WORKING TOGETHER FOR NATURE

A Biodiversity Action Plan for
West Lothian 2025 - 2035

West Lothian Council

WEST LOTHIAN COUNCIL RECOGNISES THE INHERENT VALUE OF NATURE, AND ALSO ITS ROLE IN HELPING TO REALISE OUR CLIMATE EMISSIONS AND ADAPTATION TARGETS, WHICH UNDERSCORES THE IMPORTANCE OF THIS BIODIVERSITY ACTION PLAN.

EXECUTIVE SUMMARY

MISSION

To reverse biodiversity loss in the next five years (by 2030) and to ensure the restoration, enhancement and protection of biodiversity throughout West Lothian for the long-term.

VISION FOR 2045

West Lothian will remain largely green despite population growth. Healthy mosaics of habitats will exist across the area, forming thriving, connected networks that support wildlife and allow nature to expand, move and adapt - providing resilience at all scales from genetic to ecosystem level. Planned developments will be integrated within and contribute to these networks. People will value, respect and enjoy nature, incorporating biodiversity into everyday decision-making at home, work and school. Everyone will have the knowledge, skills and means to protect and enhance biodiversity through their actions.

PURPOSE

This Biodiversity Action Plan (BAP) outlines the steps required to achieve the Mission above, engaging everyone from the council, charities and educational establishments, to land managers, farmers and businesses, to community groups and individuals. It translates national strategies into local actions and supports planning goals to address the climate and nature crises, creating nature networks and promoting nature-based solutions.

This BAP will be used to inform the next Local Development Plan, which is currently being compiled.

HAVING A PLAN MATTERS BECAUSE THE UK'S BIODIVERSITY IS IN SHARP DECLINE, AND WITH CLIMATE CHANGE EXACERBATING HABITAT LOSS AND FRAGMENTATION, REVERSING THIS TREND IS CRITICAL.

West Lothian Council recognises nature's role in climate change mitigation and adaptation, and by declaring a nature emergency in 2023, acknowledges that biodiversity loss and the restoration of ecosystems requires a step-change in awareness and action.

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CONTENTS

KEY ISSUES

In West Lothian, the main threat to biodiversity is habitat degradation, arising from the pressures of supporting a growing population in the Central Belt.

Factors include habitat loss and fragmentation from development and intensive land use, the spread of invasive species, wetland drainage and the modification of water courses, pollution from various land uses including past industry, and climate change.

Habitat mapping reveals the extent of fragmentation and highlights the dominance of low-biodiversity habitats across West Lothian; it also identifies opportunities to enhance habitat connectivity and exposes the crucial role of private gardens and public spaces in supporting biodiversity in both existing urban areas and planned developments.

Mapping analysis also uncovers the need for more data on the condition of habitats and the distribution and abundance of protected and threatened species.

GUIDING PRINCIPLES AND RULES OF THUMB

Three overarching principles to be applied at all scales (1. Protect, restore, enhance 2. Connect and allow flow 3. Repair human-nature connections) together with general rules of thumb, for assessing the quality of different habitats, are intended to ensure that there is a common understanding of what we are aiming for and to raise the bar for biodiversity across the area.

PLAN OVERVIEW

The BAP sets clear outcomes by 2035, with specific actions tied to these outcomes.

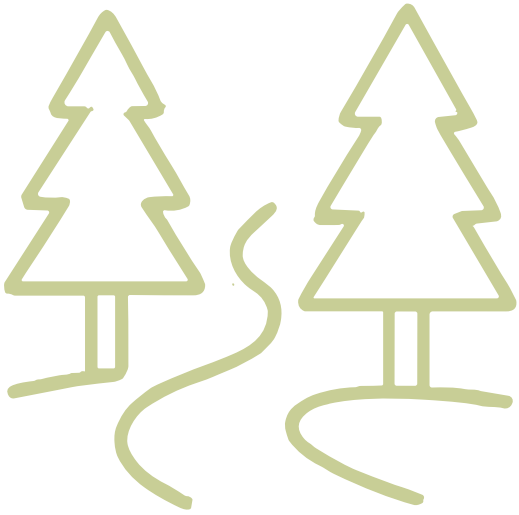
Over the next five years, key actions include mapping and realising Nature Networks; working together to share knowledge and to improve biodiversity at scale; improving the condition of aquatic, woody and grassland ecosystems to support species and strengthen Nature Networks; supporting skills-building; and educating / raising public awareness.

COORDINATED ACTION

This plan is coordinated by the council, but everyone is invited to contribute to the actions identified, to ensure the plan's success.

Collaboration with local landowners, managers, communities and supporting organisations has been essential in developing the plan, and ongoing cooperation and peer support will be critical to achieving the necessary large-scale changes required.

We only ask that everyone updates the council on their efforts, to ensure a coordinated approach.



Review

The action plan will be formally reviewed in 5 years to make sure we're on track to achieve the intended outcomes and the overall mission.

Section A

INTRODUCTION

WHAT IS BIODIVERSITYAND WHAT DOES IT DO?

'Biodiversity' means the variety of life on Earth, which includes all plants, animals, fungi, micro-organisms (e.g. bacteria and viruses) and it includes the genetic diversity between organisms of the same species. Each of these species and organisms work together at different scales - from communities to habitats and larger ecosystems - to maintain balance and to support life. In turn, these ecosystems are essential for providing us with clean air, clean water, food, fuel, medicines, building materials and other vital products and services.

As humans put increasing pressure on the environment, using and consuming more resources, and expelling 'waste' products such as carbon dioxide and pollutants, we are upsetting the balance of ecosystems, losing biodiversity and becoming more and more vulnerable to stressors, such as dwindling food/resources and disease, which are made worse by climate change.

THE CURRENT STATE OF NATURE AND WHY DOES IT MATTER?

Globally, biodiversity has declined substantially in the last 50 years, and in Scotland 1 in 9 (11%) species are currently threatened with extinction. A team at the Natural History Museum has calculated a Biodiversity Intactness Index (BII) to assess each country's biodiversity, and how it is responding to human pressures such as land use change and intensification. At the time of writing, the average global BII is 76% and the UK as a whole has a BII of 45%, which is in the bottom 10% globally.

A BII of 90% globally means the world has enough biodiversity to be resilient - this is considered the "safe limit" to prevent the world from tipping into "ecological meltdown". At 30%, the planet could be at risk of ecosystem collapse. Our reliance on nature is being recognised by governments and is starting to be acknowledged in business risk registers, but much work still needs to be done to translate this awareness into action on the ground, to reduce human impacts and to restore the resilience of natural systems.

DRIVERS OF BIODIVERSITY LOSS

Five direct drivers of global biodiversity loss and two indirect drivers (underlying causes) have been identified.

The direct drivers are:

1. The way we use land and sea;
2. Direct exploitation of organisms for food and materials;
3. Climate change;
4. Pollution;
5. Invasive non-native species.

The indirect drivers are:

People's disconnect with nature and a lack of recognition for the value and importance of nature.

Both direct and indirect drivers must be addressed in order to reverse and restore biodiversity around the world.

BIODIVERSITY AND CLIMATE CHANGE

As mentioned, climate change is already exacerbating biodiversity loss, but nature also plays a key role in helping us to reduce our carbon emissions and build resilient communities that can adapt to climate change.

Healthy ecosystems, such as peat bogs and woodlands, can store carbon in the long-term, while degraded systems release it, emphasizing the importance of habitat restoration. Other 'nature-based solutions', such as street trees and raingardens, help manage water, regulate urban temperatures, and support human health. The relationships between nature and climate change measures can be seen in Figure 1, below.

These natural systems not only absorb carbon but also create favourable environments for plants and animals to adapt as the climate shifts, contributing to overall climate adaptation efforts.

West Lothian Council recognises the inherent value of nature, and also its role in helping to realise our climate emissions and adaptation targets, which underscores the importance of this Biodiversity Action Plan.

Figure 1 - Example of relationships between biodiversity and nature-based solutions, nature recovery and net zero (source: R Gregg, J. L. Elias, I Alonso, I.E. Crosher and P Muto and M.D. Morecroft (2021) Carbon storage and sequestration by habitat: a review of the evidence (second edition) Natural England Research Report NERR094. Natural England, York)

Section B

PRESENT: WHERE WE ARE NOW IN WEST LOTHIAN

GEODIVERSITY, BINGS AND SOILS

The geology and landforms of West Lothian remain similar to those in the previous action plan, acting as the fundamental building blocks that affect the structure, soils, drainage and micro-climate of the area. The uplands, moors, river valleys, coastal plain and hills broadly influence the natural vegetation cover, and human exploitation and manipulation of the rich geology has added to the varied landscape and created the niche habitats we see today. A detailed report on the geology of West Lothian can be found on the council's **Geodiversity web page**.

West Lothian Council is a signatory to **Scotland's Geodiversity Charter**, which is being updated, and has designated over 50 Local Geodiversity Sites. There is much overlap with biodiversity sites and therefore scope to promote these sites jointly, highlighting the links between geodiversity and biodiversity.

Lothian and Borders GeoConservation has an ongoing programme of monitoring Local Geodiversity Sites in West Lothian and has been involved in raising awareness of illegal fossil collecting at Petershill SSSI.

The Scottish Geology Trust **Geosites map** has been set up and is an ongoing initiative. It brings together information on all sites designated as important for geology and geomorphology across Scotland, making it easy for people to connect with their geoheritage, share information about sites and report any problems. It includes all of West Lothian's 55 Geological SSSIs and Local Geodiversity Sites.

West Lothian's red shale bings stand prominently in the landscape, mostly occurring between Winchburgh and West Calder. They are a distinctive and rare type of post-industrial waste, which is unique in Britain. More information on their cultural significance can be found at the **Scottish Shale Museum**. This cultural significance is celebrated along the 16 mile **Shale Trail** walking/cycling route, which was created in 2019/20.

The bings are examples of primary succession sites - these are only found naturally on sand dunes, glaciers and volcanoes; all of which are very uncommon in Britain. These two factors give the bings great ecological and scientific importance, and they are considered as an ecosystem in their own right. All the bings are also home to many common plants and animals that are becoming increasingly marginalised by demands for new housing and intensive farming methods.

For a fuller account of the vegetation on the bings of West Lothian, see **West Lothian Biodiversity Action Plan: Oil Shale Bings** by Barbra Harvie.

Their significance is illustrated well by their protected status - North Addiewell is a SWT Nature Reserve; Easter Inch Moss and Seafield Law, Faucheldean Bing, Greendykes Bing and Old Philpstoun, are all Local Biodiversity Sites; Five Sisters, Faucheldean and Greendykes bings are scheduled historic monuments; and Oakbank reclaimed bing forms part of Almondell & Calderwood Country Park.

The majority of soils in West Lothian have a texture ranging from clay to sandy clay loam. The high clay content often results in poor drainage conditions, which can also make these soils difficult to manage. The council created and adopted Planning Guidance on soils in 2021 - Soil Management and After Use of Soils on Development Sites. This helps to ensure good practice for the sustainable use of soil. Soil Sustainability Plans are required for larger sites and for smaller sites, planning conditions are imposed to assure soil conservation, minimal risk of compaction and remedial measures for contamination.

SUCCESSES SINCE THE LAST BAP

- **Monitoring of geodiversity sites** by Lothian and Borders GeoConservation and West Lothian contribution to Geosites map
- **Creation of The Shale Trail** – a partnership project between WLC and community groups along the trail
- **Creation and adoption of Planning Guidance** - Soil Management and After Use of Soils on Development Sites

HABITAT DATA

The last habitat survey of West Lothian as a whole took place in 1994 and was used to inform the previous two Biodiversity Action Plans. To bring us up to date, consultants were employed in 2022/3 to remotely survey and digitally map the whole area using aerial photographs and a variety of national datasets. A comparison of habitats in 1994 and 2023 can be found on page 11.

This venture has produced a baseline digital habitat map of the whole of West Lothian, to be used for strategic biodiversity planning by the council. This digital mapping can also be updated with relevant information as we move forward and make changes. A report of the mapping exercise, together with an interactive habitat map, can be found on our **Biodiversity Action Plan webpage**.

A summary of habitats and the area they cover can be viewed in the chart on page 13 (Figure 2).

WHAT DOES THIS TELL US?

The habitat mapping allows us to see which habitats we have and where. This helps us identify isolated or fragmented habitats and where we need to join them up to ensure ecological and climate resilience. It also allows us to see which priority habitats we have that need to be protected and nurtured (see Appendix 3). This, in turn, helps to guide the pattern of development in the Local Development Plan.

