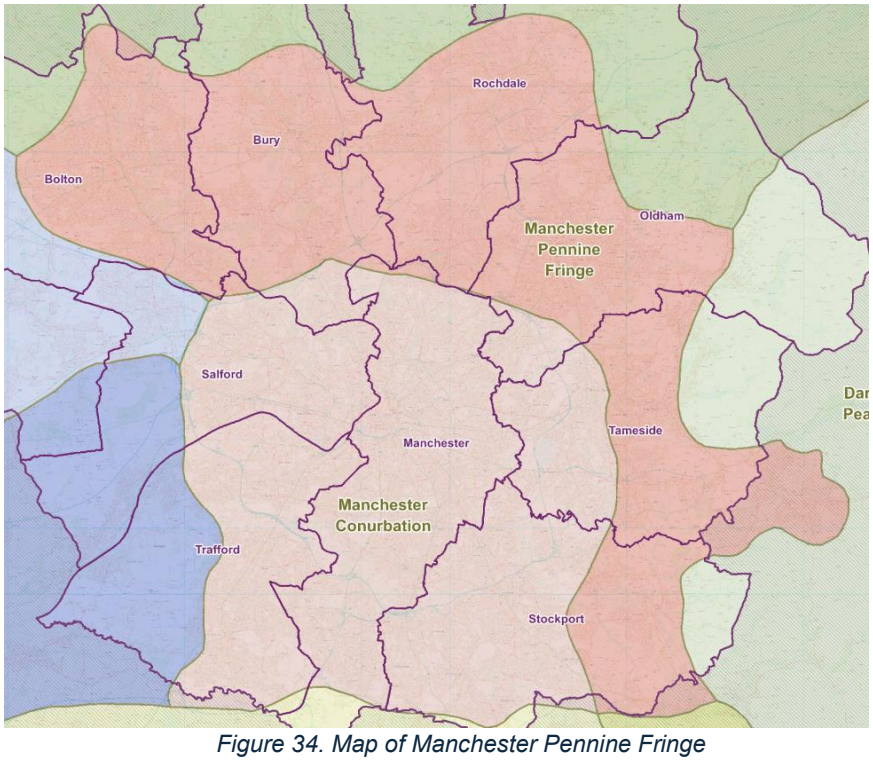

Figure 34. Map of Manchester Pennine Fringe

This transitional area from lowland to upland wraps around Manchester from Bolton in the north-west to the edge of Hazel Grove in the east, and includes the industrial towns of Bury, Bolton, Rochdale, Oldham, Dukinfield and Glossop. Its deeply incised, steep river valleys characterise the transition from moorland to urban area. It is situated between the open moorlands of the Dark Peak and Southern Pennines to the east and north.

The habitats across this area are dominated by grassland of varying quality, with some small hedgerows and walls. Locally restricted hay meadow plant species include great burnet and ragged robin. The drier soils sometimes support oak and birch woods while the wetter, lower parts have woodland dominated by ash and alder. Concentrated pockets of woodland are confined to narrow steep-sided stream valleys which cut into the smoothly undulating, upland, pastoral landscape.

The adjacent moorlands of the South Pennines and Peak District are of particular importance for breeding bird populations, including merlin, golden plover, curlew and twite. Brown hare and mountain hare are found in this area benefitting from its mixed landscape of open fields, hedgerows, uncut grass and small woodland.

Habitats and species

- **Woodland** – is concentrated in narrow, steep-sided valleys that cut into smooth shoulders of pastoral land, but it also extends along whole river valleys. Woodland over 2 hectares covers 10% of the total area, with around 1% of the total area being ancient woodland. This makes up 35% of woodland in the entire Greater Manchester area.
- **Rivers and canals** – are an important feature of this area, providing transport routes and important sites for biodiversity. Rochdale Canal is designated as a Special Area for Conservation as it supports floating water-plantain.
- Past industrial activities have left a variety of sites, such as **quarries, mill lodges, reservoirs, canals and spoil heaps**, which are now valued for their biodiversity and geodiversity.
- Almost half of this area is classed as urban with high population densities across a belt of industrial towns, with busy transport networks and motorways, with several **parks and gardens** in the area including Heaton Park, Smithills Hall and gardens, Alexandra Park, Queen's Park and Stamford Park.
- The dominant land use is **grass and un-cropped land**. The lower, steeply undulating foothills to the fringes are of variable quality grassland, with some small hedges and walls to irregular fields enclosed by the 19th-century wooded valleys, and scrub on steeper slopes.

Key sites for nature

Compstall Nature Reserve SSSI is part of Etherow Country Park which is owned by Stockport Metropolitan Borough Council. It contains a number of habitat types including open water, tall fen, reed swamp, carr and mixed deciduous woodland, and is an important example of clough woodland. The diversity of habitats supports tufted duck and mallard on the river and in adjacent ponds, whilst teal, goldeneye and pochard are frequent winter visitors. Dipper, grey wagtail and kingfisher have been frequently recorded for the site along with water rail, a particularly uncommon species. Within the woodland breeding populations of are green woodpecker, greater spotted woodpecker, woodcock, tawny owl and sparrow-hawk. The site condition is *Unfavourable, Recovering*, and incursions of Himalayan balsam are being controlled using short periods of cattle grazing while scrub has been removed.

Nob End SSSI is also a Nature Reserve, at Little Lever, not far from Bolton town centre. It is a steep sided tip at the confluence of the Rivers Irwell and Croal and was formed from an industrial process manufacturing sodium carbonate. It forms an unusual habitat where plants typically found in limestone areas thrive. These include a nationally rare species rich variant of the tall fescue–coltsfoot plant, and the grasslands feature mainly herbs rather than grasses – including rare carline thistle, blue fleabane and purging flax to name but a few. Several species of orchids occur in high numbers. In the wetter areas of marshy grassland and willow carr burnet moths and common blue butterflies thrive. The site condition is *Unfavourable, Recovering*, with management in place to tackle Himalayan balsam and rosebay willow herb.

The West Pennine Moors SSSI including Gale Clough and Shooterslee Wood SSSI are shared with the South Pennine area (see above for details of both SSSIs).

Local Wildlife Sites/Sites of Biological Importance include:

- Smithills Country Park
- Doffcocker Lodge
- Chesham Woods
- Burrs Country Park
- Ashworth Valley

- Hopwood Woods Local Nature Reserve
- Tandle Hill Country Park
- Werneth Low Country Park
- Chadwich Country Estate Local Nature Reserve.

How nature helps

The woodlands, rivers and canals and grasslands of this Pennine Fringe area that wraps around the dense urban centre of our city-region provide significant benefits by:

- Bringing green infrastructure into the urban areas, through woodlands and greenways
- Providing transport links alongside the canals
- Providing a cooling effect through green and blue spaces, improving resilience to climate impacts
- Reducing the effects of pollution through tree and hedge cover
- Through parks and nature reserves, providing people with access to natural green spaces for leisure and recreation to promote both physical and mental health
- Reducing flood risk and assisting water management.

Pressures on habitats and species

This transitional area between the dense urban setting and the countryside faces pressures from development, transport links and recreation. Housing and road development cause urbanisation of the area, and old mills are converted to retail or housing. Agricultural uses for the land between the towns are mainly permanent pasture, with much of this land used for horses.

Helping nature to recover

Northern Roots is a pioneering project creating the UK's largest urban farm and eco-park on 160 acres of stunning green space in the heart of Oldham. The aim is to develop Northern Roots in a way that creates jobs, skills and business opportunities for local people, while preserving and enhancing the biodiversity and environmental value of the site. The Northern Roots site encompasses flat grass land, heath, boggy

wetlands and dense wooded slopes. The boggy area in the centre of the site has been harnessed to create a series of ponds and reedbeds, which in future may include a swimming or fishing lake, helping to manage the vast volume of water that flows through the site while creating new habitats for nature. The woodlands have been brought under active management and several more hectares of trees planted. An area has been dedicated to growing saplings, for planting on here and across the region. At the heart of Northern Roots is the ambition to develop the project in such a way that the biodiversity and ecological value of the site is improved. That a wider range of habitats, supporting more and more diverse populations of insects, plants, fungi, birds and mammals are created. The site should become a valuable corridor and haven for wildlife in the vulnerable urban fringe.

Manchester Conurbation

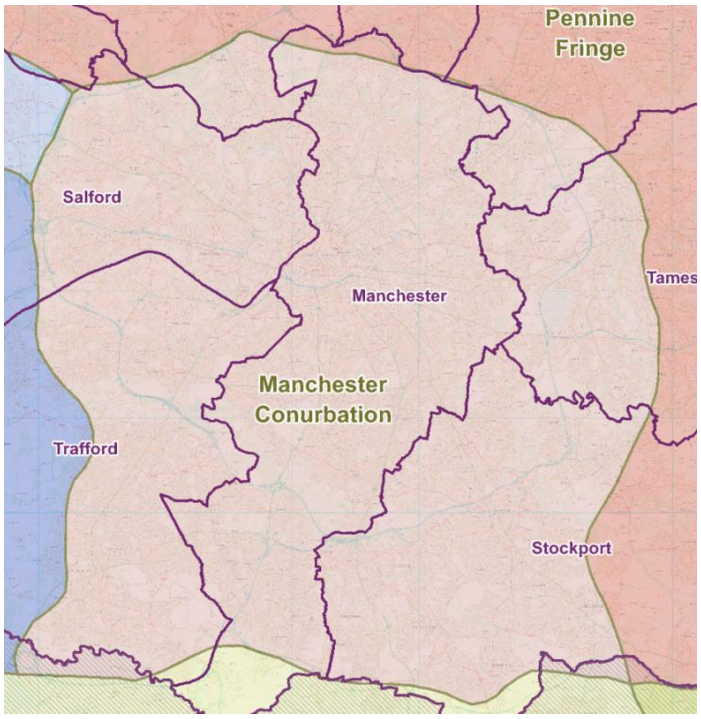

Figure 35. Map of Manchester Conurbation

Manchester Conurbation, covers most of the cities of Manchester and Salford the east of Trafford and western areas of Stockport, Tameside and the south west of Oldham. Dense urban and industrial development, and towns, along with commuter suburbs and housing, are interspersed with a network of green infrastructure such as parks and gardens (see Ecological Networks, below). With 82% of the area being classed as urban there are limited areas of natural land and habitats. Several river valleys thread through the urban fabric, flowing down from the moors of the Pennines in the north and east, and the Peak District in the south-east, to head out towards the Mersey Valley in the west.

Semi-natural broadleaved woodland can be found in small pockets, some of which are ancient woodland sites, such as Bailey's Wood, Mere Clough and Prestwich

Clough in the north, and Bramhall and Carr Woods in the south. Many of the river valleys have large areas of woodland along their slopes. The tolerance of black poplars to industrial pollution has meant that this species was widely planted as an urban tree in Manchester, however since around 2000 a virulent disease diagnosed as poplar scab has affected the Manchester poplar, and badly diseased trees have been felled. Several conspicuous species have colonised the urban areas with the fox, badger, peregrine falcon, black redstart and marsh orchid among the best-known examples. The mosaic of built environment and open space is also important for urban specialist species such as house sparrow and house martin.

Habitats and species

- **River valleys and canals** – important corridors of semi-natural habitats and natural green space line the conurbation's river valleys and canals.
- **Open grassland, woodland and wetland** link urban centres with open countryside and provide semi-natural habitats for several species
- **Woodland** is usually found in corridors along the slopes of the river valleys and on formerly brownfield land
- There are small pockets of **farmland, bounded by fences or hedges**. However, an increasing number of farms are now given over to urban farming uses such as equestrian facilities. Most holdings are grass and uncropped land
- **Public parks** and recreation facilities provide valuable open spaces for people within this urban environment but also offer a refuge for the urban wildlife
- Field boundaries, where they occur, include both fences and **hedges** in river valleys and on the peripheries of the urban areas.