The percentage of land covered by each habitat revealed through the mapping also allows us to assess which habitats we have much of and could potentially be changed, or which habitats could be expanded, for nature- restoration.

For example, improved grassland currently covers 26% of the area, compared to semi-natural grassland which covers approx 16% of the area. 'Improved grassland' typically doesn't support so many species and as grassland species continue to decline, we may look to work with other local landowners to boost the diversity of this grassland and potentially increase semi-natural grassland, as well as boosting other linked habitats.

'Active' woodlands (i.e. woodlands with living trees in them) take up almost 16% of the area, with 'recently felled woodland' from various forestry operations at 5% (still categorised as 'woodland' as it's assumed there's a requirement to replace the trees). The total woodland coverage is therefore 21% for West Lothian. This is above Scotland's average, which is 18.5% coverage, although still much lower than Europe at 38%. However, broadleaf and mixed woodland, which are generally more biodiverse than coniferous woodland in the UK, stand at 6.6% and 2% coverage respectively. We can also see that these woodland types are fragmented, with a few larger woodlands and many small slivers across West Lothian.

Therefore, to improve conditions for our woodland specialist species, we might look to increase the size and distribution of native broadleaf and mixed woodlands and the connections between them. There are also national targets from Scottish Forestry on woodland planting, including increased riparian woodland. Habitat mapping allows us to see where woodland planting is most appropriate – certain distinctive habitats, such as bogs, should be avoided.

Private gardens currently take up 4.3% of the whole of West Lothian and therefore present a significant opportunity to support wildlife in urban areas.

For the council, it is also useful to see that the most common habitat type across WLC landholdings are woodland and tree habitats, comprising 34%. Amenity and improved grassland cover 29%, with semi-natural grassland at 6.3%. This allows us to make decisions about how to manage the land to improve biodiversity across WLC land. For example, some of the large amount of low diversity amenity grassland (short grass) could be changed to semi- natural grassland, species-rich grassland, woodland or wetland to improve biodiversity across the council estate.

By observing the habitat mapping, the extent of habitat fragmentation of woodland habitats in West Lothian as a whole can be seen at a glance - particularly for Ancient Woodland, with small patches dotted across the area. Mapping also reveals the prevalence of low-biodiversity habitats across the area, with improved grassland, amenity grassland, arable and conifer woodland collectively covering 50% of West Lothian.

However, the mapping also shows where there is potential to connect up habitats. For example, the key role of private gardens and public open space is clear - to support biodiversity and to join up habitats in existing urban areas and where development is planned.

SUCCESSES SINCE THE LAST BAP

- **Creation of Planning Guidance – Planning for Nature (2020)**
- **WLC Climate Emergency Fund projects on WLC land, including:** extensive urban tree planting, invasive species removal and pathworks along the Livingston North Blue-Green Network, bog restoration works at Black Moss and Easter Inch Moss, Greening of the Shale Trail with Edinburgh and Lothians Greenspace Trust; the fund also secured the habitat mapping and Natural Capital Assessment relating to this LBAP
- **West Lothian B-lines** – a partnership project between West Lothian Council and Buglife to create wildflower meadows in 11 urban parks across the area as part of the UK B-Lines initiative, with engagement activities
- **The Agri-Environment Climate Scheme (AECS)** has to date subsidised many farming enhancements across the area including wader grazed grasslands, wetland management, lowland bog management, summer cover crops and buffering of watercourses
- **The Scottish Government's direct allocation Nature Restoration Fund to WLC has enabled many projects from 2022-24 including:** INNS mapping and control along watercourses in the Avon and Almond catchments with biodiversity enhancement works in partnership with Forth Rivers Trust, management of Blackmoss in Armadale, Ash Dieback replacement tree planting, purchase of meadow management machinery, monitoring of Local Biodiversity Sites with The Wildlife Information Centre, Great Crested Newt habitat enhancements with Edinburgh and Lothians Greenspace Trust, Buglife meadow monitoring and workshops, creation and enhancement of urban raingardens in parks, installation of a fish counter in the River Almond, living willow spiling on various water courses to stop bank erosion and a nutrient analysis with action plan for Beecraigs Loch

PROPORTION OF HABITAT TYPES (1% OR MORE) ACROSS WEST LOTHIAN

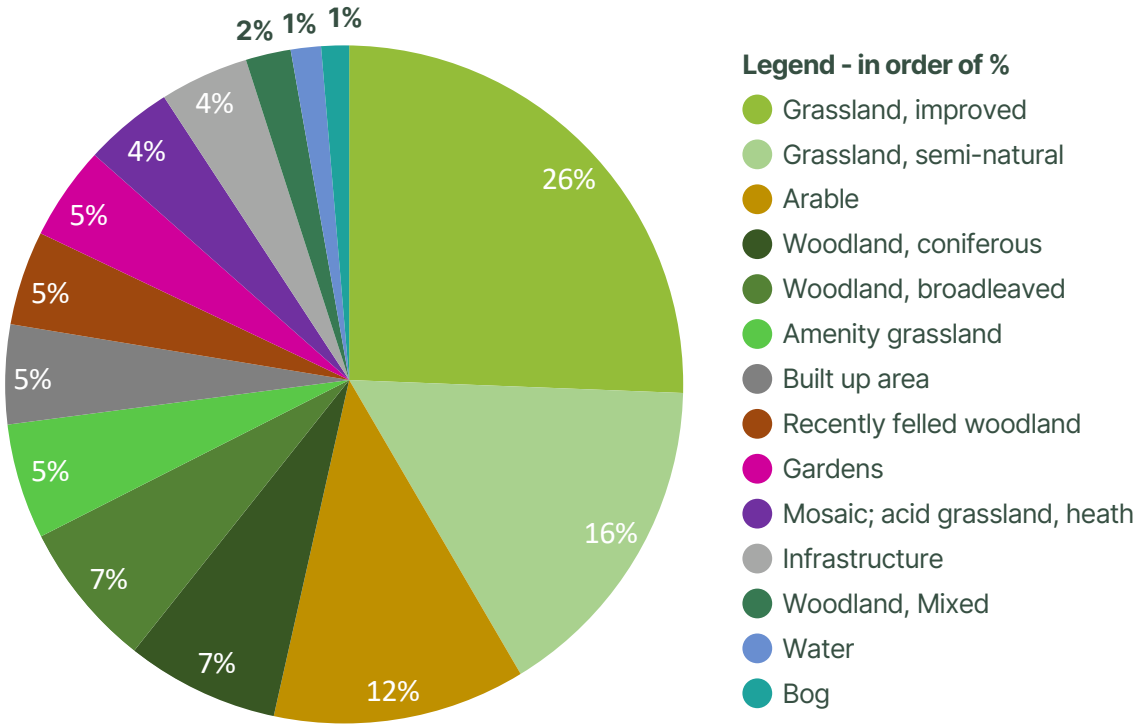


Figure 2 - Proportion of Habitat Types (1% or more) across West Lothian
(Source: WL Baseline Habitat Assessment Report WSP/NCS 2023)

NATURAL CAPITAL ASSESSMENT

Using the baseline habitat map, eleven ecosystem services were modelled in 2023. These are: carbon storage and sequestration, air purification, noise regulation, local climate (urban heat) regulation, pollination capacity, water flow regulation, water quality (sediment yield and nutrient deposition) regulation, food production, timber production and accessible nature.

For every ecosystem service, the current capacity of the natural environment to deliver that service was mapped. These 'heat maps' show us broadly which habitats/areas are currently giving us the most benefit for each function

e.g. we can see which areas best regulate water flow, have the ability to store the most carbon (over the long term), to sequester the most carbon (year on year), etc.

Having a broad overview of which areas are currently performing best enables us to plan for the future and provide resilient landscapes for future known and unknown impacts.

WHAT DOES THIS TELL US?

The final analysis report for all Natural Capital Assessment findings can be viewed on the council's **Biodiversity Action Plan webpage**.

The key points are:

- For West Lothian as a whole, the presence of large areas of deep peat in blanket and raised bogs in the south and west mean there is significant capacity for long-term carbon storage within the soil of West Lothian.

  However, many of these peatlands appear to be degraded (i.e. drained, eroded, etc) and therefore emitting carbon each year.

- Woodland areas are hotspots for the provision of many ecosystem services including carbon sequestration, air quality, local climate and noise regulation, pollination, water flow and quality. The largest woodlands (forestry) also lie mostly to the south and west of the region.

- The gardens and open spaces of West Lothian's urban settlements currently have the greatest capacity for pollination services, highlighting their potential to support insect pollinators.

- West Lothian land is, on average, considered to be emitting carbon each year. This is mainly due to presumed emissions associated with agriculture and degraded bog habitats, which cover large areas across the county. These are currently not offset by the presence of other semi-natural habitats in good condition, which is a sound reason to improve the condition of all habitats across the area.

- The total land owned by WLC, in comparison, sequesters (takes in) carbon each year; this is primarily because there is more woodland on WLC ground and relatively little farmland and peatbog.

- Demand for air purification, noise regulation, local climate regulation and accessible nature is greatest in urban areas close to major roads (e.g. Livingston and Whitburn), as these contain large populations with potentially poor health, that would benefit from pollution reduction and noise abatement. These are good reasons to specially improve the quantity and quality of habitats in urban areas.

More data on the condition of habitats is required, not only to determine the current quality of the habitats themselves and their capacity to support specialised flora and fauna, but also to determine their resilience to climate change and to calculate more accurate natural capital amounts.

SPECIES

Records of species in the area can be found through **The Wildlife Information Centre** (TWIC) and online at **NBN Atlas Scotland** (online national toolkit). Members of the public are encouraged to submit their observations to the national database through the iRecord and iNaturalist apps. Local environment groups are also encouraged to share their findings with TWIC, who share key records with West Lothian Council.

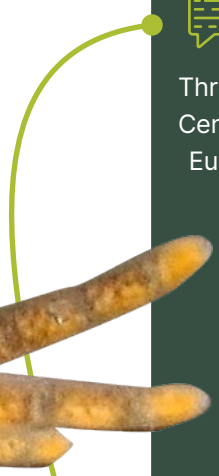
Planning applicants are requested to submit their findings to TWIC and contribute to NBN Atlas Scotland, if they have carried out Ecology surveys to support their application. This is considered best practice by CIEEM (Chartered Institute of Ecology and Environmental Management), as it helps us all to collectively catalogue and track species presence and abundance throughout the area.

The Scottish Government is legally required to produce an up-to-date list of national priority species and habitats, in the Scottish Biodiversity List. The national priority species from the most recent 2020 List, which we know are found in West Lothian, are listed in Appendix 4, together with locally important species that are known indicators of good habitat health.

Legal protection for species is a crucial element in conserving biodiversity and promoting nature recovery. All Scotland's protected species can be viewed on the **NatureScot website**. The WLC Ecology and Biodiversity Team team provides training on protected species for services within the council and ensures that protected species are taken into consideration by planning applicants.

WHAT DOES THIS TELL US?

WEST LOTHIAN IS HOME TO A WIDE ARRAY OF SPECIES, INCLUDING PROTECTED, PRIORITY AND NOTABLE SPECIES. THESE RANGE FROM THE 7 SPECIES OF BAT FOUND HERE TO RAPTORS SUCH AS KESTREL AND BARN OWL, TO GREAT CRESTED NEWTS AND TINY PLANTS, SUCH AS THE RARE MARSH SAXIFRAGE, MOSSES AND LICHENS AND TINY ANIMALS SUCH AS BEES AND MOTHS.



Through records from The Wildlife Information Centre (TWIC), we can gauge where we have European Protected Species and also other Notable species. NBN Atlas Scotland (online tool for viewing species records) also shows us where people have recorded species through various groups and/or via TWIC and apps such as iRecord.

However, this information isn't an up-to-date, comprehensive catalogue of species across the area. Where we do have records, they can be very old and patchy. It's also widely acknowledged that the absence of a record does not mean a species doesn't exist there.

Many people are collecting data about their patch – from interested individuals to community groups to consultant ecologists working for planning applicants.

If everyone shares their information through the national database (as intended via the Better Biodiversity Data Project) it will help us build up a better picture of the species within West Lothian – i.e. what we have and where it is. This will also help us to assess the effects of our actions for biodiversity and plan for the future.

This is particularly pertinent for legally protected and vulnerable species.