Key Sites for Nature

Canals are where Manchester Conurbation's three SSSIs feature. However, as stated in Section 3 above, the condition of these waterbodies has been in decline.

The Rochdale Canal is a Site of Special Area of Conservation and SSSI for its important habitats for submerged aquatic plants and waterside vegetation, including extensive colonies of the nationally scarce species floating water plantain. It also

supports diverse collections of aquatic flora, especially pondweeds. It is home to over 100 invertebrates, including two rare species of water beetle and pea mussel. The Rochdale Canal is *Unfavourable, Recovering* due to the natural recovery process of plant recolonisation being slow in some areas.

Huddersfield Narrow Canal SSSI – this SSSI extends through the Dark Peak (see above for details).

Hollinwood Branch Canal SSSI in Tameside is also a Local Nature Reserve. It is noted for being a mesotrophic standing water system (meaning that it has a moderate amount of nutrients, so has areas of open water) with diverse open-water plant species including rare examples as well as canal-side fen habitats of bullrushes and reed sweet-grass. Unfortunately, at the last assessment in 2012, the canal condition was *Unfavourable, Declining* because the canal side plants were intruding into the important clear water areas affecting water quality and species diversity.

Local Wildlife Sites/Sites of Biological Importance

Importantly for a build-up urban area, Manchester Conurbation also has local parks, nature reserves and other sites for local wildlife including:

- Heaton Park
- Clifton Country Park
- Highfield Country Park
- Blackley Forest Local Nature Reserve
- Boggart Hole Clough Local Nature Reserve
- Clayton Vale Local Nature Reserve
- Chorlton Water Park and several other nature reserves and water parks on the River Mersey
- Salford Quays
- Worsley Woods.

How nature helps

Woods and trees, rivers and canals and park and grasslands in Manchester's conurbation provide vital services to our cities and towns through:

- Bringing green infrastructure into the urban areas, through woodlands and greenways
- Providing transport links alongside the canals
- Providing a cooling effect through green and blue spaces, improving resilience to climate impacts
- Reducing the effects of pollution through tree and hedge cover
- Through parks and nature reserves, providing people with access to natural green spaces for leisure and recreation to promote both physical and mental health
- Reducing surface water and sewer flood risk and assisting water management
- Making the urban area more attractive.

Pressures on habitats and species

Development pressure is high in this busy urban centre, alongside the need to provide infrastructure and associated services. While parks and nature reserves are highly valued, biodiversity can be found in brownfield sites that have 'greened up', which in turn, are under development pressure. Incidental green space, parks and canal-sides can see high levels of use for recreation and leisure. Lighting in urban areas can affect wildlife, as can litter, pollution and disturbance. Street trees and garden green space can be under pressure from poor management or paving over. (For more detail on these pressures in the urban setting, see Ecological Networks below).

Greater Manchester's Ecological Networks

As well as looking at these broad areas, there are ecological networks that cut across Greater Manchester's administrative boundaries and its different landscapes. The city-region is criss-crossed by a network of historic canals and rivers. There are also pockets of trees and woodlands, grasslands and wetlands. Gardens and parks

are located throughout Greater Manchester, and extensive areas of peat are found to the north and east in the uplands and in the lowland mosses of the west. These habitat networks support biodiversity and provide natural corridors and stepping stones for wildlife.

Urban areas

Across many of these National Character Areas, Greater Manchester's urban areas provide a network of natural assets, important for nature but particularly for the wider benefits they provide to people and the economy. The main urban area in the city-region centres on the built-up area of Manchester, Salford and Stockport but also includes the urban areas in Bolton, Bury, Oldham, Rochdale, Tameside, Trafford and Wigan.

Half of the areas classified as urban in Greater Manchester is made up of green spaces, waterbodies and other natural features. These can be described as "urban green infrastructure", which helps us understand the range of benefits these natural assets provide. This is particularly important in urban areas and their fringes, where most people live. Within these areas, natural assets include:

- Parks and green spaces – providing valuable open spaces for people (for access and recreation) and a refuge for urban wildlife. These include 'incidental' green space found on roundabouts, verges, small areas of grass or even wasteland. Cemeteries and allotments can also from a valuable part of the urban habitat mosaics and wildlife corridors.
- Private gardens – half of urban green space is made up of private gardens[53], although research suggests that an increasing proportion of this (around 50% currently[54]) may be hard/impervious surfaces (e.g. paving or driveways). Private gardens therefore offer a significant opportunity to support biodiversity and adaptation to climate change (flooding and overheating). Suburban

[53] http://ontheplatform.org.uk/article/measuring-greater-manchester-s-green-and-blue-spaces-creating-urban-green-infrastructure
[54] https://www.mmu.ac.uk/environmental-science-research/urban-environments-research-group/research-themes/projects/my-back-yard.php

gardens growing flowers and vegetables could be habitats for around 8,000 insect species[55].

- River valleys and canals – provide important corridors of open grassland, woodland and wetland for several species as well as recreation opportunities.
- Farmland – small pockets of farmland, particularly given over to uses such as equestrian facilities, are largely grassed and uncropped.
- Nature-based solutions – include street trees, green walls, green roofs and Sustainable Drainage Systems, which help urban areas adapt to climate change. They can also provide habitats for birds and insects in the built environment.

Trees and Woodlands

Trees and woodlands are important habitats to support biodiversity. But nationally, although woodland cover is gradually increasing, woodland wildlife is decreasing. The UK's woodland cover has more than doubled in the last 100 years, however much of this increase comprises non-native trees. Existing native woodlands are isolated and in poor ecological condition[56]. Ancient woodland is one of our oldest land uses and holds the most diverse ecosystems which are almost impossible to replace if destroyed.

[55] http://www.wlgf.org/wildlife/garden_wildlife_intro
[56] https://www.woodlandtrust.org.uk/state-of-uk-woods-and-trees/

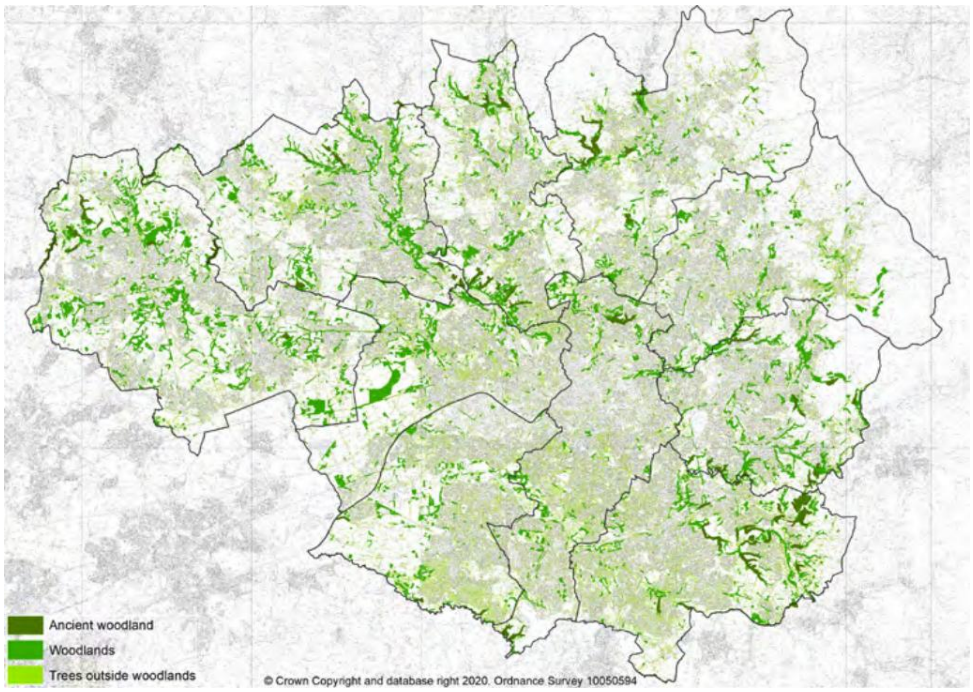

Figure 36. Map: Ancient Woodland, Woodlands and Trees outside woodlands in Greater Manchester. Source: City of Trees, All Our Trees report.[1]

The combined tree canopy across Greater Manchester covers 15.7% of the city-region's land surface, with approximately 11.3 million trees. This is around average for urban tree cover in England[57]. Whilst these include 192 species, the three most common tree species are hawthorn, sycamore and English oak. The city-region has a relatively diverse and young forest canopy with a need to increase the number of larger leafier species, such as sycamore.

A third of Greater Manchester's wooded area is in the Manchester Pennine Fringe, while the centre of Manchester and the Lancashire Coal Measures to the east each have over 20% of the woodland. However, the city-region's most populated areas have the lowest tree cover. There is much lower tree cover in the uplands of the South Pennines and Dark Peak where it is generally restricted to the wooded cloughs. As the map shows, the woodland areas are fragmented, which is a challenge for nature recovery, because new woodland should be located within 500m of established sites so woodland species can move between them. Scattered trees outside woodlands can help provide linkages in the woodland habitat network for species movement.

[57] https://www.woodlandtrust.org.uk/blog/2018/03/tree-canopy-cover-results/

Some of Greater Manchester's most important woodlands are detailed in the National Character Area character descriptions above. The jewels in the crown include clough woodlands which are SSSIs, namely Gale Clough and Shooterslee Wood, Brookheys Covert and Compstall Nature Reserve.

Ancient woodland found in the Manchester Conurbation, central area of the city region includes Semi-natural broadleaved woodland can be found in small pockets, some of which are ancient woodland sites, such as Bailey's Wood, Mere Clough and Prestwich Clough in the north, and Bramhall and Carr Woods in the south.

Percentage woodland cover by NCA area

National Character Area	Lancashire Coal Measures	Mersey Valley	South Pennines	Dark Peak	Manchester Pennine Fringe	Manchester Conurbation
Percentage of wooded cover in GM	23%	8%	8%	4%	35%	21%
Percentage of this NCA which is wooded	10%	9%	5%	6%	10%	6%

Source: Table of Habitats by NCA (Appendix 4)

How Trees and Woodlands help

Trees and woodland not only provide valuable habitats, but they provide wider environmental and social benefits as well:

- Trees play a vital role in carbon storage and in improving resilience to climate change by slowing the flow of water into streams and rivers, helping to reduce the risk of surface water flooding and reducing the urban heat island effect
- In the right place, they can help manage air quality
- They create better places for walking and cycling
- They create a barrier to noise

- They improve the look and feel of an area, which can give a boost to the local economy.

Pressures on Trees and Woodlands

Woods and trees are subject to a range of threats from direct loss to the impacts of climate change, imported diseases, invasive plants, animal grazing and air pollutants:

- **Mismanagement and loss of urban trees**: careless construction or conflict with disadvantages of trees, such as shade, can lead to the damage of destruction of urban trees.
- **Lack of woodland management**: most woodlands in Greater Manchester do not have an up-to-date management plan or schedule of operations[58]. Woodlands need management to improve their condition and help prepare them for an increasingly unsettled environment and climate. This includes good forestry practices, legal compliance, safety and protecting designated sites for biodiversity. Moreover, woodlands need a diversity of species and ages of trees too, for resilience and to provide a rich habitat for wildlife.
- **Old age or poor health of trees**: The Greater Manchester i-Tree survey results[59] tell us that around 30% of Greater Manchester's trees are in poor or moderate condition, either because of disease, damage or old age. Trees in poor condition are unlikely to thrive and so we can expect that we will lose these trees by 2050.
- **Development**: the need to provide land for homes and employment sites means that trees can be lost through development.
- **Climate change**: is causing extremes of temperature, wind, and rainfall, which could have major impacts on trees. Droughts particularly affect young trees which have not yet established strong root systems. Climate change also allows pests and diseases to expand their natural ranges, putting more trees at risk, for example ash and horse chestnut are particularly at risk.