SUCCESSES SINCE THE LAST BAP

- **Green Battle Linlithgow** has promoted the use of the iNaturalist app, which allows people enjoying the area to identify and record plants, trees and animals. The group's engagement work has been recognised nationally by GroundsWell – a consortium of UK Universities - and they were asked to showcase their work at the 2024 conference.
- **Buglife** have run workshops in WLC meadows, training people on pollinator identification and how to carry out Flower Insect Timed counts; with information submitted to the Pollinator Monitoring Scheme (PoMS) through their FIT Count app.
- **Guardians of our Rivers** – an initiative by Buglife that trains groups to participate in the Riverfly initiative.

  Several few groups in West Lothian have been trained and continue to monitor biological indicators of water quality, and submit their results to the Riverfly Partnership's national database
- **Individual volunteers are contributing information on species in West Lothian** – through records sumitted to TWIC, BSBI, BTO, Butterfly Conservation and many national initiatives such as the Big Garden Birdwatch, RSPB Swift Mapper and Bumblebee Conservation Trust bee transects

PROTECTED SITES

West Lothian's protected sites represent the most biodiverse areas in the region. They also play a crucial role in mitigating and adapting to climate change, and offering the highest value natural capital, as they are the least degraded and therefore offer the most resilience and vital ecosystem services. When habitats are in good ecological condition, they are better able to withstand environmental pressures.

Protected biodiversity sites contribute to essential ecosystem services such as clean air and water, carbon storage, and soil fertility, benefitting both nature and people; they preserve genetic diversity, which is critical for species adaptation and resilience in the face of environmental changes including climate change; they act as key nodes for ecological networks, from which species can move and exchange genes; they enhance ecosystem resilience, helping species and ecosystems recover from disturbances, such as natural disasters or human impacts; they provide sanctuary for endangered and threatened species; they offer invaluable opportunities for scientific research, monitoring, and environmental education; they also provide cultural, recreational, and economic benefits to surrounding communities, acting as hotspots for eco-tourism and recreational activities.

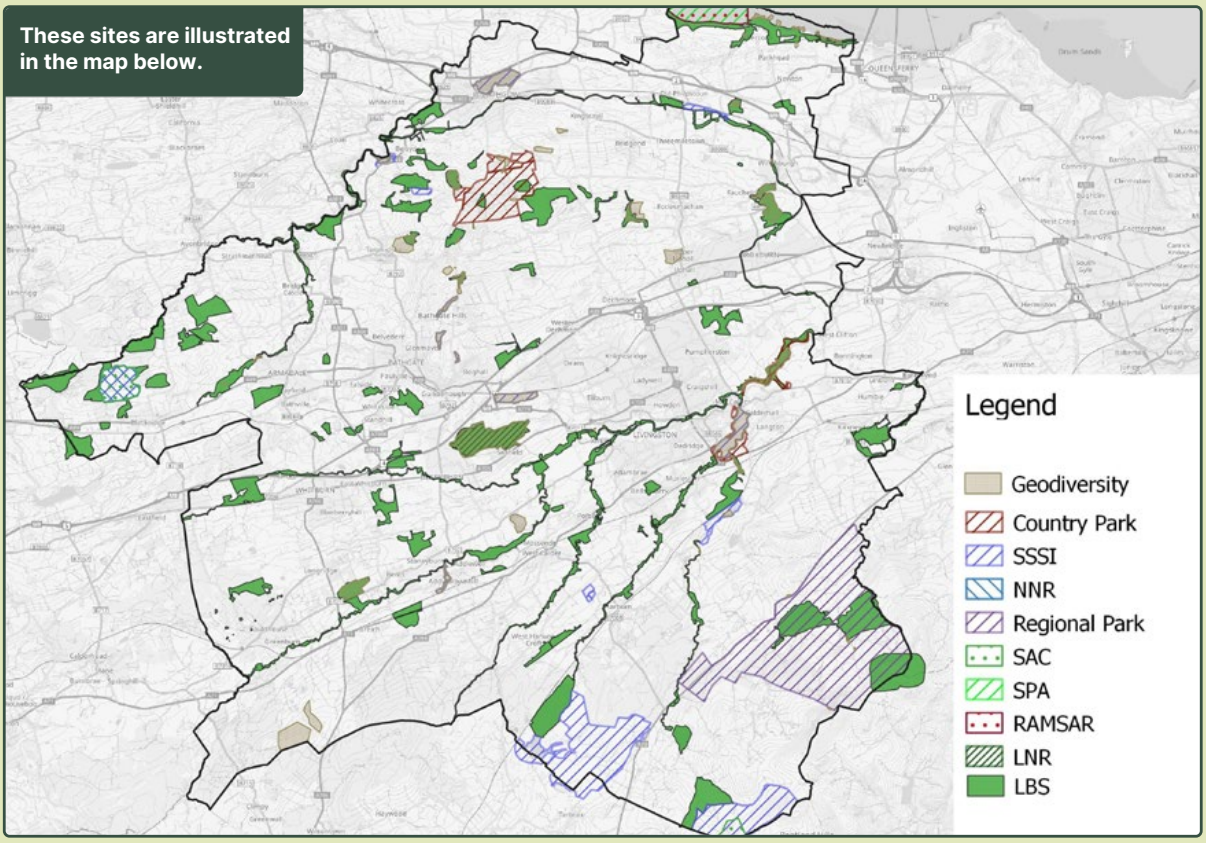
In West Lothian we have:

- **Statutory (legally) protected sites:** including 16 Sites of Special Scientific Interest, 1 National Nature Reserve and 2 Special Areas of Conservation, 1 Special Protection Area and 1 Ramsar (European designated sites); there is also one Local Nature Reserve and a small part of the Pentland Hills Regional Park lies within the West Lothian boundary.

- **Non-statutory Local Nature Conservation Sites**, safeguarded to some extent through the Local Development Plan. These are called Local Biodiversity Sites and Local Geodiversity Sites, of which there are approx. 172.

Further information can be found on the **council's website**.

These sites are illustrated in the map below.



INVASIVE NON-NATIVE SPECIES AND POLLUTION

IN 2021 THERE WERE APPROXIMATELY 2,000 NON-NATIVE SPECIES KNOWN TO LIVE IN THE WILD IN GREAT BRITAIN. OF THESE SPECIES, 10% TO 15% ARE CONSIDERED 'INVASIVE' AND DETRIMENTAL TO OUR NATIVE FLORA AND FAUNA [1]

Invasive Non-Native Species (INNS) as a group are one of the main causes of biodiversity loss, as they compete with native species and may also spread diseases that weaken native populations that have evolved within native habitats e.g. Squirrel pox is carried by non-native grey squirrels and is fatal to native red squirrels.

The major INNS species we know to be present in West Lothian include: Mink and Signal crayfish found in rivers and burns, Himalayan balsam, Japanese knotweed and Giant hogweed found mainly on riverbanks, Rhododendron ponticum in woodland, Grey squirrel in woodland and urban areas and New Zealand pigmyweed in ponds. We also have a known case of Pond Apple Snail, which is an imported non-native species, in a Beecraigs pond.

The council currently deals with INNS when they are **reported**. At the time of writing, the council is also working with Forth Rivers Trust (FRT) to map, monitor and control INNS along water courses; FRT is training volunteer groups who use West Lothian's water courses to help control INNS.

We also know from stakeholder feedback that many other landowners and community groups already carry out valuable conservation work, including removing INNS along many stretches of water and within woodlands.

The location and abundance of INNS is constantly changing, therefore it is important to continue monitoring in the long-term. Projects have shown that concerted efforts can eradicate INNS (e.g. mink in Norfolk and Suffolk) and therefore in order to address INNS issues in West Lothian we will need to continue collaborative efforts of mapping and control.

West Lothian's rivers, lochs, and ponds are highly vulnerable to pollution from sources such as sewer overflows and agricultural or urban runoff. Contamination from mine water is also a particular issue, due to the many historic mines and quarries across the area.

Activities affecting the water environment must comply with Controlled Activity Regulations (CAR) and may require authorisation from the regulator: Scottish Environment Protection Agency (SEPA). SEPA is also the lead agency for **River Basin Management Planning** (RBMP) and works to: Deliver river basin and flood risk management plans; Monitor water quality, quantity, and bathing waters to meet EC standards; and Protect and restore aquatic ecosystems, ensuring species like Atlantic salmon thrive.

West Lothian Council supports SEPA through pollution enforcement measures and watercourse inspections under the Flood Act 2009. Pollution incidents can be reported by anyone via **SEPA's website**.

[1] The Great Britain Invasive Non-Native Species Strategy (2023 to 2030)

Flooding is also a particular issue in certain key areas of West Lothian. Increased run-off and extreme flood events are destined to become more frequent with climate change. Floodwaters can spread pollutants from urban, industrial, and agricultural sources, degrading water quality. Nature-based solutions such as Sustainable Drainage Systems (SuDS), riparian buffer zones, and wetland restoration help filter contaminants, slow floodwaters, and enhance habitats. These approaches can be integrated to balance flood risk and surface water management with ecosystem protection, ensuring resilient, thriving water environments.

The River Almond Action Group is a campaigning and community action group, consisting of local community groups and residents, from various locations along the River Almond. The aim of the group is to highlight the issue of water quality in the River Almond and to actively campaign to improve it.

Linlithgow Loch group is made up of representatives from various organisations that meet to monitor and improve the loch's water quality. Their aims are: to identify and monitor pressures on the loch; set goals to improve water quality; monitor the loch for cyanobacteria blooms; notify users of the loch's water quality.

WHAT DOES THIS TELL US?

Although the prevalence of INNS in West Lothian does not appear to be high, this may be due to a lack of information. Therefore, locating and mapping INNS is paramount. The INNS we know about also need to be controlled, which takes sustained effort. The appearance of the Pond Apple Snail and New Zealand Pigmyweed in public ponds also highlight the need for increased awareness of biosecurity measures, and for everyone to follow to best biosecurity practice such as checking footwear for mud/plant matter and rinsing footwear, after visits to wetland or woodland areas in particular.

SEPA is the lead agency with regards to improving water quality and regulating pollution, river basin management planning, reducing flood risk and improving flood resilience. The council supports this work and helps to deliver plans at a local level. Nature-based solutions can be used to enhance biodiversity whilst addressing flood and pollution issues.

Community groups play a leading role in campaigning for the reduction of pollution and the improvement of water quality in the area's rivers and lochs. And active collaboration helps us to combat pollution issues.

SUCCESSES SINCE THE LAST BAP

- Working with Forth Rivers Trust, WLC Nature Restoration Funding was used from 2023-25 to **identify and control INNS** in the River Almond catchment, together with training up volunteers from community groups to control Giant hogweed and Japanese knotweed in their areas. Signal crayfish have also been surveyed, mapped and controlled as far as possible in the Harburn Water area.
- The establishment of **collaborative initiatives** to improve the water environment, such as Bathgate Meadows Nature Park river restoration project and the River Almond Water Quality Improvement Group.

PEOPLE (BEHAVIOURS/ATTITUDES/PARTICIPATION)

There are many people actively engaged in nature conservation throughout West Lothian. The council's Ranger Service leads educational events and supports many volunteer groups, with over 1200 people participating in volunteering activities and events in 2023-24. The West Lothian Litter Pickers have over 3600 Facebook members, and other groups such as Easter Breich Community Woodland, Linlithgow Angling Club, Skolie Burn SCIO, Friends of Little Boghead, Friends of Almondell & Calderwood and the many community garden groups, as well as others, are actively improving their local environments for people and for wildlife.

In the summer of 2021, the council carried out an extensive consultation and engagement exercise, through the Community Choices participatory budgeting process, to find out local residents' attitudes to the council's grounds maintenance service and to help prioritise future changes to the service. A Citizen's Panel survey on climate change in the summer of 2024 also asked specific questions about nature/ nature-based solutions.

IN SUMMARY:

IN TOTAL, THE COUNCIL RECEIVED 1,208 RESPONSES AND 849 COMMENTS ON THE GROUNDS MAINTENANCE CONSULTATION

The majority of comments were in favour of a more flexible approach to grass cutting; collecting and removing grass in some high amenity areas whilst leaving grass uncut to grow naturally in some areas of parks and open spaces to improve biodiversity.

Nearly 500 participants said they wanted to see more wildflower meadows and summer bedding areas across West Lothian to improve natural habitats and biodiversity within West Lothian.

In particular were suggestions for the council to introduce planting or wildflowers on the roadside verges on approaches to towns and villages, and on roundabouts to improve their appearance at key locations throughout West Lothian.