[58] https://www.cityoftrees.org.uk/allourtrees
[59] https://www.cityoftrees.org.uk/project/i-tree-eco

Helping nature to recover

Greater Manchester is a leader in community forestry; the Red Rose Forest (now City of Trees) and Pennine Edge Forests were established in 1990 to restore previously degraded sites. The planting carried out over the last 30 years has seen an increase in species including the greater spotted woodpecker and long tailed tits.

Parks and Gardens

Greater Manchester's parks and gardens cover half the urban area of the city-region.

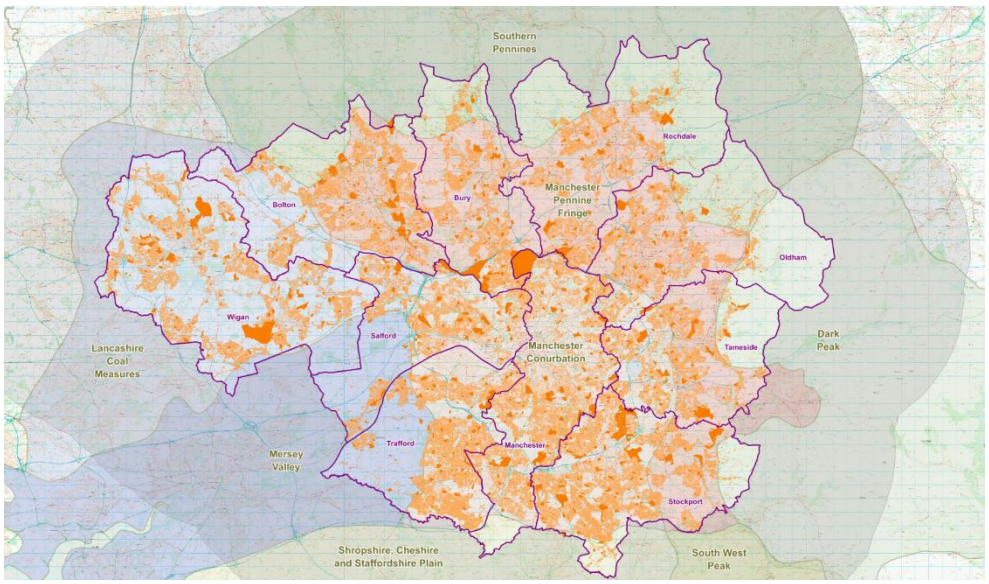

Figure 37. Map of parks and gardens in Greater Manchester

Many parks are publicly owned and managed by local authorities. They are vitally important for people's mental and physical health, being spaces for connection with nature and recreation in particular.

Those fortunate to have gardens also benefit from the impact on their mental health, in particular. The majority of gardens are privately owned and unregulated by public authorities, although some trees are protected or regulated for safety reasons. Gardens with flowers, trees, hedges and ponds make up an important proportion of existing and potentially improved stepping stones and habitat mosaics for invertebrates – especially pollinators, birds and even mammals.

How Parks and Gardens help

Parks and gardens provide us with greenspaces that are vital places for recreation and our mental and physical health. However, access to good quality green space is unequal – a Groundwork report into equity in access to nature in urban areas[60] found that:

- Only 5% of adults say that access to nature has never been important to them or their mental health
- 40% of people from ethnic minority backgrounds live in the most green-space deprived areas
- 29% of people living with a long-term illness or disability had not visited a natural space in the previous month

Pressures on Parks and Gardens

As for so many of our wild spaces, gardens are also under pressure from development and human activity. However, significant areas of gardens have been lost to extensions, patios and paving or plastic turf replacing plants and grass. Only half of the typical Manchester garden is green[61]. People may remove hedges and replace these with easier-to-maintain fencing, which form barriers rather than natural corridors for wildlife such as hedgehogs and remove valuable habitats for birds and invertebrates.

Public parks have come under increasing pressure from the budget cuts local authorities have had to make to their services over the last 10 years due to austerity. This has reduced the amount of money local authorities have been able to invest in maintaining and enhancing public parks and green spaces. In addition, use of these has continued to rise, particularly over the course of the Covid-19 pandemic, resulting in increased pressure on them.

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[60] NEWS: Report finds severe inequalities in access to parks and greenspaces in communities across the UK | Groundwork

[61] https://www.mmu.ac.uk/media/mmuacuk/content/documents/school-of-science-and-the-environment/urban-environments/1.-MBY-Intro-Gina-Cavan.pdf

Helping nature recover

My Wild Garden is a Wildlife Trust campaign supported by GMCA that links to the Manchester City Council My Wild City project to create a city-wide nature reserve. The campaign encourages and supports people to use their gardens, workplaces and green space to create nature corridors throughout the Greater Manchester. Ranging from planting for insects to creating a wild patch or gardening for wildlife, resources help people to learn how to be a part of the nature recovery network. Over 1,500 people signed up to make their gardens nature friendly during 2020.

Mayfield is a 24-acre multi-purpose housing, offices and retail development in the centre of Manchester. Within this, a new 6.5-acre park, Mayfield Park, will be built. As well as providing grassy space for leisure and recreation, wilder areas will include floodable meadows and biodiverse ecological areas beside the river.

GREATER MANCHESTER

DOING THINGS DIFFERENTLY FOR THE ENVIRONMENT

Greater Manchester Local Nature Recovery Strategy

Appendix 7 – Overview of the headline targets developed

Introduction

The Greater Manchester Local Nature Recovery Strategy (LNRS) sets out an overarching vision and aims for nature recovery across the city-region, as well as factors that will be critical to supporting and enabling the vision and aims to be achieved.

To drive forward action, headline targets are set out for each aim to support wider understanding of whether progress is being made to deliver against them. These are voluntary components of the strategy and are not a requirement under the national LNRS regulations or guidance. These targets have been put in place where there is readily available and reliable data to support monitoring of progress. Action beyond these is crucial but these targets will be used to focus action and report regularly on progress against key aims. Wider indicators for the strategy will form part of a broader monitoring framework.

This document explains how the headline targets have been developed and how they link to the wider strategy and national targets under the national Environmental Improvement Plan[62].

Overall approach

The overall approach for setting out the headline targets is as follows:

- **Evidence based** – the targets draw on the key areas identified in the Greater Manchester State of Nature Report.
- **Fair share** – where relevant, an approach of Greater Manchester contributing its fair share towards a national target has been adopted.
- **Ambitious** – the targets are set to be stretching and ambitious, reflecting the scale of the biodiversity emergency.

[62] https://www.gov.uk/government/publications/environmental-improvement-plan

- **Quantifiable and measurable** – targets should be quantitative with progress against them able to be monitored by GMCA using existing data that is updated at least annually.
- **Time period** – targets have been set over a 10-year period (the maximum duration of the strategy) to 2035 or a 5-year period to 2030.

Progress against the targets set out in this document will be reported and monitored annually through our Natural Capital Group, GM Green City Region Board and GM Green City Region Partnership. A publicly accessible dashboard will be created to enable everyone to track progress.

Vision and aims

The targets set out relate to the vision and aims for the LNRS.

Vision:

“Our collective vision for nature recovery in Greater Manchester is to work together to deliver a resilient network for nature across the city-region, connecting and enhancing wild spaces so that people and nature can thrive”.

Aims:

To deliver on this vision we need Greater Manchester to be a place where we all:

1. **Enhance and protect:** Safeguard, enhance and restore wildlife-rich spaces
2. **Create and connect:** Create more wildlife-rich resilient spaces, where they will expand and connect spaces for wildlife and people
3. **Build resilience:** Manage and reduce pressures on our environment and waterways, and maximise nature’s role in adapting the city-region to climate change

To achieve these aims we also need to:

- **Act together:** Work together to take action for nature and embed space for nature and people to thrive across all our communities
- **Accelerate action**: Boost the pace and scale of action for nature in response to the biodiversity emergency

- **Improve access:** Improve local access to nature and ensure there are more opportunities to enjoy nature responsibly, in those areas in which people need it the most
- **Engage and value:** Better engagement with nature and recognition of its value in our lives and economy

Headline Targets

The headline targets included in the strategy relate to the key aims – as set out below.

Aim 1 - ENHANCE AND PROTECT: Safeguard, enhance and restore wildlife-rich spaces	**LNRS Target 1:** To increase the amount of land designated for nature by 5000ha by 2035, growing this from 11% to 15% of the city-region. **LNRS Target 2:** To bring 50% of sites designated for nature into active management for nature conservation by 2035.
Aim 2 - CREATE AND CONNECT: Create more wildlife-rich resilient spaces, where they will expand and connect spaces for wildlife and people	**LNRS Target 3:** To restore or create 1,800ha of new wildlife-rich land by 2035, and target delivery within the nature network. **LNRS Target 4**: To provide at least 3 ha of accessible green space per 1,000 residents by 2035.
Aim 3 - BUILD RESILIENCE: Manage and reduce pressures on our environment and waterways, and maximise nature's role in adapting the city-region to climate change	**LNRS Target 5:** To reduce spills from combined sewer overflows into our waterbodies by disconnecting 150ha of land from our drainage network by 2030. **LNRS Target 6:** To better adapt the city-region to the impacts of climate change by expanding our tree canopy cover from 15% to 17% of the city region by 2035.

The following sections provide more information on how each target was developed.

Headline LNRS Target 1

Aim 1 - ENHANCE AND PROTECT: Safeguard, enhance and restore wildlife-rich spaces

LNRS Target 1: To increase the amount of land designated for nature by 5,000ha by 2035, growing this from 11% to 15% of the city-region.

*The term designated sites is used in this definition to refer to the following: Sites of Special Scientific Interest (SSSI), Special Areas for Conservation (SAC), Special Protection Areas (SPA), National Nature Reserves (NNR), Local Nature Reserves (LNR), Sites of Biological Interest (SBI) and Local Wildlife Sites (LWS).

Background

The basis of the Nature Network is its designated and scheduled sites (mapped and described as “core local nature sites” in the strategy) – those areas that already have a degree of protection for nature and represent areas where nature is prioritised. The Greater Manchester State of Nature Report sets out that these currently cover 11% of the land area of the city-region. To help nature recover, we need to increase the area of land designated or scheduled for nature and thereby increase the core local nature sites in the Nature Network.

Relevant national targets

The UK has committed to “protect 30% of land for nature by 2030” to support the global “30by30” target[63] agreed at the UN Biodiversity Summit (COP15) in 2022. However, the land included in the definition for this target is different to that used for the core local nature sites for the purposes of Local Nature Recovery Strategies (not just in Greater Manchester, but England-wide). For example, it does not include the Local Wildlife Sites (also referred to as Sites of Biological Interest) that make up nearly half of Greater Manchester’s core local nature sites[64].

[63] https://www.cbd.int/gbf
[64] https://www.gov.uk/government/publications/criteria-for-30by30-on-land-in-england/30by30-on-land-in-england-confirmed-criteria-and-next-steps#our-vision-for-30by30-on-land-in-england

Currently, 7% of land in England and less that 4% of land in Greater Manchester meets the criteria set out by DEFRA. Much of the work nationally to meet this target will be focussed on much more rural areas – particularly Protected Landscapes (national parks and national landscapes).

Rationale

This target has been chosen based on the following:

- The peak year for designations over the past 25 years (350ha designated in 2003) being surpassed each year between now and 2035.
- Ambitions for designations by the local authorities where this is known (e.g. Manchester) and Natural England (e.g. Risley, Holcroft and Chat Moss National Nature Reserve).
- Reflecting the intention of the national-level target, whilst also taking account of the more limited opportunities in urban areas – almost 50% of land in the city-region is already urban or built up – and the important role Local Wildlife Sites (locally called Site of Biological Importance - SBIs) play for nature and people's access to it in Greater Manchester, making this a more meaningful target.