THE CITIZEN'S PANEL CLIMATE CHANGE QUESTIONNAIRE RECEIVED 1,002 RESPONSES

- 29% of respondents have used their garden more sustainably in the last 2 years to help reduce their climate impact, with 41% of respondents willing to use their garden more sustainably in the next 12 months; 31% said they would like to, but are not able to
- Only 5 respondents have installed a raingarden or living roof
- Only 4% of respondents are currently involved in action locally to help their communities become more resilient to the impact of climate change; 29% said they are not currently involved, but would like to be
- 43% of respondents strongly agree that the council should lead by example in reducing the impact of climate change in West Lothian

- Out of 6 given priorities that the council could focus on to reduce the impact of climate change, "do more to restore nature and the bogs, woods, rivers and countryside in the area" came out as the top priority

WHAT DOES THIS TELL US?

There is significant support for the natural world in West Lothian, with many people taking practical steps to improve their environment for nature and wildlife.

There is public endorsement for the council to manage the landscape in a more nature-friendly way and for the council to lead by example in reducing the impact of climate change in West Lothian. To this end, restoring nature in general is the top priority.

SUCCESSES SINCE THE LAST BAP

- Many **community gardens** have been set up in the last 10 years, which include habitats and features for supporting biodiversity. These gardens are spread across the area, including Polbeth/West Calder, Whitburn, Craigshill, Bathgate (Whitehill), Winchburgh and Murieston
- **Skolie Burn SSSI** has undergone significant restoration through ongoing management by the Skolie Burn Community Meadow and Woodland SCIO
- The **WLC Ranger Service** continues to engage volunteers in practical conservation work throughout the area, including control of invasive species, tree planting and habitat management at Almondell & Calderwood Country Park, Beecraigs Country Park, Blackridge, Little Boghead and Easter Inch Moss; meadow management for the Greater Butterfly Orchid at Beecraigs; as well as an annual programme of educational activities
- **Linlithgow Angling Club** carried out Trout in the Classroom projects with Forth Rivers Trust. They also carry out regular litter-picks, burn clearance, water quality tests and insect counts on specific river sites.
- The **Walled Garden** project in Howden - funded by the NHS and National Lottery Heritage Fund – is a partnership between St John's Hospital and WLC with support from Ladywell Neighbourhood Network. The project aids the recovery of patients from the hospital through practical conservation and gardening projects and also engages volunteers from the community. The project is managed and led by TCV.

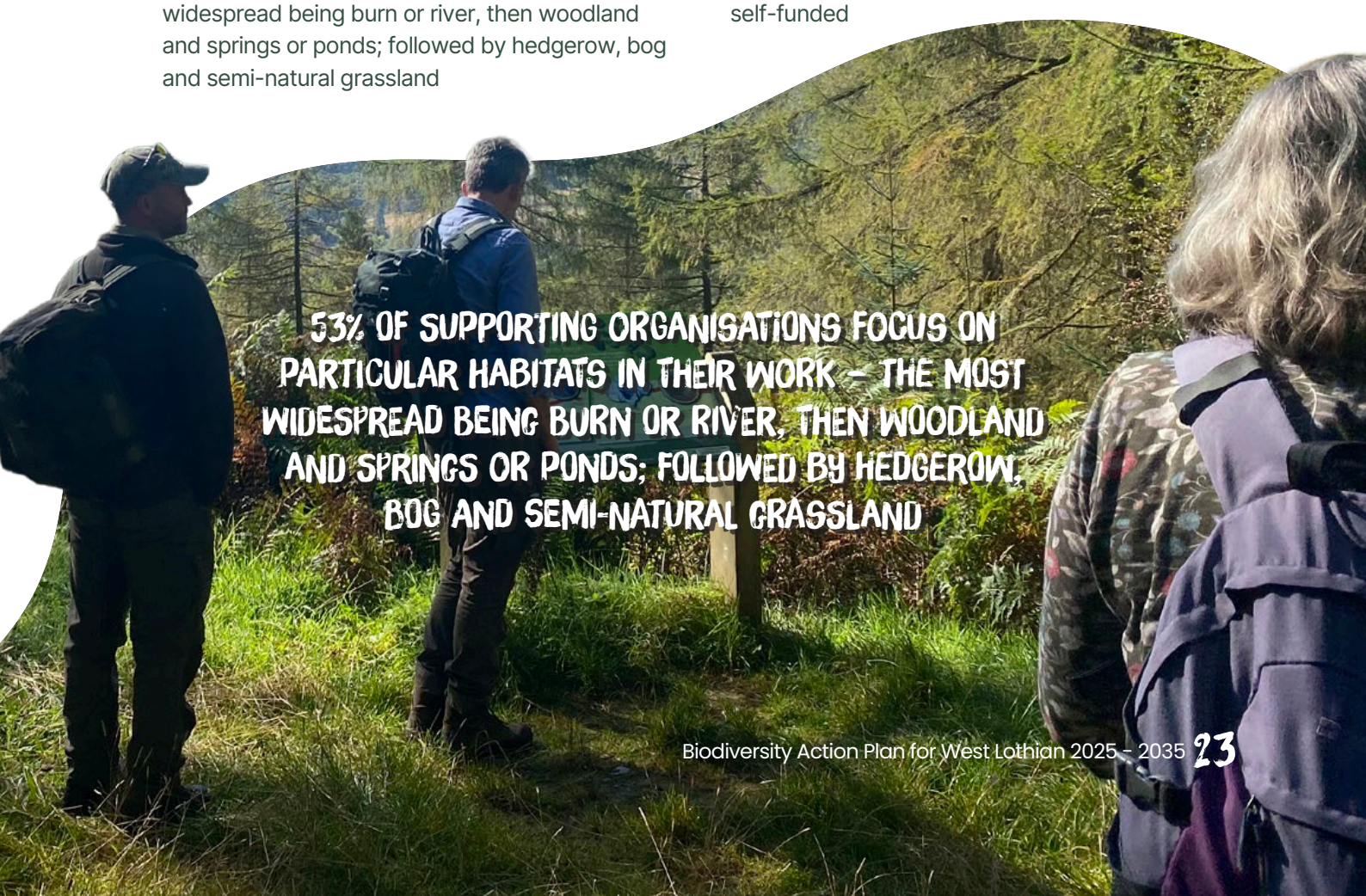
STAKEHOLDER FEEDBACK

71 stakeholders, including those managing approx. 25% of land in West Lothian (in total) together with 16 supporting organisations, have participated in questionnaires and an event to inform this action plan. For detailed stakeholder feedback, please see the reports on our **WL BAP webpage**.

WHAT DOES THE FEEDBACK TELL US?

IN SUMMARY:

- There is a broad range of people and organisations carrying out actions for biodiversity already, either as specific paid work, as voluntary work, or as part of a wider remit
- Many stakeholders are already working in partnership, but there is a will to work together on a broader scale for biodiversity across the area
- 83% of landowning participants are already actively managing land for biodiversity; the habitats being managed are mostly woodlands and species-rich meadows/grassland, with some wetland/water management and a small amount of invasive species control
- 53% of supporting organisations focus on particular habitats in their work – the most widespread being burn or river, then woodland and springs or ponds; followed by hedgerow, bog and semi-natural grassland
- Approx 57% of participants either manage or help to monitor protected sites across the area
- The most prominent challenges for everyone are: funding/ resources, balancing priorities, limits of land designations, lack of control (tenancies or pollution issues), skills / advice, education / engagement
- 53% of respondents are actively managing/ monitoring other areas for biodiversity, including waterways, bogs and bings, and also species that occur across sites including raptors and badgers
- Biodiversity work is mostly financed through grants or subsidies, also in-kind support from others, using or redirecting existing budgets/ resources, and some carry out work unfunded/ self-funded



STAKEHOLDER PRIORITIES FOR THE NEXT 10 YEARS:

% of vote	Subject	Ref
24%	Working together – networking, sharing good practice, knowledge and skills	SHP1
17%	Influencing upward – ideally grant systems will tie in with planned Nature Networks	SHP2
11%	Education and awareness-raising – both formal and informal	SHP3
9%	Connecting up habitats in networks – hedges, woodlands, water courses	SHP4
7%	Protected sites – step up protection and manage to ensure good condition	SHP5
7%	Tackle water quality issues – through pollution control, monitoring	SHP6
7%	Support for volunteering – coordination, publicity	SHP7
5%	Monitoring and benchmarking – biodiversity baselines	SHP8

SUCCESSES SINCE THE LAST BAP

- The purchase of **Easter Breich Community Woodland** by the community and also the establishment and development of Beechbrae Woodland Centre
- **FIRNS funding** for project L-AND – nature recovery consultants Ecosulis and the Pentland Land Managers Association (a group of farmers and land managers who want to improve the environment and biodiversity in the Pentland Hills) received funding in 2023 to explore the potential for habitat creation, carbon sequestration, flood management and water quality improvements across 50% of the Pentland Hills Regional Park
- **Riverlife** – an ambitious 5-year partnership project between West Lothian Council, City of Edinburgh Council and Forth Rivers Trust (FRT), involving key community groups, to make improvements to the catchments of the Almond and Avon, including extensive works to remove barriers to fish and a broad programme of practical engagement activities
- **Creation of habitats and management** to support biodiversity, including ponds, across the Hopetoun Estate together with a Long Term Forest Plan
- **Livingston South Blue-Green Network** – a partnership project between West Lothian Council, Green Action Trust (previously CSGNT), Woodland Trust Scotland and community groups, involving habitat restoration work along a key blue-green corridor through South Livingston
- **Woodland Trust Scotland** has been restructuring their woodlands, removing non-native conifers and replacing them with native broadleaves, through their 5-year woodland management cycles
- **WLC has enhanced biodiversity** through capital projects: in urban parks, trees have been planted and raingardens created through using capital funding; changes in grassland management are also enhancing biodiversity; at Almondell Country Park, WIAT funding was used to restructure woodland, plant new trees and remove invasive Rhododendron ponticum and snowberry.

Section c

MOVING FORWARD: GUIDING PRINCIPLES AND BENCHMARKING

IN ORDER TO RAISE THE BAR FOR NATURE THROUGHOUT WEST LOTHIAN, IT IS IMPORTANT TO UNDERSTAND AND APPLY THE FOLLOWING THREE GUIDING PRINCIPLES:

1 PROTECT, RESTORE AND ENHANCE

This principle refers to protecting what we have – our most significant sites and species. Where habitats are not in good condition, or significant species populations are declining, they must be restored. But we also need to go one step further by not just restoring, but also enhancing what we have.

Habitats / Natural Capital in Protected sites

Areas with existing high biodiversity must be protected, while degraded habitats within protected sites must be restored. All protected sites must also be enhanced - by improving the condition of sites, expanding the size of some protected areas and creating new ones. It is vital that all protected areas are managed to ensure resilient and optimal ecosystem functions. Protection will be facilitated through statutory site designations and the Local Development Plan, which upholds non-statutory Local Biodiversity Sites. Priority habitats should be enhanced and expanded, even where not in protected sites. Ongoing management of nature-rich and geodiverse areas will be required to sustain them in a 'favourable' condition.

Soils

Soils within protected areas should be the most healthy. For degraded habitats, as their condition is improved so should their soils. In areas of intense farming, forestry, development and urban settlements, soil sustainability practices must be employed to ensure that soil is not further degraded and eroded, instead being restored and enhanced as far as possible; this includes reduced compaction, reduced sediment run-off and nutrient leaching, improved soil structure, increased soil organic matter and healthy soil organisms.

Species

Understanding which species are present and monitoring their populations over time is essential for protecting, restoring and enhancing biodiversity. Accurate data on species diversity and population health allows for better conservation planning. Regular observation, monitoring, and research must be conducted, with findings recorded and shared with The Wildlife Information Centre (TWIC) or through iRecord/ iNaturalist, ultimately contributing to NBN Atlas Scotland – this coordinated data-sharing will enable us all to manage habitats that benefit key species and allow their movement across the region.

Pollution / INNS / Biosecurity

Pollution, invasive non-native species (INNS) and diseases are significant drivers of biodiversity loss. They can spread through water, air and soil, making effective management a collaborative effort. Partnerships will be essential to tackle these issues, ensuring prevention, control, and restoration strategies are implemented at scale. Higher biosecurity awareness with the general public is also paramount to avoid the further spread of INNS and diseases.

2 CONNECT AND ALLOW FLOW

This principle refers to softening the transition zones between habitats, connecting up significant sites/habitats and facilitating the movement of species across the landscape.