How will this target be achieved?

Several initiatives are already underway to try and work towards this target over 2025 and 2026, including the designation of a new National Nature Reserve in the Chat Moss area by Natural England and partners, as well as the identification and designation of more ancient woodlands (potential SBIs) across Greater Manchester by Greater Manchester Ecology Unit (GMEU).

Monitoring

How these sites are designated and defined is well-established and the process for categorising them agreed as part of the LNRS process. Natural England play a key role in the declaration process for SSSI and NNRs and can report any new declarations locally and nationally. Local Nature Reserve designations come through local authorities and GMEU manages the SBI/LWS designation process. Data to monitor progress will be updated annually, reflecting the frequency of monitoring and the long-term nature of this target.

Baseline

Designation type	2024	2025
Total area covered by all designations (hectares/ha) ***This is the net area as different designations overlap. Includes SSSI, SAC, SPA, NNR, LNR, LWS and SBI.**	14,402	14,786
Percentage of Greater Manchester's total land cover	11.3%	11.6%

Headline LNRS Target 2

Aim 1 - ENHANCE AND PROTECT: Safeguard, enhance and restore wildlife-rich spaces

LNRS Target 2: To bring 50% of our designated sites into active management for nature conservation by 2035.

Background

The basis of the Greater Manchester Nature Network is its core local nature sites. Ensuring these sites are in active management for nature conservation is crucial to support nature recovery. The State of Nature Report sets out what is known about the condition of these sites – how well managed they are (or are not) for nature. This varies by designation type:

- SSSIs (which also cover all SACs and SPAs) – have regular condition assessments that ascribe the site with a condition (ranging from "favourable" to "destroyed").

- NNRs – are required to be in active management to maintain their designation.
- LNRs and LWSs/SBIs – do not have regular condition assessments and we generally lack knowledge about whether they are in active management for nature conservation or not. Some are in local authority ownership, but many are in private ownership.

To help nature recover, we need to make sure more of these sites are in active management for nature conservation, particularly the many LNRs and LWS (see table below).

Designation type	**Number of sites in Greater Manchester (2024)**	**Number of sites in Greater Manchester (2025)**
SSSI (covering SAC and SPAs)	22	22
NNRs	1	2
LNRs	78	79
LWS/SBIs	531	533

Relevant national targets

The government has recognised the importance of designated and scheduled sites – not just in terms of being safeguarded, but in terms of their condition (e.g. only SSSIs in a favourable or unfavourable recovering condition are included in the land counted towards the national 30-by-30 target). To reflect this, the government has committed to the following:

- All SSSIs will have an up-to-date condition assessment by 31 January 2028.
- 50% of SSSIs to have actions on track to achieve favourable condition by 31 January 2028.
- 75% of SSSIs will be in favourable condition by 2042.

However, there are no such national targets set for other types of designations (including NNRs, LNRs and LWSs/SBIs).

Rationale

A target to bring 50% of all our designated and scheduled sites into active management or nature has been chosen based on the following:

- There is no standardised ambition for the condition or management of LNRs or LWSs/SBIs. Committing to a standardised and targeted approach will help bring more of these sites into active management and will help ensure these sites are consistently getting better for nature.
- In recognition of the quantity of these sites across GM (over 600) we are aiming for 50% in active management by 2035, this means working to bring 316 into active management by 2035. Some of these sites are in local authority ownership but many are in private ownership.
- Expanding beyond the national target is important in Greater Manchester, as SSSI designations account for less than half the land designated for nature.

How will this target be achieved? How will we make progress against this target?

Achieving this target will require significant active work by GMCA, the local authorities and partners, including private landowners who own designated sites. Developing habitat management plans for each site is a key initial action, then ensuring the right management is happening and monitoring progress against actions.

Monitoring

These sites will be monitored through a mixture of Natural England and GMCA/local authority reporting. Initial work will be required to understand how many can currently be classed as in active management for nature conservation, as this is largely unknown at present and needs to be assessed and established.

Baseline

Designation	Number in 2025	Number in active management	% in active management
SSSI (SAC and SPAs)	22	6	27%

NNRs	2	2	100%
LNRs	79	Unknown[65]	Unknown
LWS/SBIs	533	Unknown	Unknown

Where the status of the site is currently unknown, GMCA and GMEU will be working with the local authorities to confirm the exact number in active management over 2025 to establish the baseline.

Headline LNRS Target 3

Aim 2 - Create more wildlife-rich resilient spaces, where they will expand and connect spaces for wildlife and people

LNRS Target 3: To restore or create 1,800ha of new wildlife-rich land by 2035 and target delivery within the Nature Network.

Background

The strategy sets out the importance of delivering a network for nature across Greater Manchester. This means not only creating more wildlife rich spaces but also crucially targeting this habitat creation within the nature network, so it can deliver the greatest gains for nature. The nature network sets out the priority areas to do this, based on ecological connectivity modelling work and stakeholder input.

Relevant national targets

The government has recognised the importance of action beyond designated and scheduled sites in achieving nature's recovery. To reflect this, the government has committed to restore or create more than 500,000 hectares of wildlife-rich habitat by 2042.

[65] Where current status is unknown, we are working towards assessing sites against an agreed and consistent definition. Once this process is completed we will update our baseline accordingly.

Rationale

A target to work towards the restoration and creation of 1,800ha of new wildlife-rich land by 2035 and target delivery within the nature network has been chosen based on the following:

- The restoration and creation of wildlife-rich land will be crucial for achieving the vision of the LNRS.
- Natural England have estimated proportions of the national target for each LNRS area and provided them to LNRS Responsible Authorities. A figure of 3,000ha by 2042 was derived by Natural England for Greater Manchester, as a guide to what could be achieved. This figure was based on the national target along with considering the likely capacity for wildlife-rich habitat restoration or creation within each strategy area and taking account where possible of local circumstances (such as the degree of urbanisation).
- The target of 3,000ha by 2042 has then been adapted to 1,800ha to set a 10-year target for 2025-2035 and align with the timescale for this strategy.
- Understanding how much of this creation and restoration takes place in areas identified within the Nature Network will be crucial to ensuring efforts are being targeted in the areas where they can have the biggest impact for nature recovery.

How will this be achieved?

Achieving this target will require the combined efforts of a wide range of organisations from across Greater Manchester, particularly landowners (including farmers), land managers, environmental NGOs, public bodies such as Natural England and the Environment Agency, businesses, utilities and infrastructure providers (such as United Utilities), local authorities, community groups and volunteers, as well as developers meeting Biodiversity Net Gain (BNG) requirements. No single organisation alone will be able to achieve this target.

Monitoring

Monitoring this target will be undertaken through first establishing an agreed definition of wildlife-rich land. Organisations will then be asked to self-report against this agreed definition on an annual basis, providing a location of where new wildlife-rich land has been created, how much, and which actions set out in the LNRS have

been delivered upon. Organisational data will then be combined with records of any offsite BNG sites which have been implemented annually (which will be monitored by GMEU and Natural England). Once combined, this data will give us an annual picture of additional wildlife rich land that has been restored or created each year and the location of this land, allowing us to track not only quantity but also what has been delivered within the nature network and which actions progress is being made against.

Baseline

The initial baseline is set at 0 for this target for 2024.

Headline Target 4

Aim: Create more wildlife-rich resilient spaces, where they will expand and connect spaces for wildlife and people

LNRS Target 4: To provide at least 3 ha of accessible green space per 1,000 residents by 2035.

Background

The strategy sets out the importance of delivering more wildlife rich spaces for nature and also the need for more access to nature for people. This means ensuring good access to green spaces to help people connect to nature. Publicly accessible green spaces are spaces that are available for the general public to use free of charge and without time restrictions.

Setting and monitoring targets for publicly accessible green space is guided by Natural England who set out a capacity target of "at least 3 ha publicly accessible greenspace per 1,000 people and ensuring that there is no net loss or reduction in capacity of accessible greenspace per 1,000 population at an area-wide scale".

Relevant national targets

The government has recognised the importance of ensuring good access to green space across the UK and sets out a national target to work to ensure that everyone in England lives within 15 minutes' walk of a green or blue space. Natural England's National Green Infrastructure Standards set out a capacity of '*at least 3 ha accessible greenspace per 1,000, measured at district /borough/ unitary authority-wide scale and ensuring that there is no net loss or reduction in capacity of accessible greenspace per 1,000 population at an area-wide scale*'. This target is set to ensure that sufficient greenspace is provided across a local authority area.

Rationale

A target to provide at least 3 ha of accessible green space per 1,000 residents in Greater Manchester by 2035 has been chosen based on the following:

- Meeting national commitments and using national standards set out by Natural England.
- A number of different local targets are set out by local authorities in a range of strategies and plans. They measure different things – e.g. amount of space per resident and vary considerably between our local authorities.
- Recognising the scale of the challenge, as it is currently estimated that provision of accessible green space is around 2.7ha per 1000 resident in GM. To reach 3 ha per 1000 we need to increase publicly accessible green spaces to approximately 8,900ha by 2035. This is an increase of 768ha, which is roughly equivalent to 537 football fields. However, this figure is estimated based on current population levels (as of 2024); the amount of greenspace that we need to deliver will actually increase as the population of the city-region increases over the next decade. Therefore, 768ha is the minimum amount of new accessible greenspace that needs to be delivered.

Monitoring

Natural England provide a nationally consistent definition of green spaces that can be counted as publicly accessible. The definition of 'accessible' and 'green space' used has a large impact on measuring this target. GMCA have used this definition as a starting point and then assessed what makes sense locally.

Natural England's National Green Infrastructure Standards define accessible greenspace as:

- Accessible green spaces are available for the general public to use free of charge and without time restrictions (although some sites may be closed to the public overnight and there may be fees for parking a vehicle). Accessible greenspaces are available to all, meaning that every reasonable effort is made to comply with the requirements of the Equality Act 2020. Accessible green spaces are areas of vegetation set within a landscape or townscape, often including blue space (i.e. lakes, rivers and wetlands).
- A range of types of green spaces is included within the definition of publicly accessible greenspace. They include: public parks, country parks, millennium or doorstep green, Local Nature Reserves, National Nature Reserves, playing fields, other sports facilities, access land (section 15 and section 16 of the Countryside and Rights of Way Act 2000 – "CRoW land"), woodland, watercourses and surface water features, allotments and community growing spaces, activities spaces provision (including bowling greens and tennis courts), cemeteries and religious grounds, golf courses and play spaces.

GMCA have largely followed this definition but have excluded access land (as defined under the Countryside and Rights of Way Act 2000 and generally includes the open country and registered common land). Although this land is accessible to the public, the vast majority of this land is found in the upland areas of Greater Manchester (see Figure 1 below) and is not likely to be accessible for residents on a regular basis. Including CRoW land in our estimates inflates the amount of publicly accessible land in Greater Manchester from 2.7ha to 5.9ha per 1000 residents. Instead, we have focused our definition of publicly accessible land on those land types that would be regularly accessed by residents.