Nature Networks and connectivity

Many species depend on multiple habitat types to complete their life cycles. For example, newts breed in ponds but spend the rest of their time on land, within grass, scrub, or woodland. Therefore, interconnected mosaics of habitats—whether within a single site or across a broader landscape—are essential for supporting diverse wildlife.

The creation of gradual boundaries, or ecotones, between habitats is particularly important. Unlike harsh edges, ecotones increase habitat functionality, support specialist species, and reduce the effects of habitat fragmentation. Fragmentation, which occurs when habitats are divided or reduced, can erode ecosystems over time. It can, however, be reversed through careful ecological planning and by reconnecting habitats where possible.

As defined by NatureScot "A Nature Network connects together nature-rich sites, including restoration areas and other environmental projects, through a series of areas of suitable habitat, habitat corridors, and stepping-stones."

Buffers zones around these core sites cushions the core network from surrounding pressures. These networks offer functional connectivity and habitat creation opportunities. The overarching aim is to create a landscape abundant in wildlife and resilient to environmental change.

Mapping and implementing Nature Networks on the ground is a requirement of National Planning Framework 4 and also the Scottish Biodiversity Strategy. This is currently a work in progress in West Lothian and forms one of the actions in this plan.

If priority habitats fall out with the primary strategic Nature Network, they are still a priority for conservation, management and enhancement. We will also aim to map secondary and tertiary networks within the primary network, to ensure a 'nested' network that allows species movement at a variety of scales.

3 REPAIR HUMAN CONNECTIONS WITH NATURE

The disconnection between people and nature is a significant driver of biodiversity loss. Therefore, repairing these connections is a key principle for restoring nature.

Community engagement

Addressing this issue requires collaboration among stakeholders, including landowners, community groups, schools, environmental organisations and local businesses. Public engagement campaigns, educational activities, and opportunities for involvement are critical to fostering a shared understanding of nature's value.

As public knowledge increases, so does the capacity for action. Community members can contribute by sharing skills, monitoring biodiversity through citizen science, and participating in practical conservation efforts.

Existing engagement work by landowners/managers, environmental organisations and community groups should be celebrated and further supported to build on this success.

BENCHMARKING AND RULES OF THUMB

What is a biodiverse habitat? What are we aiming for? Measuring 'biodiversity' is extremely complicated, as all life is interconnected and there's still so much we don't know. There are many ways to measure aspects of biodiversity

and habitat health, including 'condition' assessments, indicator species and their trends, the presence/abundance of INNS, the presence of species that are sensitive to pollution, etc. These approaches often need to be applied together to determine an overall picture of health, so we have created the guides over pages 28 and 29, as a rule of thumb for all partners in our steps to raise the bar and to create healthy, ecologically diverse and resilient habitats across the area.

The information below can be used to roughly gauge the biodiversity/health of habitats. If they come out as 'poor' then it can be seen what needs to change in order for a habitat to be assessed as 'moderate' or 'good' and management can be adapted accordingly.

General rules of thumb*

MOSAICS

On a larger site, the presence of several habitats within the site can improve biodiversity more than just the quality of one habitat alone – encourage a range of habitats to support the various life stages of animals and ensure gradual transitions between habitats (Sharp transition- mown lawn to tree belt. Gradual transition – mown lawn to long grass to shrubs to tree belt); if a site is small, consider how the site contributes to the mosaic of habitats in the wider area

CONNECTIVITY

How well each habitat links up with similar habitats nearby is key to restoring nature and improving resilience; don't create new, isolated habitats; make sure that habitat creation on site addresses gaps in the wider landscape by either physically linking up habitats adjacent to and across the site or by providing 'stepping stone' links with similar habitats nearby

GRASSLAND

Poor = less than 6 species on average per m2, more than 5% bare ground, damage due to trampling (humans or animals) or machinery is more than 5%, uniform vegetation height, lots of bracken, few good indicator species, INNS present; Moderate = at least 6-8 plant species per m2, small amount bare ground, small amount physical damage, varied vegetation height (above and below 7cm), high proportion of good indicator species; Good = 10 species or more per m2, less than 5% bare ground, less than 5% damage, varied vegetation height, high proportion of indicator species, no INNS. Species-rich grassland = 25 or more species per m2 (not including Creeping thistle, Spear thistle, Docks, Nettle, Creeping buttercup, Greater plantain, White clover, Cow parsley)

HEDGEROW

Poor = 3 or less native hedgerow plant species, no climbers or ground flora, big gaps in hedges, INNS may be present along hedgerow; Moderate = 4-7 species of woody plants, climbers and ground flora, fewer gaps and INNS; Good = more than 1.5m high and 1.5m wide on average along its length, at least 4 woody native species, 8-15 or more species inc climbers and ground flora, undisturbed ground and vegetation along at least one side of hedge, good mix of flowering / fruit- bearing plants, berry-producing plants allowed to ripen, very small amount of INNS present if any, gaps less than 10% of whole hedge length, all gaps less than 5m.

WOODLAND

Poor = all trees same age, evidence of tree damage by animals, substantial cover of INNS (Rhododendron ponticum, Cherry laurel or other), few ground plants, 2 or less species of native tree or shrub, hard edges, no open glades and very dark OR openings really big and lacking trees, much damaged ground, no veteran trees (old and gnarly); Moderate = some INNS, trees of different ages, understorey present (shrubs), at least 3-4 native species of tree or shrub over 75% of the woodland, some recognisable ground flora, some glades/openings, presence of dead wood, some shrubs at woodland edges, presence of some natural regeneration, some damaged ground; Good = no INNS, 5 or more native tree or shrub species over 80% of woodland, good age range of trees – from large and mature to small saplings, good cover of ground flora with ancient woodland specialists present, moderate glades/ openings, presence of dead wood, gradual transitions to adjacent habitats on edges of woodland, no damaged ground evident

COASTAL

Poor = little variation in vegetation structure, excessive erosion/trampling/grazing, visual evidence of pollution, litter, few quality habitat indicator species, hard and fixed sea defences, INNS present; Moderate = mixed sea defences (allowing for some change), moderate grazing/ human use, little pollution / litter, presence of several habitat indicator species, vegetation varied with evidence of some succession, INNS controlled, moderate water quality / quantity; Good = characteristic habitat indicator species present, different successional stages / transitions / mosaics of vegetation, varied vegetation structure, naturally open / bare ground, no INNS present, no visual evidence of pollution, very little litter, light grazing/erosion/trampling. Breeding waders present.

PONDS / LOCHS / RESERVOIRS

How well each habitat links up with similar habitats nearby is key to restoring nature and improving resilience; don't create new, isolated habitats; make sure that habitat creation on site addresses gaps in the wider landscape by either physically linking up habitats adjacent to and across the site or by providing 'stepping stone' links with similar habitats nearby

RIVERS/STREAMS

Poor = banks lacking vegetation, much erosion, sheer banks, presence of invasive species, no shade, no vegetation buffer on either side, predominantly leeches and aquatic worms found in water, no native fish present; Moderate = some bank vegetation, sloping banks, few invertebrates present, no invasive species , approx. 5m vegetation buffer on either side, presence of mayflies, stoneflies and caddisflies, dragon/damselfly nymphs, alderfly larvae, beetles, crustaceans and molluscs; some native fish present (e.g. trout / salmon); Good = bank vegetation has mix of herbaceous plants and trees, no invasive species present, vegetation buffer of at least 10m on either side of water course, presence of dead wood / large stones, presence of mayfly and stonefly nymphs and caddisfly larvae; sustainable levels of trout / salmon and other natives such as eels.

WETLANDS

Poor = rather dry, much exposed soil, drainage, visible soil erosion, INNS present, water shows signs of pollution, large coverage of scrub/trees; Moderate = some exposed soil, wet/moist for much of year, water may show signs of pollution, moderate coverage of scrub/trees; Good = wet all year, water clear – no obvious pollution, minimal exposed soil (less than 5%), minimal cover of scrub/trees (less than 10%)

HEATHLAND

Poor = more than 1/3 heather shoots recently grazed, lots scattered trees / scrub, heather of uniform age, lots bare ground, disturbance, lots bracken, presence of INNS, damage such as drains/ peat extraction/ leachate/ nutrients, large amount of gorse and broom; Moderate = heather of varying ages, little bare ground, some scattered trees / scrub, actively improving from damaging activity, some gorse; Good = no INNS, bare ground less than 10%, good range of heather age classes, at least 2 dwarf shrub species present, less than 1/3 heather shoots recently grazed, small amount scattered trees/scrub, bracken cover less than 5%, small amount gorse, no signs of damaging activities.

*In the absence of a Scottish metric, these simple rules of thumb broadly align with the DEFRA biodiversity metric 4 habitat 'condition assessment' tool

Section d

FUTURE: WHERE WE AIM TO BE

IN ORDER TO RAISE THE BAR FOR NATURE THROUGHOUT WEST LOTHIAN, IT IS IMPORTANT TO UNDERSTAND AND APPLY THE FOLLOWING THREE GUIDING PRINCIPLES:

BAP MISSION:

To reverse biodiversity loss and to effectively restore and protect biodiversity throughout West Lothian into the foreseeable future.

A LONG-TERM VISION FOR 2045

Despite increased human population growth, West Lothian remains a principally green area with little habitat fragmentation; planned developments exist within a network of functionally connected and diverse thriving habitats, which contain enough resources to support wildlife and with space for nature to expand, move and adapt as necessary; healthy mosaics of habitat exist right across the area, with protected characteristics and niches, and functional connections ensuring a resilient diversity, at all scales from genetic to ecosystem. People value their local environment, appreciate the dependency of humans on natural systems and respect wildlife. Everyone has the knowledge, skills and means to incorporate biodiversity into their decision-making at home, work and school, and to protect and enhance biodiversity through their actions.

WHERE WE WANT TO BE BY 2035

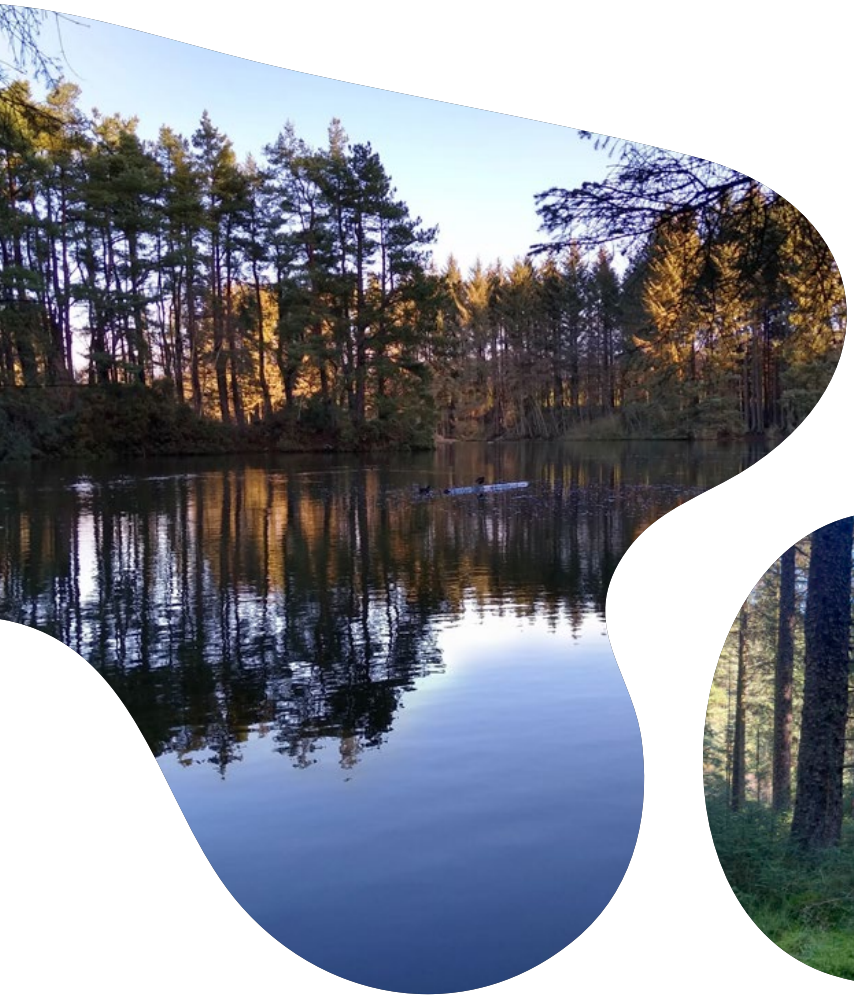
Taking the stakeholder priorities for the next 5 years and using the guiding principles on page 31, the following cross- cutting goals have been identified.