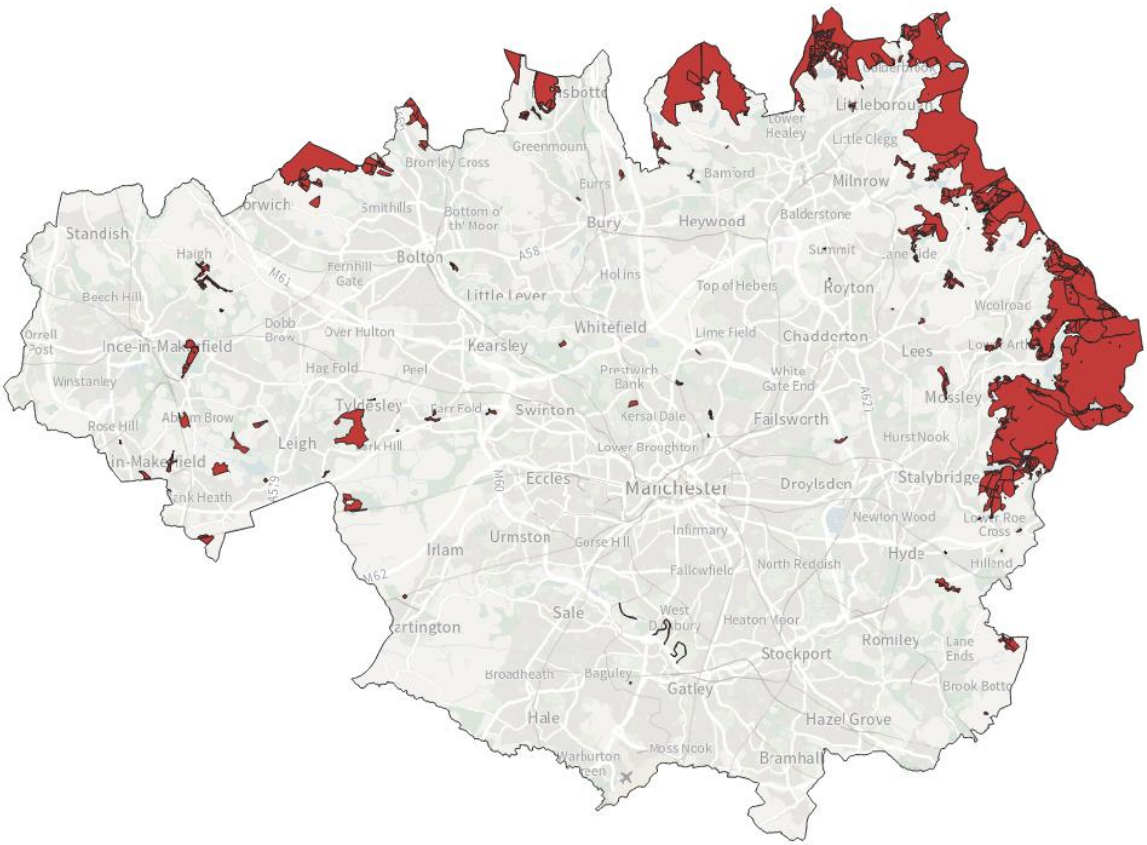

Figure 38. Map of access (CRoW) land in Greater Manchester

How will this target be achieved?

Creating new accessible green space will require the combined efforts of a wide range of organisations from across Greater Manchester, particularly local authorities, developers, environmental NGOs, public bodies such as Natural England and the Environment Agency, utilities and infrastructure providers (such as United Utilities), local authorities, community groups and volunteers. No single organisation alone will be able to achieve this target. The continuation of the Greater Manchester Green Spaces Fund will be one way that GMCA can play a role in working towards this target.

Other funds such as Nature Towns & Cities and United Utilities' Sustainable Water Fund, as well as investment in greening the public estate (NHS, Education, Sporting etc.) will all help to achieve this target with even more needed to achieve our ambition. Other approaches are key contributors such as the "Green in 15" scheme or using and establishing planning mechanisms that support inclusion of green space in master-planning and through Local Plan policy to address the growing population's need for green space.

Baseline

	2024	2025
Hectares of publicly accessible land per 1000 residents	2.7 ha per 1000 residents	Not yet released by Natural England

Headline Target 5

Aim 3 - BUILD RESILIENCE: Manage and reduce pressures on our environment and waterways, and maximise nature's role in adapting the city-region to climate change

LNRS Target 5: To reduce spills from combined sewer overflows into our waterbodies by disconnecting 150ha of land from our drainage network by 2030.

Background

There are a wide variety of pressures on nature across Greater Manchester, from invasive species to climate change and urbanisation. There are also very limited national or open datasets available to help monitor these pressures in a consistent way over the long term. Setting out just a few headline targets for this aim is therefore extremely challenging.

Across the strategy, the importance of rivers, waterbodies and canals as key corridors for nature recovery is clear, and the many issues related to the condition or quality of these blue spaces is a key issue highlighted in our State of Nature report. Having a target related to our rivers, canals and waterbodies was, however, a high priority, as it is clear that to help nature recover, we need our blue spaces to be in better condition.

Many factors influence the quality and condition of our rivers and waterbodies including diffuse pollution from agriculture, roads and urban areas, litter, modification or canalisation of rivers and canals, use of pesticides and herbicides and also point source pollution from combined sewers overflows (CSOs), industry and agriculture.

It is not possible to set targets or approaches to monitoring many of these different factors. However, United Utilities has now committed to new targets intended to reduce pollution from CSOs by 2030 – allowing us to monitor one component affecting our water quality.

Relevant national targets

The government has recognised the importance of action on combined sewer overflows in helping nature recover. To reflect this, the government has committed to requiring water companies to have eliminated all adverse ecological impact from sewage discharges at all sensitive sites by 2035, and at all other overflows by 2050.

Rationale

A target to reduce spills from combined sewer overflows into our waterbodies by disconnecting 150ha of land from our water network by 2030 has been chosen based on the following:

- Driving forward progress on one of the measurable drivers of point source pollution
- Meeting national targets and commitment to reduce pollution from combined sewage overflows
- A measurable target that we are able to monitor annually and make progress against

Monitoring

United Utilities will monitor and provide data on the area of land that has been disconnected from combined sewers ever year. The area disconnected will be based on their capital investment programme and work with landowners and local authorities to implement disconnection projects on ground. This will be reported annually to the GMCA.

How will this target be achieved?

United Utilities has identified key catchments where the disconnection of land from the combined sewer network would reduce spills from CSOs. United Utilities has designated funding for the next 5 years through its rainwater management

programme to invest in disconnection projects, in partnership with local authorities and other organisations.

Headline Target 6

Aim 3 - BUILD RESILIENCE: Manage and reduce pressures on our environment and waterways, and maximise nature's role in adapting the city-region to climate change.

LNRS Target 6: To better adapt the city-region to the impacts of climate change by expanding our tree canopy cover from 15% to 17% of the city region by 2035.

Background

The impacts of climate change on Greater Manchester are already being felt and will further increase over the coming years. Trees play a crucial role in mitigating this risk, contributing to slowing the flow of water, maintaining soil integrity and preventing soil erosion. They also provide shading, particularly in urban areas where the urban heat island effect can raise temperatures significantly during spells of warm weather, compared to surrounding areas.

Increasing tree canopy cover will provide a wide range of benefits, beyond adapting the city-region to the impacts of climate change. This includes locking up carbon, improving air and water quality and providing spaces for wildlife to thrive and people to enjoy.

Relevant national targets

The government has set a target to increase tree canopy and woodland cover from 14.5% to 16.5% of total land area in England by 2050. This target is based on data that includes not only woodlands but also trees outside of those areas. These trees, including street trees, are particularly important in urban areas such as Greater Manchester.

Rationale

A target of increasing tree canopy cover from 15% to 17% of the city region by 2035 has been chosen based on the following:

- This target would see Greater Manchester contributing its fair share to the national target (2% reflecting the national ambition).
- However, this would see Greater Manchester delivering on this target in a much shorter timeframe. This builds on the momentum built by stakeholders, particularly City of Trees, over the past 5 years in accelerating planting across the city-region.
- Previously, progress in tree planting has been monitored and reported on in terms of number of trees planted. While a useful indicator, this only provides a partial picture given that it does not account for all trees planted in the city-region (only those self-reported by City of Trees). It also does not account for any growth in the canopy cover provided by existing trees or the loss of trees (for example, from felling due to Ash dieback).

Monitoring

The current baseline of 15% and changes against this will be monitored annually using national available data. This is based on mapping through satellite and laser technology. This will allow alignment of the target for Greater Manchester with the national target for England.

How will this target be achieved?

Significant tree planting has taken place across the city-region, particularly over the past 5 years. Tree planting involves and is carried out by a range of organisations, but the most significant activity has been carried out by City of Trees, who have secured and deployed government funding to accelerate activity. This momentum will be built upon, subject to further government funding, over the coming years.

The nature of this target will place an increased focus on the importance of the management of existing woodlands so that the canopy cover they provide is

maintained and enhanced. It also demonstrates the importance of replacing and restocking trees that are lost – through either natural loss or disease.

GREATER MANCHESTER

DOING THINGS DIFFERENTLY FOR THE ENVIRONMENT

Greater Manchester Local Nature Recovery Strategy

Appendix 8 – Habitat priorities and actions

Overview

This document provides further technical details and examples, where available and appropriate for the habitat actions set out in the Greater Manchester Local Nature Recovery Strategy.

The text in italics provides examples and further technical details for suggested actions.
Actions that have been mapped as part of the Nature Network have been indicated with an asterisk (*).

Urban green spaces and buildings

Priority	Action code	Action
More schools, hospitals, public, commercial and community buildings have nature-rich accessible green spaces, better for wildlife and people.	**Urban 1.1**	**Enhance and increase the diversity of existing greenspaces and create dedicated wilder set-aside areas for nature.** *For example through: more native planting; encouraging a greater variety of habitats; encouraging a range of tree species, age structure and wooded habitats; safely allowing areas of scrub and dead wood; reducing pesticide or herbicide use; reducing mowing; removing invasive species; cleaning up litter; reducing water and light pollution; creating dedicated set aside areas; creating wildflower strips, meadows or pollinator friendly planting; creating wildlife ponds; planting trees; creating and implementing long term habitat management plans.*
	Urban 1.2	**Create more nature-friendly multiple-use spaces, such as wellbeing gardens, community grow spaces or orchards, that provide habitats for urban species and benefit people.** *For example through: creating nature friendly wellbeing or community gardens with pollinator-friendly planting and dedicated homes for wildlife; encourage creation of school nature areas for education and nature benefit; installing planters or raised beds; integrating green roofs or green walls onto buildings.*

	Urban 1.3	**Increase or expand nature-rich green spaces where they will provide stepping stones or corridors that better connect existing green space and reduce barriers to species movement.** *For example through: incorporating green nature-rich corridors or expanding habitats where they will better connect to another green space nearby; creating more wildlife crossing points and corridors (such as hedgerows) between and within spaces, particularly for target species like hedgehogs.*
	Urban 1.4	**Support species by installing homes for wildlife.** *For example through: installing bug hotels, bird or bat boxes, swift bricks or ponds.*
	Urban 1.5	**Create or allow more space for water and install sustainable drainage, providing water for wildlife and adaptation to climate change.** *For example through: installing ponds, raingardens, swales or other permeable surfaces.*
	Urban 1.6	**Support and involve local communities in the creation and maintenance of spaces for nature.** *For example through: improving access and inclusion; boosting awareness of nature recovery; installing better paths, access points and signage; supporting and involving communities with greenspace creation and maintenance; running awareness campaigns, training, courses, workshops or other promotional activities.*
Better parks and open spaces, enhanced	**Urban 2.1**	**Enhance and increase the diversity of existing greenspaces for nature and create dedicated wilder set-aside areas for nature.**

and managed to be nature-rich and climate-adapted, with a range of habitats for wildlife supported by local communities.		*For example through: more native planting; encouraging a greater variety of habitats; encouraging a range of tree species, age structure and wooded habitats; safely allowing areas of scrub and dead wood; reducing pesticide or herbicide use; reducing mowing; removing invasive species; cleaning up litter; reducing water and light pollution; creating dedicated set aside areas; creating wildflower strips, meadows or pollinator friendly planting; creating wildlife ponds; planting trees; creating and implementing long term habitat management plans.*
	Urban 2.2	**Create and maintain longer grasses and wildflower strips.** *For example through: reducing or modifying mowing regimes to allow longer grass; maintaining access with mown paths; creating wildflower strips and meadows of a variety of scales.*
	Urban 2.3	**Increase or expand nature-rich green spaces where they will provide stepping stones or corridors that better connect existing green space and reduce barriers to species movement**. *For example through: incorporating green nature-rich corridors or expanding habitats where they will better connect to another green space nearby; creating more wildlife crossing points and corridors (such as hedgerows) between and within spaces for target species like hedgehogs.*
	Urban 2.4	**Support species by installing homes for wildlife.** *For example through: installing bug hotels, bird or bat boxes, swift bricks; installing ponds.*