CROSS-CUTTING GOALS	Ref
Progressing the LBAP	
Increased opportunities for stakeholders to come together to share information, learn from each other, collaborate and share resources, in order to progress the Action Plan	CCG1
Protected sites	
By 2030, 30% of land in West Lothian is protected or recognised OECM, resulting in increased conservation areas and improved environmental sustainability (14% increase) [SBS, SHP5]	CCG2
All protected areas achieve 'favourable' status by 2035 [related to SBS]	CCG3
Soils	
Conserve soils, minimise the risk of compaction and include remedial measures for contamination on development sites	CCG4
Minimise loss of organic carbon, erosion, compaction, and poaching through implementation of sustainable land use practices [related to SBS]	CCG5
Habitats and Species	
More comprehensive and accurate species data is recorded and shared, enabling better conservation decisions; through increased submission of species records to TWIC or iRecord / iNaturalist, by landowners/ managers, developers, ecologists, local groups and individuals [related to SBS Better Biodiversity Data, SHP8]	CCG6
Increased stakeholder collaboration on habitats/species to exchange knowledge and best practice, which results in resilient ecosystems [SHP8]	CCG7
Improved long-term monitoring and research on habitats, species and their dynamics supports more effective nature restoration and management [SHP1, SHP8]	CCG8
Pollution	
Point source and diffuse pollution are minimised through collaborative efforts, leading to cleaner and healthier ecosystems [SBS related, SHP6]	CCG9
INNS / biosecurity	
INNS are effectively mapped, monitored, removed and managed, resulting in the restoration of native ecosystems [SBS related]	
Improved biosecurity measures prevent the spread of INNS and diseases (through woodland and water in particular) with widespread community participation [SHP3]	CCG11
Nature Networks	
Nature-rich sites, functional connections between and suitable buffers are effectively mapped and safeguarded [SBS]	
Ecologically functional Nature Networks are created and enhanced across West Lothian resulting in more resilient and interconnected ecosystems [SBS, SHP4]	CCG13
Education and Community Engagement	
Increased coordinated awareness-raising and educational activities in order to connect people with nature and to highlight important messages [SHP3]	CCG14
Increased citizen science participation enhances biodiversity monitoring and understanding [SBS]	CCG15
Increased volunteering opportunities to take practical action lead to improved health, well-being, sense of community and connections with nature [SBS, SHP7]	CCG16
Influencing upward	
The Biodiversity Action Plan and Nature Network mapping help to inform national policy, aligning local actions with national strategies and funding [SHP2]	CCG17

SBS = Scottish Biodiversity Strategy action
SHP = Stakeholder Priority

In the following section, we have grouped West Lothian habitats under different ecosystems - as they all share certain characteristics, they will often be linked/adjacent and transitions between them may often be blurred. An explanation of the sub-headings used under each ecosystem is as follows:

- **Ecosystem name** = name of overall ecosystem
- **Percentage cover** = the proportion of West Lothian that is currently collectively covered by these habitats
- **Habitats included** = all the habitats that are grouped in this ecosystem
- **Linked habitats** = habitats from a different ecosystem type that are often adjacent to / merge with these habitats
- **Associated priority habitats** = habitats within this ecosystem type that are found in West Lothian and listed on the Scottish Biodiversity List (2020 ed) that are labelled 'conservation action needed' or 'avoid negative impacts'
- **Key priority species** = key species from the list in Appendix 4 known to be present in West Lothian on the Scottish Biodiversity List, that are labelled 'conservation action needed'
- **Associated INNS** = Invasive Non-Native Species primarily associated with these habitats
- **Challenges / threats** = activities /situations that present a challenge or threaten efforts to improve biodiversity
- **Outcomes** = the intended results of our actions in the next 10 years – what we want to have changed by 2035 (or before, if stated)



AQUATIC ECOSYSTEM

PERCENTAGE COVER OF WEST LOTHIAN (OPEN WATER, FEN, SWAMP, COASTLAND): 2% (APPROX 900HA)

- **Habitats included:** Fen, Marsh, Swamp, Reedbeds, Rivers and streams, Riparian corridors, Ditches, Canals, Standing open water (ponds, reservoirs), Coastal habitats and Intertidal zones
- **Linked habitats:** Intertidal habitats: mud flats and saline lagoons; Transition zones between fast-flowing and sluggish rivers/stream, and sluggish river/stream and Eutrophic lake; acid and neutral grasslands, rush pasture; riparian woodland, wet woodland
- **Associated priority habitats:** Coastal saltmarsh, Eutrophic standing waters, Lowland fens, Ponds, Rivers
- **Key priority species:** Water vole, Slavonian grebe, Sandwich tern, Scaup, Curlew, Common scoter, Grasshopper warbler, Atlantic salmon, Brown/ Sea trout, Slender mud snail, Marsh saxifrage; also Great Crested Newt
- **Associated INNS:** American mink, Signal crayfish, Giant hogweed, Himalayan balsam, Japanese knotweed, New Zealand pigmyweed, Floating pennywort, Terrapins, Pond apple snail

Aquatic ecosystems are characterised by water. This can be permanently water-logged areas or seasonally wet areas. Typically, these areas are dominated by sedges and rushes.

The overall aims are to recognise the importance of aquatic habitats for invertebrates, fish, amphibians, birds and mammals; and to recognise and optimise the role of aquatic environments in flood prevention/mitigation; to avoid erosion and protect against diffuse pollution of water courses by ensuring suitable buffers of marginal and bankside vegetation; to provide shade water cooling effects through riparian tree planting; to improve monitoring of water quality and the health of aquatic habitats; to improve water quality through improving land management practices and removing barriers to species movement e.g. weirs; to enhance the resilience of the water environment to climate change e.g. optimising river morphology where possible; to reduce the spread of INNS by improving biosecurity measures; to improve connections for species by creating more pond and wetland networks.

- **Challenges / threats:** Pollution from point sources (industry, human waste, etc) and diffuse sources (run-off from agricultural fields, roads, etc); barriers to species movement through previous manmade changes e.g. river morphology, weirs, culverts, etc

OUTCOMES	Ref
Increased number of sites used to monitor biological indicators of key water courses by 2035	AE1
Increased native riparian woodland by at least 5km in total across West Lothian, with buffers of at least 10m wide on banks [SBS related action, SEPA and Scottish Forestry]	AE2
Decreased barriers to fish movement, through targeted barrier removal	AE3
More people are aware of the benefits of West Lothian's wetland network and the importance of INNS control and biosecurity in water ecosystems [SBS action]	AE4
Increased volume of wetland habitat types by 5ha, within appropriate places - increasing the number of seasonal ponds and seasonal wetlands for amphibians and wading birds in particular	AE5
Improved habitats increase the opportunities for the expansion and support of populations of priority aquatic species (as above)	AE6
Increased natural flood management measures in urban and rural areas [SBS related]	AE7

PERCENTAGE COVER OF WEST LOTHIAN (SWAMP, BOG, FEN, HEATH, HEATH/GRASSLAND MOSAIC, DWARF SHRUB HEATH): 9.8% (APPROX 4,200HA)

BOG AND HEATH

- **Habitats included:** Heathland, Peatland, Bog, Heather moorland
- **Linked habitats:** transitions between upland wet heath, upland dry heath and blanket bog; transitions between lowland wet heath and valley mire
- **Associated priority habitats:** Lowland raised bog, Blanket bog, Upland heathland, Lowland heathland
- **Key priority species:** Curlew, Red grouse, Mountain bumblebee, Large heath, Marsh saxifrage, Cladonia uncialis lichen
- **Associated INNS:** New Zealand pigmyweed, Rhododendron ponticum

Heaths are areas of short scrub - they can be dry or wet. Mire is a term used for any ecosystem that accumulates peat – coming from the Scandinavian myr.

The vegetation present, and local conditions, can form wetlands, peatlands, fens and marshes. In these areas the water table is at or above ground level for at least half the year.

The overall aims are to recognise the importance of bog and heath habitats for invertebrates, amphibians, reptiles, birds and mammals; and to fully recognise and optimise the role of bog and heath in flood prevention/ mitigation and carbon storage.

- **Challenges / threats: Drought** – increased frequency and prolonged periods; Fire – natural (through drought), accidental (litter), deliberate (fire-setting); fragmentation; erosion; pollution through water run-off (e.g. fertiliser, pesticides, herbicides); overgrazing / trampling; peat extraction; drainage; afforestation; development

OUTCOMES	Ref
Improved ecological condition of bog and heath habitats across the area, which are contributing to the positive conservation of priority species (see Appendix 4) [SBS related; WLC Climate Strategy]	BH1
Increased public awareness of importance of bog and heath habitats	BH2
Increased landowners / manager awareness of the importance of bogs, with increased support to deliver positive conservation action	BH3
Increased practical community engagement opportunities in bog habitats	BH4
Increased protection through designation of sites and management of bogs and heathland	BH5
Increased external investment in peatland restoration projects	BH6

GRASSLAND ECOSYSTEM

PERCENTAGE COVER OF WEST LOTHIAN (ALL GRASSLAND AND MARSH): 40.3% (APPROX 17,400HA)

Explanation of 'grassland' terms:

Semi-natural grassland – all grassland that has had low levels of management. Contains naturally occurring communities of species or species that behave like a natural plant community.

Unimproved grassland – quite rare; low levels of management, often via non-intensive grazing or hay/silage cuts; incredibly species-rich; no significant chemical applications, no intensive drainage; often contains good levels of plant diversity. Can be acid, neutral or calcareous, depending on soil.

Semi-improved grassland - a transition category that ranges from poor to good; modified through past management/ application of fertiliser/herbicides with a range of species less diverse and natural than unimproved grasslands. Includes urban wildflower meadows. Can show characteristics of acid, neutral or calcareous grassland if 'good'.

Improved grassland – heavily modified through application of chemical (fertilisers/herbicides), grazing and/or drainage; species diversity and composition is low or very limited; dominated by species tolerant to high nutrient levels and grazing

- **Habitats included:** From 'man-made' - i.e. amenity grass/ golf courses - through to urban wildflower meadow, semi- improved and unimproved grasslands; lowland and upland grasslands
- **Linked habitats:** scrub, woodland, dry heath, marsh, wetland, heathland, lowland fen, dwarf-shrub and montane habitats; habitat boundaries such as walls, ditches and hedgerows, ponds, rivers
- **Associated priority habitats:** Arable Field Margins; Lowland Calcareous Grassland; Lowland Dry Acid Grassland; Lowland Meadows; Purple moor grass and rush pastures
- **Key priority species:** Brown hare, Barn owl, Kestrel, Grey partridge, Curlew, Lesser butterfly orchid, Greater butterfly orchid, Salad burnet

Associated INNS: Giant hogweed, Himalayan balsam, Japanese knotweed

Overall aims are to recognise the importance of different grassland habitats for supporting a wide range of micro-organisms, invertebrates, amphibians, reptiles, birds and mammals; to recognise and optimise the role of grasslands in supporting pollinators and soil organisms in particular, slowing water run-off and storing carbon; and to ensure resilience to climate change by connecting grassland habitats. To improve the diversity of species supported by grasslands, through iterative management; to improve the condition of grasslands, inc soils, species diversity, varied sward heights; to ensure biodiverse transition zones between grassland and adjacent habitats; to allow habitat mosaics in grassland landscape – with some succession to scrub; and to protect existing semi-natural grasslands.