	Urban 2.5	**Create or allow more space for water and install sustainable drainage, providing water for wildlife and adaptation to climate change.** *For example through: installing ponds, raingardens, swales and permeable surfaces; daylighting brooks, streams or rivers where possible.*
	Urban 2.6	**Create more nature-friendly multi-use spaces, with improved access for all, such as pocket parks and community grow spaces that benefit urban species and people.** *For example through: creating community orchards or community gardens with pollinator friendly planting and dedicated homes for wildlife; creating community growing spaces; installing or maintaining better paths; installing more access points and signage.*
	Urban 2.7	**Support and involve local communities in the creation and maintenance of spaces for nature and improve public awareness of the benefits of nature recovery.** *For example through: installing or maintaining better paths; installing more access points and signage; supporting and involving communities with greenspace creation and maintenance; running awareness campaigns, training, courses, workshops or other promotional activities.*
More streets, roads, pedestrian and cycle routes are	**Urban 3.1**	**Enhance and increase the species diversity of streets and highways verges, with longer grasses, native wildflower strips or meadows and more dedicated spaces for nature.**

greener, nature-rich and tree-lined, acting as corridors for nature and adapted to climate change.		*For example through: more native planting; encouraging a greater variety of habitats; encouraging a range of tree species, age structure and wooded habitats; safely allowing areas of scrub and dead wood, reducing pesticide or herbicide use; reducing mowing; removing invasive species; cleaning up litter; reducing water and light pollution; creating dedicated set aside areas; creating wildflower strips, meadows or pollinator friendly planting; creating wildlife ponds; planting trees; creating and implementing long term habitat management plans.*
		Increase or expand nature-rich green spaces along existing and new streets, highways and cycle-ways (our Bee Network). *For example through: creating new greenspaces and green verges as part of highways improvements; planting more street trees; encouraging a range of tree species, age structure and wooded habitats; installing raingardens, planters or pocket parks along streets as part of improvement works; targeting greenspace creation in those communities with the least access to greenspace; encouraging peer-to-peer learning between councils; creating more wildlife crossing points and corridors (such as hedgerows) between and within spaces for target species like hedgehogs.*
	Urban 3.2	**Create or allow more space for water and install sustainable drainage along our existing and new streets, highways and cycle paths (our Bee Network).** *For example through: installing raingardens, swales, bioretention areas, SuDS enabled tree pits or more permeable surfaces along cycle paths, pavements and streets as part of improvements works.*

	Urban 3.3	**Reduce key barriers to wildlife movement across our major highways.** *For example through: creating green bridges.*
	Urban 3.4	**Support species by installing homes for wildlife.** *For example through: installing bug hotels, bird or bat boxes, hedges or ponds.*
	Urban 3.5	**Support and encourage more community involvement and more community adoption of unused greenspaces.**
Town and city regeneration and development driving new and enhanced nature-rich green space creation, building more biodiverse, accessible and climate-adapted places and buildings	**Urban 4.1**	**Safeguard and enhance important local habitats and green spaces.**
	Urban 4.2	**Restore existing local habitats and green spaces.**

Urban 4.3	**Create dedicated new multifunctional and inclusive greenspaces as part of new development and regeneration, to meet the national Urban Greening Factors of 0.3 on commercial and 0.4 on residential development or the local authority set Urban Green Factor.** *For example through: creating a range of greenspaces from green roofs and walls to hedgerows or street trees; newly created greenspaces and habitats should have long term management plans and funding in place in perpetuity; follow clear standards e.g. Building with Nature.*
Urban 4.4	**Increase or expand nature-rich habitats and green-spaces where they will provide stepping stones or corridors that better connect existing green space and reduce barriers to species movement.** *For example through: incorporating green nature-rich corridors within and across new developments or regeneration sites; installing more wildlife crossing points and corridors (such as hedgerows) between and within spaces for target species like hedgehogs; building green bridges; expanding habitats where they will better connect to another green space nearby.*
Urban 4.5	**Support species by installing homes for wildlife on and around buildings and reducing barriers to species movements across and between greenspaces.** *For example through: installing bug hotels, bird or bat boxes, swift bricks and ponds.*

	Urban 4.6	**Create dedicated space for water and wetter habitats by installing sustainable drainage and providing sufficient space for river corridors.** *For example through: installing ponds, raingardens, swales or other permeable surfaces.*
	Urban 4.7	**Support and involve communities in the design and creation of new or regenerated greenspaces.** *For example through: running awareness campaigns, training, courses, workshops and promotional activities.*
More nature-friendly and climate-adapted gardens, balconies, yards and driveways	**Urban 5.1**	**Plant gardens, yards and balconies that support local wildlife, using pollinator-friendly planting or planting size appropriate shrubs or trees.**
	Urban 5.2	**Support species by installing homes for wildlife and reduce barriers to species movements across and between gardens.** *For example through: installing bug hotels, bird or bat boxes, swift bricks; installing ponds; installing hedgehog highways between gardens, swapping fences for hedges and working with neighbours.*
	Urban 5.3	**Manage spaces in a wildlife-friendly way by leaving areas of longer grass for wildlife in gardens or reduce mowing, reducing use of pesticides and herbicides.**

	Urban 5.4	**Create more space for water in gardens and encourage more sustainable water use.** *For example through: using ponds, raingardens or permeable surfaces; creating more permeable spaces rather than paving gardens; reducing garden water use by installing a water butt.*
	Urban 5.5	**Boost awareness of the need for wildlife friendly gardening.** *For example through: campaigns raising awareness of the need for wildlife friendly gardens; promoting guidance on wildlife friendly planting; initiatives such as Britain in Bloom, My Wild City and others.*
More community-led creation of new nature-rich green spaces and increased opportunities for local food growing	**Urban 6.1**	**Encourage or enable the creation of new community-led green spaces in our least green areas**. *For example through: helping communities apply for funding; supporting land allocation towards community greenspace; providing more training opportunities.*
	Urban 6.2	**Increase or expand nature-rich green spaces where they will provide stepping stones or corridors that better connect existing green space and reduce barriers to species movement.** *For example through: creating pocket parks or community gardens where they will act as stepping stones between existing green spaces or expand existing green spaces*

		towards nearby green spaces; creating linear green corridors along streets e.g. using planters or by installing street trees to better connect up green spaces; installing hedges along boundaries.
	Urban 6.3	**Enable more opportunities for community-led action and community adoption of local greenspaces.** *For example through: establishing a network of community nature groups; promoting community initiatives and projects e.g. clean ups and litter picks.*
	Urban 6.4	**Support more opportunities for local food growing and the 'right to grow'.** *For example through: Encouraging and supporting the use of land for local green spaces, community orchards and allotments, community growing projects, etc***.**
	Urban 6.5	**Boost awareness and skills in nature recovery and connection to nature.** *For example through: campaigns; running training sessions, skills sessions or educational talks; volunteering days; green social prescribing; events or self-led activities; encouraging wildlife monitoring and citizen science e.g. bioblitzs; developing a network of community nature groups.*

Woodlands, trees, scrub and hedgerow

Priority	Action code	Action
More existing woodlands, hedgerows, trees and scrub are safeguarded, restored and resilient	**Woodland 1.1**	**Identify, safeguard and enhance ancient, long-established and designated woodlands, veteran and notable trees*.** *For example through: the identification, notification, designation and safeguarding of ancient woodlands, long-established woodlands, veteran and notable trees; producing management plans and bringing more ancient or long-established woodland into management; managing and considering appropriate ground flora; restoring Plantations on Ancient Woodland Sites (PAWS).*
	Woodland 1.2	**Enhance existing woodlands, scrub and hedgerows through positive management, diversify them and increase their resilience to pests, disease and climate change.** *For example through: creating and implementing more woodland management plans targeting key types of woodland habitats and species; safely retaining standing or fallen dead wood, dead or dying trees; diversifying age and stand*

		structure; encouraging species suitable for existing site conditions and future climate (taking site status into account); incorporating open space such as rides and glades; using natural regeneration or planting species of local provenance; introducing low impact silvicultural systems; managing grazing pressure; removing invasive species; controlling or managing pests, disease and species damaging woodlands (such as deer and squirrel) where appropriate and practical; encouraging the creation of clearings or rides; ensuring responsible recreational use; maintaining paths and rights of way; encouraging management at all stages of the woodland life cycle; planning for and encouraging site appropriate ground flora.
	Woodland 1.3	**Promote better understanding of the value of woodland, scrub, trees, hedgerow, wood pasture and agroforestry habitats.** *For example through: supporting community groups; running training sessions and talks; adding signage boards.*
	Woodland 1.4	**Encourage wildlife-friendly recreational use of woodland**. *For example through: clearly maintaining marked paths; reducing damaging recreational uses; wildlife-friendly lighting.*
Bigger and better connected woodlands, trees and scrub,	**Woodland 2.1**	**Target native woodland and scrub creation or establishment, where it will connect existing woodland and scrub*.** *For example through: planting or natural colonisation of woodland, scrub and trees of a range of different sizes and across a range of different land ownership and land use types; targeted planting or natural regeneration of riparian or wet woodlands; follow the 'right tree, right place, right reason'*

integrated with patchworks of other habitats		*principle; targeted planting where these habitats have been lost; planting species of local provenance (where appropriate).*
	Woodland 2.2	**Expand existing woodland and scrub and other woodland fringe and transitional habitats***. *For example through: the expansion of woodlands next to existing woodland sites or buffering of existing woodlands with other woodland fringe and transitional habitats; creation of woodlands of a range of different sizes and across a range of different land ownership and land use types; follow the 'right tree, right place, right reason' principle; planting species of local provenance (where appropriate); use planting, natural regeneration or colonisation; protection from grazing and browsing; supplementary planting if needed.*
	Woodland 2.3	**Encourage the planting or establishment of trees, woodland and scrub where they will play a role in natural flood management, control of pollution or reduce soil erosion.** *For example through: targeted planting of contour woodlands or shelterbelts; targeted planting of strips of trees; clough planting; planting of SuDs enabled street trees; follow the 'right tree, right place, right reason' principle; target planting projects where diffuse pollution and soil erosion is a known issue (for example near slurry pits or livestock housing).*
	Woodland 2.4	**Ensure new woodlands are well managed to maximise biodiversity, accessibility and support a variety of locally appropriate woodland types, mixes and scrub.**

		For example through: diversifying species (where appropriate) and age structure; planting species of local provenance (where possible); choosing species for future resilience to pests and diseases and adapting to climate change (where appropriate); creating more woodland management plans, targeting key types of woodland habitats and species.
	Woodland 2.5	**Involve local communities in new tree planting, woodland and scrub creation.** *For example through: establishing small stands of trees or tiny forests within schools; engaging community groups and volunteers with tree planting and woodland habitat management; boost awareness of the benefits of trees and woods.*
New urban street trees, urban community orchards and woodlands, improving access to nature and climate	**Woodland 3.1**	**Targeted urban tree and woodland planting where it will increase connectivity, climate adaption and accessibility.** *For example through: targeting planting where it will boost local access to shaded greenspace or provide other environmental benefits such as intercepting surface water flooding.*

adaptation		
	Woodland 3.2	**Create new and enhance old or traditional orchards and urban community woodlands, and work to ensure better access for communities.**
	Woodland 3.3	**Improve woodland path networks to diversify access for all users.** *For example through: creating well-drained paths, considering the surrounding landscape, managing vegetation along the edges as well as improving access for all needs and providing clear signage.*
	Woodland 3.4	**Support and engage diverse local groups with local woodlands, orchards and trees and encourage positive recreational use of woodlands.**
More native hedgerows created and maintained, linking together spaces for wildlife	**Woodland 4.1**	**Safeguard, manage and restore the species diversity and structure of existing hedgerows**. *For example through: filling gaps in hedgerows with new native species (where appropriate); restoring hedgerows along existing linear routes; following existing legislation and standards; managing using the hedgerow management cycle; introducing or favouring the development of mature trees along the hedgerow; ensuring enough space is given to hedgerows to reach a mature size; allow hedgerows to flower and set fruit.*
	Woodland 4.2	**Create more native hedgerows, particularly, where they act as corridors between existing trees and woodlands, or**

		where they could intercept diffuse pollution or reduce soil erosion.
	Woodland 4.3	**Encourage more mature trees in hedgerows.** *For example through: including native tree species when planting new hedgerows; including trees at irregular spacings minimum distance of 20m apart, tag and protect from routine hedgerow trimming; ensuring enough space is given to allow new created hedgerows to reach a mature size where possible.*
More varied trees, parkland, scrub and woodland habitats incorporated into our farmlands and more productive woodlands delivering nature	**Woodland 5.1**	**Enhance productive woodlands, parklands, scrub and orchards to maximise benefits to biodiversity, alongside the production of timber, food and environmental benefits, such as flood risk reduction.** *For example through: managing grazing pressure within existing woodland; low input orchards; uptake of agro-forestry and low density in-field tree planting; bringing more plantation woodlands into positive management for nature.*

recovery		
	Woodland 5.2	**Encourage wildlife-friendly farm diversification opportunities which will enable more woodland, tree and hedgerow planting as well as agro-forestry.** *For example through: supporting and promoting financial incentives for tree planting and hedgerow creation; promoting support for agro-forestry projects; facilitating access to funding for farm diversification that benefits nature.*

Rivers, canals and waterbodies

Priority	Action code	Action
More accessible and visible rivers, canals and waterbodies.	**Rivers 1.1**	**Unblock, improve and extend rights of way along waterbodies and improve connections between these networks and our wider ecological corridors and recreational routes.** *For example through: removing invasive plants that block access, clear and maintain footpaths and continuous access along routes.*
	Rivers 1.2	**Celebrate rivers, canals and waterbodies as part of the local identity and increase understanding of their natural value and management.**

		For example through: increased provision of signage, interpretation boards, guided walks, boat trips, guides, and web resources; more river monitoring e.g. using citizen science; more education about riparian ownership responsibilities and opportunities to assist nature.
Cleaner, more resilient, rivers, canals and waterbodies.	**Rivers 2.1**	**Reduce point source pollution by identifying and tackling critical locations.** *For example through: targeted creation of sustainable drainage and wetland filter habitats (including raingardens, swales, bioretention areas and new reedbeds); raising awareness of misconnections and illegal discharges; reducing Combined Sewer Overflow (CSO) spills; monitoring/management of domestic misconnections; appropriate land management activities; public campaigns; targeting critical locations.*
	Rivers 2.2	**Reduce urban diffuse pollution using sustainable drainage and by tackling litter and plastic pollution.** *For example through: buffer strips; land decontamination; reedbeds and ponds used to clean water from industrial agricultural land; better management of road runoff; reduced macro and micro plastic loads from various sources such as urban runoff by, for instance, a public litter campaign, and/or a deep clean of urban hard surface.*
	Rivers 2.3	**Encourage agricultural, industrial and land management practices that deliver water quality improvements.** *For example through: improving agricultural practices in relation to soil, nutrient, and pesticide management e.g. Water Friendly Farming projects or wetter farming; land decontamination; and the management of diffuse pollution from industry sites; targeting critical locations; adoption of low impact silvicultural*

		techniques; encouraging farmers and land managers to develop a diffuse water plan.
More natural, well managed and biodiverse rivers and waterbodies.	**Rivers 3.1**	**Make water channels more natural and complex, re-meander channels and reconnect to floodplains where feasible*.** *For example through: encouraging a range of chutes, pools and submerged and exposed sediment bars, to vary flow and create habitats while providing shelter; allow water channels to follow natural routes and restoring natural processes where appropriate; reduce canalisation of rivers, streams and brooks; reconnecting to floodplains and introducing more natural features where feasible and appropriate such as re-meandering; removal of culverts.*
	Rivers 3.2	**Enhance and maintain existing habitats within our waterbodies and adjacent grassland, wetland and woodland habitats to increase species richness*.** *For example through: enhancing existing riparian grassland, wetlands, reedbeds and woodlands; removing invasive species; revegetating and increasing the species richness of waterside habitats.*
	Rivers 3.3	**Restore and maintain more natural banks, in appropriate locations, and reduce invasive species*.** *For example through: adding buffer strips where possible to support a range of bankside topology and riparian habitat; bank modifications that cannot be removed being softened by adding material at their base; hibernacula for reptiles and amphibians to shelter/over winter; sand and shingle patches to act as microhabitats for insects; vertical banks as nest sites for kingfishers and sand martins; tree planting for shade creation and water cooling; restoring space for expanded and new habitats and species to establish by controlling the spread of*

		invasive plants, and other invasive species and diseases as necessary, with community involvement where appropriate.
Increased habitat connectivity along our river corridors, canals and waterbodies.	**Rivers 4.1**	**Expansion, creation or restoration of a variety of waterside habitats, including woodlands, wetlands and meadows, where they will better connect existing habitats*.** *For example through: creation of reedbeds and pond networks with different sizes and structures, management of woodlands, grassland and wetland to improve species richness along riparian corridors.*
	Rivers 4.2	**Improve mobility for aquatic creatures by removing barriers, daylighting buried or covered waterbodies or installing by-pass structures, where feasible*.** *For example through: removing culverts, uncovering or daylighting buried rivers, waterbodies and canals where possible or appropriate; installing fish passes.*
More space for water and natural flood management in	**Rivers 5.1**	**Install more sustainable drainage schemes, natural flood management schemes and permeable surfaces, in areas which will benefit nature and are most at risk of flooding.** *For example through: installing site appropriate swales, bioretention areas, rain gardens, buffer or filter strips along roads, soakaways, more permeable land surfaces across all our public and private spaces; expanding existing sustainable drainage schemes where possible; work with nature to better*

our communities and across catchments.		*store and manage water in upper catchments and maximise the role of upstream habitats in reducing flood risk.*
	Rivers 5.2	**Increase awareness and understanding of climate resilience and the role of sustainable drainage and natural flood management schemes.** *For example through: running educational and awareness campaigns, creating resources to build awareness and engagement; running SuDS tours and events.*
More canals restored and well managed for nature and people.	**Rivers 6.1**	**Restoration and reconnection of canalside habitats, including targeted woodland creation and tree planting*.** *For example through: encouraging the preparation and implementation of long-term management plans for all our canals for nature.*
	Rivers 6.2	**Softening manmade canal banks using natural materials and native plants*.** *For example through: soft engineering solutions with coir rolls and native local provenance planting instead of sheet piles.*
	Rivers 6.3	**Reduce litter and pollution in canals.**

	Rivers 6.4	**Encourage responsible recreational use of canals and maintain a good balance between more natural and diverse vegetation and keeping canals clear for recreation.** *For example through: disposing of dredged material where it will have least negative impact; boat speed limits; keeping paths clear; controlling invasive species such a Greater Reedmace (native) and Japanese Knotweed (non-native).*
	Rivers 6.5	**Improve mobility for aquatic creatures by removing barriers and ensure appropriate daylighting and reduced disturbance.** *For example through: removing culverts, uncovering or daylighting buried rivers, waterbodies and canals where possible or appropriate.*

Lowland wetlands and mosslands

Priority	Action code	Action
More lowland bogs, fens and other wetland habitats are restored and better managed for nature, able to store more water and emit less carbon.	**Lowland 1.1**	**Enhance, maintain and manage existing and remnant areas of lowland raised bog, fens and other wetland habitats over the long term, to improve diversity*.** *For example through: managing and working to reduce key pressures including reducing pollution and run-off from roads, agriculture, and industry; reducing pesticides and fertiliser; reducing land drainage and optimising water tables; reducing invasive species; reducing overgrazing; working to create agreed management plans where appropriate, based upon agreed best management practice to reach good condition; working to identify small remnant areas of lowland bog, fen and other wetland habitats; always following existing best practice and using existing standards and decision-support frameworks.*

	Lowland 1.2	**Enhance patchworks of semi-natural habitats surrounding our remaining lowland raised bog, fens and other wetland habitats to improve resilience*.** *For example through: enhancing and working towards dynamic lowland wetland mosaics and associated habitats surrounding remaining sites, such as brooks, open water bodies, bog, fen, swamp, flashes, ponds, wet woodland and wet species-rich grassland; reducing overgrazing; reducing land drainage; removing invasives; always following existing best practice and using existing standards and decision-support frameworks.*
	Lowland 1.3	**Reintroduce lost species across a range of mossland and wetland communities*.** *For example through: establishing satellite nurseries to grow the rare wetland plants.*
Bigger mosslands and wetlands, with more habitat corridors and stepping stones reconnecting and expanding	**Lowland 2.1**	**Restore degraded wetland sites and areas of restorable deep peat, particularly where they will connect remaining wetland habitats*.** *For example through: expanding or buffering existing sites; maintain an optimal water table, restore habitat-specific vegetation; targeted creation of continuous habitat corridors between sites; creation of new patches of habitat where they will act as stepping stones; small isolated sites are particularly crucial areas for improved connectivity; during restoration projects always following existing best practice and using existing standards and decision-support frameworks.*

remaining habitats.		
	Lowland 2.2	**Create more patchworks of wetland habitats and transitional habitats, particularly around remaining and restored lowland raised bog, fens and other wetland habitats*.** *For example through*: *maintaining an optimal water table surrounding key remaining sites; targeting small or isolated sites; always following existing best practice and using existing standards and decision-support frameworks.*
	Lowland 2.3	**Maintain and enhance restored sites and new corridors over the long term to maximise benefits for nature, carbon emissions reductions and water management.** *For example through: maintaining an optimal water table, restoring habitat-specific vegetation; always following existing best practice and using existing standards and decision-support frameworks.*
More of our historic wetlands and restorable peat are wet.	**Lowland 3.1**	**Identify former wetland habitats and investigate their potential for restoration to contribute to climate resilience and nature recovery.**
	Lowland 3.2	**Reduce land drainage and positively manage the hydrology of land adjacent to lowland raised bog, fens and**

		other sensitive wetland habitats, to increase climate resilience. *For example through: managing surface water drainage and groundwater abstraction to help re-wet peat soils and prevent harm from lower water levels*; *always following existing best practice and using existing standards and decision-support frameworks.*
	Lowland 3.3	**Encourage the uptake of wetter farming and commercial paludiculture.**
Reconnect local communities to mosslands and wetlands, and their heritage.	**Lowland 4.1**	**Enable more well-managed recreational access to mosslands and wetlands.**
	Lowland 4.2	**Increase awareness of the importance and benefits of healthy mosslands and wetlands.** *For example through: more signage, campaigns and the promotion of peat-free products.*
	Lowland 4.3	**Enhance and extend networks and other access opportunities for walkers, cyclists, horse-riders and other outdoor recreational pursuits in ways that are compatible with habitat enhancement.**