- **Challenges / threats:** Drought – increased frequency and prolonged periods; fire – natural (through increased drought), accidental (litter), deliberate (fire-setting); flooding – frequency, intensity and duration; habitat fragmentation; erosion; pollution (e.g. fertiliser, herbicide, insecticide); over-grazing, trampling and 'poaching'; cultural aesthetics and trends; disturbance to ground-nesting birds

OUTCOMES	Ref
Increased connections between grassland habitats that support pollinators	GL1
An additional 10ha of species-rich wildflower meadows / semi-natural grassland have been created and are being actively managed (from 2024 coverage)	GL2
Increased understanding of ecological condition of grassland across West Lothian, through education and monitoring, in order to better manage grasslands for biodiversity	GL3
Percentage ratio of amenity: relaxed grassland within WLC urban landholdings is increased to 60% : 40%	GL4
Increased species diversity of all grassland, including pasture, amenity grassland, etc, leading to habitats in better condition to support priority species	GL5

PERCENTAGE COVER OF WEST LOTHIAN (ARABLE AND IMPROVED GRASSLAND): 37.5% (APPROX 16,200HA) HIGHER IF RELEVANT WOODLANDS, HEDGEROWS, UPLAND HABITATS, ETC ARE INCLUDED

FARMLAND ECOSYSTEM

- **Habitats included:** Arable crops (including fallow), pasture, improved grassland, semi-natural grassland, ditches and streams, ponds, hedgerows, woodland, heath, moorland, lowland and upland habitats

- **Linked habitats:** Bog, Wetland, Scrub, Fen, Marsh, Swamp

- **Associated priority habitats:** Arable field margins; Lowland calcareous grassland; Lowland dry acid grassland; Lowland meadows; Lowland mixed deciduous woodland; Upland birchwoods; Upland mixed ashwoods; Upland oakwood; Wood pasture and parkland; Wet woodland; Lowland raised bog; Blanket bog; Upland heathland; Lowland heathland; Purple moor grass and rush pastures; Ponds

- **Key priority species:** Brown hare, Water vole, Barn owl, Kestrel, Swift, Grey partridge, Woodcock, Lapwing, Curlew, Tree sparrow, Corn bunting, Corncrake, Redwing, Swift, Spotted flycatcher, Lesser redpoll, Siskin, Yellow wagtail, Greater butterfly orchid, Small heath, Pearl-bordered fritillary

- **Associated INNS:** American mink, Giant hogweed, Himalayan balsam, Japanese knotweed, Rhododendron ponticum, Snowberry

Overall aims are to recognise the importance of farmland in the landscape and as a key land management system with the potential to deliver improved biodiversity and nature networks; to value the mosaic of farmland habitats and to encourage landowners to manage these habitats to maximise their potential for nature; to optimise the role of farmland in restoring soil health and the microbiome, protecting waterways from diffuse pollution, ensuring biodiverse transition zones between a mosaic of different habitats across the rural landscape, and protecting and enhancing the populations of protected and threatened species particularly associated with farmland, including red- listed farmland and migratory wading birds; to recognise opportunities for habitat creation / adaptive management and to explore the potential of providing multiple benefits through farmland management as well as food production, such as natural flood management, run-off reduction, carbon sequestration and storage, pollination services, etc.; to work with farmers and land managers to enable action

- **Challenges / threats:** Flooding – increased frequency, intensity and prolonged periods; Drought – increased frequency, intensity and duration of rainfall events; over/under-grazing, trampling and 'poaching'; funding – unknown funding situation for wider ecosystem services benefits, or conflicts between different subsidies; disturbance to ground-nesting birds; pollution; loss of habitat through change of land use; habitat fragmentation; lack of public understanding/support

OUTCOMES	Ref
Increased understanding of baseline biodiversity on farmland across West Lothian	FL1
Increased recording and data-sharing of priority farmland wildlife requiring conservation action e.g. red-listed farmland birds, Brown hare, etc [SBS related]	FL2
Increased percentage ground cover of arable field margins (priority grassland habitat), by the next habitat map in 2035	FL3
Strengthened connectivity through the farmland landscape through habitat improvements that link up Nature Networks and improve biodiversity and ecosystem services at landscape scale; particularly through hedgerow creation/ management (priority habitat), buffer strips and riparian tree planting, arable field margins (priority habitat), traditional hay meadows, herbal leys, farm ponds and agroforestry/ wood pasture (priority habitat) where appropriate	FL4
Increased opportunities for networking, sharing good practice and skill-building in nature-based education, nature restoration skills, volunteering, regenerative agriculture and agroforestry [SBS related]	FL5
Increased knowledge of the farmland ecosystem and rural land management, to build positive connections between farmers and local communities	FL6

WOODY ECOSYSTEM

PERCENTAGE COVER OF WEST LOTHIAN (INC 'RECENTLY FELLED WOODLAND'): 21% (APPROX 9,100HA)

- **Habitats included:** Forest, Broadleaved and Mixed Woodlands, Ancient Woodland, Riparian woodland, Wet Woodland (inc willow/alder carr), Wood Pasture, Hedgerows, Parkland, Scrub, Tree-lined Streets, Urban hedges, Veteran trees, Plantations

- **Linked habitats: transitional scrub** - between woodland and grassland/ heathland; transitions between wet woodland and bog, reeds, or open water; coastal habitats; arable fields and pasture; bracken swathes

- **Associated priority habitats:** Lowland mixed deciduous woodland, Upland birchwoods, Upland mixed ashwoods, Upland oakwood, Wet woodland, Wood pasture and parkland

- **Key priority species:** Red squirrel (if presence confirmed), Black grouse, Wood warbler, Willow tit, Woodcock, Tree sparrow, Spotted flycatcher, Lesser redpoll, Siskin, Greater butterfly orchid, Pearl-bordered fritillary, Intermediate wintergreen

Associated INNS: Grey squirrel, Giant hogweed, Himalayan balsam, Japanese knotweed, Rhododendron ponticum, Snowberry, Cherry laurel, Cotoneaster

Overall aims are to recognise the importance and enhance the ecological condition of woody habitats to support a wide range of micro-organisms (including fungi, lichen and mosses), invertebrates, amphibians, reptiles, birds and mammals; to recognise the irreplaceable nature of Ancient Woodland; to recognise and optimise the role of woody habitats and features in climate change mitigation and adaptation; to promote gradual transitions between habitats; to ensure resilience to climate change by expanding and connecting woody habitats; and to protect and improve the condition of ancient/semi natural woodlands in particular. Priority woodland expansion areas are identified in the outcomes table below. Sensitive areas (e.g. peatland, semi-natural grassland, etc) will be avoided, as per the 2012 Edinburgh and Lothians Forestry and Woodland Strategy and the 2023 West Lothian habitat map. Scottish Forestry maps, including priority riparian planting areas, can be viewed here.

Also see: the UK Forestry Standard, ensuring sustainable forest management; WLC's Forestry and Woodland Strategy (when complete); WLC Tree and Woodland plan. These documents will address any more technical and detailed forestry-related issues that are outwith the remit of this Biodiversity Action Plan.

- **Challenges / threats:** Fires - natural (caused by hot, dry conditions), accidental (caused by litter) or deliberate (through fire-setting); browsing pressure from deer and squirrel damage; unauthorised bike trails; illegal activities such as badger baiting, snaring, egg collecting.

OUTCOMES	Ref
Increased native woodland cover from 9% (broadleaf + mixed) to 14%, in priority areas by 2035 (Priority areas in WL: restructuring of non-native woodland, areas between woodland fragments (esp Ancient Woodland), areas around existing woodland, riparian woodland planting, wet woodland and areas identified for natural flood management run-off reduction) [SBS action; SFS actions]	WE1
Increased woodland overall in 'good' condition, through use of woodland condition assessments and sustainable management [related to SFS action]	WE2
Improved condition of Ancient Woodland sites and Ancient and Veteran Trees throughout West Lothian [SBS related]	WE3
Increased length of native hedgerows across West Lothian by 10km (from 2025 levels) by 2035	WE4
Increased condition of native hedgerows across West Lothian	WE5
Increased woodland cover in school grounds to improve habitat connectivity, learning and health and wellbeing [SBS related]	WE6
Increased understanding and involvement via raising awareness of the benefits of trees, woodlands, hedgerows, etc and providing opportunities for community engagement/ volunteering in these habitats	WE7

SFS = Scotland's Forestry Strategy

PERCENTAGE COVER OF WEST LOTHIAN: 18.5% (APPROX 8,000HA)

URBAN ECOSYSTEM

- **Habitats included:** Parks and Green spaces, School Grounds, Vacant and derelict land, Transport and active travel corridors, all man-made blue/green infrastructure and nature-based solutions (inc green roofs, SuDS, etc), Allotments and Community Gardens, private gardens, graveyards and cemeteries, woodland and shelter-belts,
- **Linked habitats:** Ancient woodland, semi-natural grassland, hedgerow, scrub, riparian habitat
- **Associated priority habitats:** Ponds, Rivers, Lowland raised bog, Lowland mixed deciduous woodland, Wet woodland, Eutrophic standing waters

Key priority species: Water vole, Kestrel, Swift, Siskin

Associated INNS: American mink, Giant hogweed, Himalayan balsam, Japanese knotweed, New Zealand pigmyweed, Floating pennywort. Urban environment is also the source of many 'garden escapes' which have become invasive, such as Rhododendron ponticum, Snowberry, Cherry laurel, Cotoneaster, etc

Overall aims are to create a mosaic of habitats within urban areas to support the life cycles of a wide range of micro- organisms, invertebrates, amphibians, reptiles, birds and mammals and to enable their movement through and around built-up areas; to recognise and optimise the role of urban habitats and blue-green infrastructure to ensure resilience to climate change and to support health and well-being; to increase rain interception and slow the flow of water into our rivers and drainage systems; to sequester carbon and provide shade and reduce the urban heat island effect; to reduce air pollution and enhance air quality; to provide healthy, local food.

- **Challenges / threats:** Increased heat in built-up areas (urban heat island effect); drought – increased frequency and prolonged periods; fire; flooding – increased intensity of rainfall events; habitat fragmentation; erosion; pollution; cultural aesthetics and trends; increased disturbance to wildlife; pets such as domestic cats and dogs off lead; unauthorised bike trails

OUTCOMES	Ref
Increased nature positive public urban greenspaces by 2030, through reductions in non-permeable surfaces and increased numbers of trees, semi-natural grassland, raingardens, etc [SBS related]	UE1
Increased awareness of how gardens can be managed to better support biodiversity and ecosystem services (e.g. managing rainwater) [SBS action]	UE2
Increased awareness, implementation and agreed maintenance of blue-green infrastructure in public open spaces for surface water management [SBS related]	UE3
Increased biodiversity via enhancements associated with existing and new transport / active travel infrastructure [SBS related]	UE4
By 2035 the urban ecosystem (existing and planned) is green, diverse and well-connected and does not present a barrier to wildlife and species movement	UE5
Increased awareness of garden plants, available to buy in the UK, that are also noted as invasive	UE6

The measures outlined in NatureScot's **Developing with Nature** guidance can aid in all the above.

GEODIVERSITY AND BINGS

PERCENTAGE COVER OF WEST LOTHIAN (BINGS AND GEODIVERSITY SITES): 2.4% (APPROX 1,000HA)

- **Habitats included:** Oil shale bings, Natural rock outcrops, Old quarries Linked habitats: Coast, scrub, grassland, ponds, marshes, woodland Associated priority habitats: Lowland calcareous grassland, Ponds

- **Key priority species:** Brown Hare, Kestrel, Lapwing, Spotted flycatcher, Grey partridge, Grayling (butterfly), Salad burnet, Greater knapweed, Hoary plantain, Greater butterfly orchid; also scarce lichens and mosses

Associated INNS: Giant hogweed, Himalayan balsam, Japanese knotweed, New Zealand pigmyweed

Overall aims are to preserve the integrity of geodiversity sites and raise awareness of their importance in their own right and also for biodiversity; to increase our knowledge and understanding of bings as ecosystems in their own right, to inform their protection and management; to appreciate the significance of bings as primary successional habitats and raise awareness of this; to ensure that soil sustainability and health is at the forefront of all development and land management practices.