Better quality and better connected ponds.	**Lowland 5.1**	**Safeguard, enhance and appropriately manage existing ponds and encourage good connectivity to surrounding habitats.** *For example through: controlling scrub; reducing pollution and pesticide runoff; removing invasive species; controlling livestock access to decrease poaching or contamination from farm animals; creating supporting ditch and pool infrastructure; ensuring the sloping edges around ponds are structurally diverse and including hibernacula for reptiles and amphibians to shelter/over winter.*
	Lowland 5.2	**Create a variety of new ponds and resurrect ghost ponds, in the right places to connect existing ponds.** *For example through: following the existing site hydrology; ensuring variety in terms of size, depth, seasonality and vegetation.*

Grasslands, farmlands and lowland heath

Priority	Action code	Action
Species-rich and semi-natural grasslands and lowland heath are safeguarded, well-managed and restored.	**Grassland 1.1**	**Identify and safeguard remaining notable semi-natural grasslands*.** *For example through: public and volunteer surveys or BioBlitz surveys.*
	Grassland 1.2	**Enhance and appropriately manage remaining semi-natural grasslands and lowland heath, including increasing species richness*.** *For example through: writing management plans when appropriate; promoting good management of public access; removing invasive species, targeted grazing management and mowing regimes for key species.*

	Grassland 1.3	**Showcase successful grassland and heath management and encourage awareness of the value of these habitats.** *For example through: celebrating examples of good quality species-rich grasslands; considering landscape suitability (e.g. woodland cover and extent, agricultural management practices and landscape homogenisation) for ground nesting birds in relation to nesting sites.*
More species-rich grasslands and lowland heath created, particularly where they will connect existing habitats.	**Grassland 2.1**	**Creation or restoration of species-rich grasslands and lowland heath, particularly where they will expand or act as stepping stones or corridors*.** *For example through: using seedbanks of local provenance; reducing mowing; reintroducing appropriate native species and where appropriate reducing nutrients by stripping topsoil or cut-collect regimes; monitoring and tracking grassland creation.*
	Grassland 2.2	**Creation and maintenance of transitional areas or more mosaics of habitats, on the boundaries between grasslands and other habitats.**
	Grassland 2.3	**Enhance and manage improved or semi-improved grasslands to boost species richness*.** *For example through: wildlife-friendly cutting, mowing or grazing regimes; reducing spraying regimes or nutrient enhancement; where appropriate reducing nutrients by stripping topsoil; reducing the intensity of management.*

	Grassland 2.4	**Ensure appropriate long-term management of newly created grassland to achieve increased species-richness, and lowland heath.** *For example through: writing management plans; targeted grazing management and mowing regimes; low inputs; long-term monitoring.*
More urban meadows, with native wildflower species and longer grasses.	**Grassland 3.1**	**Allow areas of urban grasslands to grow long and flower and increase species diversity through planting or other measures.** *For example through: reducing mowing or cutting regimes; using seedbanks of local provenance and appropriate native species; removal of topsoil and wildflower seeding of subsoil.*
	Grassland 3.2	**Encourage greater understanding and acceptance of long grass and less intensively managed grasslands.** *For example through: engagement with local communities to explain changes and increase acceptance.*
More dedicated spaces for wildlife integrated into farmland and	**Grassland 4.1**	**Install or enable more accessible homes for birds and bats on and around farms and rural buildings.** *For example through: homes for species such as barn owl, house martin, swift and bats; avoid blocking or covering existing access points; creating skylark plots in arable fields.*

buildings, alongside food production.		
	Grassland 4.2	**Set aside dedicated patches of sympathetically managed or uncropped areas, along field boundaries, margins, corners or less productive areas, particularly where they will connect.**
	Grassland 4.3	**Create and maintain forage areas and homes for species on farmland, alongside food production.** *For example through: species-diverse hedgerows; ponds; scrapes; in-field blocks or strips of wildflower pollen or nectar flower mixes.*
	Grassland 4.4	**Safeguard existing hedgerows and plant more native hedgerows along field boundaries wherever possible**
	Grassland 4.5	**Grow and maintain multi-species cover crops, and cut later in the year, to provide food and cover for wildlife.**
	Grassland 4.6	**Support and collaborate with farmers, landowners and managers to enhance their land for nature, alongside food production, and involve farmers in targeted species conservation programmes.** *For example through: collaborating with farmers, farmer groups and landowners to build on existing success including through local farm open days, local knowledge and story sharing; providing resources such as a tailored and easily*

		accessible guide for wilder farming funding and delivery; increasing uptake of relevant agri-environment schemes.
More biodiverse farmland, with healthier soils, better water management and fewer intensively managed areas.	**Grassland 5.1**	**Manage grassland and cropland at lower intensity and with low inputs.** *For example through: adjusting timing of cropping or mowing to better protect wildlife; reduce herbicide, pesticide use and minimise use of artificial fertilisers.*
	Grassland 5.2	**Reduce soil erosion, minimise bare ground and encourage soil recovery.** *For example through: practices such as direct drilling, minimising tillage, cover crops or maintaining ground cover.*
	Grassland 5.3	**Support switch to diversified plant species for grazing livestock, establish and maintain herbal lays or species-rich hay meadows** *For example through: promoting appropriate rotational grazing practices.*

	Grass land 5.4	**Improve water quality and pollution management on farmland, in farmyards and control livestock access to waterbodies.** *For example through: installing roofs over slurry/silo stores; discouraging arable production on steeply sloping fields; fencing off or hedging ditches and water bodies to prevent poaching and contamination by farm animals; encouraging the growth of diverse riverside habitats, conversion away from arable crops in frequently flooded areas.*
	Grass land 5.5	**Support awareness raising efforts around responsible recreation in nature rich areas.** *For example through: encouraging more awareness of the countryside code, campaigns and engagement with schools and universities.*

Upland moorlands

Priority	Action code	Action
More varied and well-functioning upland habitats, with patchworks of restored bog, heath, trees, springs and flushes, reducing flood and wildfire risk.	**Upland 1.1**	**Stabilise, rewet and restore deep bare peat towards active blanket bog***. *For example through: nurse crops; raising the water table; reducing land drainage; grip and gully blocking; reprofiling gully sides, bunding, reintroduction or translocation of moorland plants e.g. sphagnum, reducing intensity of grazing or considering choice and type of grazing animals; always following existing best practice, standards and decision-support frameworks; encouraging positive long term management for nature.*
	Upland 1.2	**Encourage more diverse native vegetation and more flower-rich habitats on existing upland moorlands*.**

		For example through: cutting to create a varied age structure; bracken and invasive species control; reintroduction of blanket bog plants; encouraging positive management for nature; *considering the most appropriate grazing regimes and grazing animals to encourage more plant diversity and dynamic habitats; ensuring a diversity of heathland structure and managing fire risk; flower-rich habitat restoration and creation; always following existing best practice, standards and decision-support frameworks.*
	Upl and 1.3	**Create transitional habitats or corridors to increase linkage between our uplands and lowland habitats, where conditions allow*.** *For example through: using carefully designed woodland, heath and scrub mosaics on moorland edges and in valleys replacing modified grassland or bracken dominated ground; considering the most appropriate grazing regimes and grazing animal to maximise benefits for nature; expanding upland heath habitat (e.g. substrate and nutrient levels); using locally sourced heather brash (dry and wet heath).*
	Upl and 1.4	**Reduce wildfire risk by creating natural fire breaks, rewetting, and boost awareness.** *For example through: creating more flushes, dense trees and bunds, re-wetted and restoring water tables, to act as firebreaks; reducing gorse cover in targeted areas to minimise fire risk; influencing people's awareness and behaviour; always following existing best practice, standards and decision-support frameworks.*
More of our upland flushes	**Upl and 2.1**	**Restore more naturalised wet areas, flushes and ponds*.** *For example through: bunds, grip and gully blocking, scrapes and pond creation.*

are thriving, rich with sphagnum moss, rushes and sedges, supporting a diverse range of species.		
	Upland 2.2	**Create rough, diverse grasslands around flushes and wetlands, wet in some areas with rushes around flushes and springs***. *For example through: cutting or managing for different sward heights; considering the most appropriate grazing regimes and grazing animal to maximise benefits for nature.*
	Upland 2.3	**Reduce and slow land drainage and encourage natural flood management**. *For example through: bunds, grip and gully blocking, leaky dams, scrapes and pond creation.*
More trees, small woods and scrub are naturally	**Upland 3.1**	**Encourage the restoration and regeneration of existing upland woodlands and clough woodlands***. *For example through: more woodland management plans created and implemented; targeted restoration, natural colonisation or regeneration of key woodland types and shrubs (such as temperate Atlantic rainforest, upland oak woodland and wood pasture) to reach good condition; restore and*

regenerating, in appropriate places, across our uplands, helping slow and store water.		*increase clough woodlands and scrub, adding to the habitat available for woodland species; reducing grazing intensity or restricting access by grazing animals where possible; restoration efforts should always follow existing best practice, standards and decision-support frameworks.*
	Upland 3.2	**Increase woodland and tree regeneration and planting, with varying density from closed canopy woodland in some places to scattered trees in others**. *For example through: adding fencing in target areas to restrict access by grazing animals and enable natural colonisation or planting of less-dense woodlands, scrub and scattered trees over the top of cloughs onto the edges of less-sensitive open moorland; using traditional boundaries, fencing and grazing management; taking a coordinated landscape scale approach to deer management; restore and increase clough woodlands and scrub edges to expand tree cover, adding to the habitat available for woodland species; fence and let natural colonisation occur; planting efforts should always follow existing best practice, standards and decision-support frameworks to avoid planting on important existing grassland, heath or bog habitats.*
	Upland 3.3	**Encourage moorland and clough edges to 'scrub up', to improve diversity, securing soils and slowing water flow.**

		For example through: fencing or reducing grazing pressure to enable the natural colonisation of trees and scrub; always following existing best practice, standards and decision-support frameworks; considering the most appropriate grazing regimes and grazing animal to maximise benefits for nature.
	Upland 3.4	**Target woodland creation, tree planting and the creation of leaky dams, where they will also contribute towards slowing water flow.**
Restore and rewet peat to active blanket bog and wet heath, to retain more carbon and hold more rainwater.	**Upland 4.1**	**Stabilise, rewet and restore deep peat towards active blanket bog and wet heath.** *For example through: nurse crops; raising the water table; reducing land drainage; grip and gully blocking; reprofiling gully sides, bunding, reintroduction or translocation of moorland plants e.g. sphagnum; reducing intensity of grazing or considering choice and type of grazing animals; always following existing best practice, standards and decision-support frameworks; encouraging positive long term management for nature.*
	Upland 4.2	**Work at scale to restore larger areas of remaining blanket bog faster.** *For example through: reducing heath and grass dominance by cutting and reintroduction of blanket bog plants; reducing grazing pressure on blanket bogs; reducing burning on deep peat, blanket bog and wet heath; always following existing best practice, standards and decision-support frameworks.*

More upland communities, land managers and landowners are rewarded for helping nature recover.	**Upland 5.1**	**Support the switch to land management practices that will further enhance the diversity of upland habitats.** *For example through: supporting creation of management plans for more nature friendly land uses; encouraging more landowners to access support for woodland and tree planting or agro-forestry or other relevant agri-environment schemes; coordinating support for farmers across partners; considering the most appropriate grazing regimes and grazing animal to maximise benefits for nature; encouraging positive long term management of land for nature.*
	Upland 5.2	**Encourage more sustainable upland grazing and less intensive management of uplands.** *For example through: encouraging appropriate rotational and mixed grazing systems that can ensure a sustainable grazing intensity while maintaining productivity and supporting upland biodiversity; considering the appropriate choice of grazing animal to maximise benefits for nature.*
	Upland 5.3	**Maintain, restore and increase upland hedgerows, hedgerow trees and field boundaries as important habitats.**
	Upland 5.4	**Encourage sustainable recreation and reduce activities that damage upland habitats.** *For example through: promoting awareness and education about the impacts of accidental fires and damage from off-road vehicles and implementing measures to prevent such damages.*