- **Challenges / threats:** Illegal fossil collecting; loss of features through encroaching vegetation; erosion via unauthorised bike trails on bings;

OUTCOMES	Ref
Increased monitoring of geodiversity sites to ensure that important features are protected and still visible e.g. upland/exposed rock type habitats which need protecting or management	GB1
Increased promotion of geo/ biodiversity sites and the links between geodiversity and biodiversity	GB2
Increased knowledge of the bing resource to inform their purpose and management for biodiversity, culture and landscape	GB3
Increased protection of bings as habitats with unique flora/fauna by 2035	GB4
Increased community engagement, promotion and research of the Bings as valuable remnants of West Lothian's cultural heritage	GB5
Increased promotion of The Shale Trail, resulting in better awareness of the bings as culturally and ecologically significant sites	GB6

Map showing Bings of West Lothian

Section E

ACTION PLAN: HOW WE WILL GET THERE

(FOR REVIEW IN 2029/30)

Reference	Actions	Responsibility	Timescale	Relevant Outcomes
Progressing the LBAP				
A1	Organise themed working group meetings throughout year, as required	LBAP stakeholders	Ongoing from 2025	CCG1 – working together
A2	Organise at least 1 event for all stakeholders (case study – different places) and 1 meeting per year (online)	WLC - E&BD	Ongoing from 2025	CCG1 – working together; CCG7 – peer learning
A3	Highlight good practice / case studies / volunteer opportunities through partner communications / local media (following meetings above)	WLC; stakeholders	Ongoing from 2025	CCG15 – influencing upward; CCG7 – peer learning
A4	Facilitate information-sharing via sharing contact details and exploring the set-up of a Knowledge Hub, or similar	WLC; stakeholders	Ongoing from 2025	CCG1 – working together; CCG13 – NN implementation
A5	Stakeholders to explore the submission of 1 collaborative, landscape scale funding bid to implement the Nature Network	Stakeholders – working groups	By Dec 2030	SHP4 – connecting habitats; CCG13 – NN implementation
A6	Update the West Lothian habitat map to monitor progress on the ground	WLC – E&BD	2030 and 2035	CCG8 – understanding improved
Cross-cutting goals				
Habitats / Natural Capital in Protected sites				
A7	Identify and map additional areas to be protected or recognised as an OECM: through gaps in the Nature Network, high biodiversity/geodiversity areas that are currently not protected (including woodland, quality semi-natural grasslands and unique habitats such as bings)	WLC; WTS; TWIC; E&L GeoConservation	By June 2026	CCG2 – increase protected areas
A8	Create 3 additional Local Nature Reserves in the next 3 years	WLC	Dec 2027	CCG2 – increase protected areas
A9	Increase the size / create additional Local Biodiversity Sites	WLC; TWIC; stakeholders	Dec 2030	CCG2 – increase protected areas
A10	Carry out / update baseline condition assessments for all protected sites (particularly SSSI's, LNR's and LBS's) including surveys for relevant species where cited	WLC; NatureScot; TWIC	Dec 2030	CCG3 – condition of protected areas
A11	Create written management briefs for all Local Biodiversity Sites	WLC; TWIC; stakeholders	Dec 2032	CCG3 – condition of protected areas

Reference	Actions	Responsibility	Timescale	Relevant Outcomes
A12	Support and advise landowners/managers to ensure that protected sites are adaptively managed over time to either secure or improve their condition (where they are not 'favourable')	WLC; NatureScot; landowners / managers	Ongoing from 2025	CCG3 – condition of protected areas
Soils				
A13	Continued implementation of WLC Planning Guidance (or updated version) "Soil Management and After Use of Soils on Development Sites" through the planning system, also NPF4 – Policy 5 – Soils	WLC - Planning	Ongoing from 2025	CCG4 – soil conservation
A14	Promote sustainable land use practices, through information sharing, networking, peer-learning events and collaboration	WLC; NGOs	Ongoing from 2025	CCG5 – sustainable land use
Habitats and Species				
A15	Planning applicants submit species records to TWIC or contribute records the NBN Atlas Scotland through iRecord; landowners / managers and public encouraged to record observations and submit to TWIC or iRecord / iNaturalist, for ultimate contribution to NBN Atlas Scotland	Developers/ planning applicants; public; community groups; stakeholders	From 2025 onwards	CCG6 – data / species records; FL1 – recording species
A16	Organise networking and peer-to-peer learning opportunities on assessing the condition of habitats, species identification / monitoring, priority species requirements, protected species, etc to aid benchmarking	WLC; LBAP stakeholders	From 2025 onwards	CCG7 – peer learning; FL5 – learning, sharing, skill- building
A17	Organise monitoring/research opportunities by seeking partnerships with further education establishments	WLC; stakeholders	From 2025 onwards	CCG8 – understanding improved
Pollution				
A18	Work together to promote good land use and management practice that helps to prevent pollution, such as increasing buffer widths to water courses, riparian planting, use of blue-green infrastructure in urban settlements to reduce run-off, etc	SEPA; WLC; all stakeholders; other landowners/ managers; GAT	By Dec 2034	CCG9 – pollution; CCG13 – NN implementation See also Aquatic ecosystem
Invasive Non-Native Species / Biosecurity				
A19	Create an INNS strategy for West Lothian, including a WLC reporting and treatment process	WLC	By Dec 2026	CCG10 – INNS mapping and control; CCG11 – biosecurity; UE1 – nature-positive greenspaces

Reference	Actions	Responsibility	Timescale	Relevant Outcomes
A20	Create working group to map and control INNS across the whole area, focusing particularly on Signal Crayfish, Mink, Japanese Knotweed, Giant Hogweed, Himalayan Balsam, Rhododendron ponticum	WLC; NHS Lothian; WTS; stakeholders	By Dec 2026	CCG10 – INNS mapping and control; UE1 – nature- positive greenspace
A21	Explore creation of INNS interactive mapping system; create publicity on INNS, involve public in reporting and mapping and encourage information sharing on INNS locations between landowners/managers	WLC; stakeholders; public	By Dec 2030	CCG10 – INNS mapping and control; CCG11 - INNS/biosecurity participation; UE1 – nature- positive greenspace
A22	Provide training on INNS treatment with paid staff and community volunteers	WLC; FRT	Ongoing from 2025	CCG10 - INNS mapping and control; CCG11 – INNS/biosecurity participation; UE1 – nature- positive greenspace
A23	Establish high priority areas for biosecurity awareness/action; promote biosecurity through campaigns and on-site signage; ensure that biosecurity best practice is implemented by all partners	WLC; WTS; LBAP stakeholders; public	Dec 2030	CCG11 – INNS/ biosecurity participation
Nature Networks				
A24	Create and publish a strategic Nature Network map; ensure inclusion in LDP2	WLC; stakeholders	Jan 2026	CCG12 – NN protection; CCG2 – increase in protected areas
A25	Explore interactive public online mapping, to identify who is doing what and where in the Nature Network, enabling all to contribute	WLC	Dec 2026	CCG13 – NN implementation
A26	Maximise implementation and enhancement of Nature Networks through Development Planning controls; explore Section 75 contributions for Biodiversity, where appropriate	WLC; developers; stakeholders	From 2025 onwards	CCG13 – NN implementation; UE1 – nature- positive greenspaces
Education and Community Engagement				
A27	Publicise Nature Networks; including the importance of each habitat type, the dynamics between them and connectivity, to increase community interest in conservation / biodiversity across the area	WLC; stakeholders	Dec 2030	CCG14 – awareness and education
A28	Provide citizen science opportunities such as Bioblitzes, training in FIT counts, learning events, etc. to engage local groups in species observation and monitoring on public / private ground	WLC; TWIC; NGOs e.g. Buglife; Landowners / managers	Ongoing from 2025	CCG15 – citizen science; CCG7 – collaboration

Reference	Actions	Responsibility	Timescale	Relevant Outcomes
A29	Provide engagement opportunities such as events, volunteering, training, peer to peer learning, Friends groups, focussed campaigns, social media and led activities (e.g. guided walks)	WLC; NGOs and community groups e.g. Forth Rivers Trust, Bathgate Hills Venture; Landowners / managers; WTS; GAT	Ongoing from 2025	CCG16 – volunteering; FL5 – learning, sharing, skill-building; CCG7 - collaboration; UE1 – nature- positive greenspaces
A30	Form working relationships with schools and educational establishments to provide more formal opportunities for connecting with nature, learning and skills development	WLC; stakeholders; further education establishments	Ongoing from 2025	CCG15 – citizen science; CCG16 - volunteering FL5 – learning, sharing, skill-building
Influencing upward				
A31	Promote LBAP as a tool for change; Engage with Scottish Government where opportunities arise, to influence policy and programmes (e.g. consultations, etc)	WLC; GAT; stakeholders	Ongoing from 2025	CCG17 – influencing upward
Aquatic Ecosystem				
A32	Map existing sites of monitoring; prioritise new sites for monitoring using Riverfly mapping / SEPA data	WLC; Buglife; FRT	By Dec 2030	AE1 – biological indicators; CCG9 - pollution
A33	Promote community participation in Guardians of our Rivers / Riverfly initiative; share information with stakeholders	Buglife; FRT; WLC	By Dec 2030	AE1 – biological indicators; CCG9 - pollution
A34	Use SEPA and Scottish Forestry priority riparian planting maps to plan and plant native vegetation (particularly trees) over at least 5km of riverbank in total across West Lothian, with buffers of at least 10m on each bank (SEPA guideline ; Scottish Forestry map viewer). Use of grants where possible.	WLC; landowners / managers	By Dec 2034	AE2 – riparian vegetation; CCG9 - pollution
A35	Map and remove barriers to fish as per SEPA priorities and funding	WLC; FRT	By Dec 2034	AE3 – fish barriers
A36	Work in partnership to map ponds and wetlands; create and distribute publicity / resources on the importance of wetlands, including INNS and biosecurity	WLC; stakeholders	By Dec 2030	AE4 – wetland awareness; BH2 – public awareness; CCG10 – INNS mapping and control
A37	Wetland creation by landowners / managers to increase habitat provision by 5ha and ensure they're well connected; explore and promote appropriate grants and financial support to aid action	WLC; NGOs, consultants, community groups (e.g. PWCCG)	By Dec 2034	AE5 – wetland creation; AE6 – wetland species; AE7 – natural flood management; UE1 – nature-positive greenspaces

Reference	Actions	Responsibility	Timescale	Relevant Outcomes
A38	Investigate potential for water vole project	WLC	By Dec 2028	AE6 – wetland species
A39	Support Slender mud snail and Marsh saxifrage conservation projects where possible	WLC; RZSS; RBGE	Ongoing from 2025	AE6 – wetland species
A40	Use SEPA mapping and blue-green infrastructure measures to increase implementation of natural flood management in urban and rural areas; explore and promote appropriate grants and financial support to aid action	WLC; landowners / managers	By Dec 2034	AE7 – natural flood management
Bog and Heath				
A41	Identify, map and carry out preliminary condition surveys of all bogs in West Lothian	WLC	By Dec 2025	BH1 – improved condition
A42	Complete peatland condition assessments on all known areas, with recommendations for management	NatureScot; WLC; Landowners / managers	By Dec 2026	BH1 – improved condition
A43	Form working relationships to promote joint working to enhance condition of bog and heath through land management	NatureScot; WLC	Ongoing from 2025	BH1 – improved condition; BH6 – increased investment
A44	Create and distribute publicity on bogs and heaths; specifically raise awareness of peat bogs as a rare habitat type / climate change asset	WLC; stakeholders	Ongoing from 2025	BH2 – public awareness; AE4 – wetland awareness; CCG14 – awareness and education
A45	Organise 1 bog/heath event per year for landowner/managers	WLC; NatureScot; bog owners/managers	Ongoing from 2025	BH3 – landowner/ manager awareness
A46	Explore and signpost to sources of funding for peatland restoration / private investment	WLC; NatureScot; consultants; Buglife; GAT	Ongoing from 2025	BH1 – improved condition; BH3 – landowner/manager awareness
A47	Liaise with community groups to set up bog conservation volunteering opportunities in areas where there are bog habitats e.g. Bog Squad	WLC; NatureScot; Butterfly Conservation; GAT; stakeholders	By Dec 2030	BH4 – practical engagement
A48	Designate sites accordingly, following identification and mapping (above)	WLC; NatureScot	By Dec 2030	BH5 – protection / management
A49	Form collaborative working relationships to promote peer to peer events and publicity, increase awareness of available grant schemes, peatland code and potential private investment opportunities	WLC; consultants	By Dec 2030	BH6 - investment

Reference	Actions	Responsibility		Relevant Outcomes
A50	Create and publish a West Lothian Pollinator Plan / Strategy to ensure joined-up working/ connected habitats for supporting pollinators across the area	WLC with stakeholders	By Dec 2027	GL1 – connected grasslands; GL3 – increased understanding; UE1 – nature-positive greenspaces
A51	Map existing semi-natural/species-rich grasslands, and opportunities for grassland creation / connectivity through the Nature Network, using UK B-Lines as a guide	WLC with stakeholders; NHS Lothian; WTS	By Jan 2026	GL1 – connected grasslands;
A52	Partnership working to increase the area of man-made species-rich grassland created and managed by 10 ha (from 2024 land coverage)	WLC; landowners / managers; NHS Lothian; WTS	By Dec 2034	GL2 – grassland creation; UE1 – nature-positive greenspaces; CCG13 – NN implementation
A53	Create and distribute publicity / education packs for different grassland types; organise training and peer to peer learning events on how to monitor grasslands	WLC; Buglife	By Dec 2027	GL3 – increased understanding / monitoring
A54	Support groups and individuals to monitor grasslands and to share data through appropriate platforms	WLC; consultants; Buglife; Soil association	By Dec 2034	GL3 – increased understanding / monitoring
A55	Implement WLC grassland strategy to ensure grassland in public open spaces is managed 60:40 (amenity:managed for nature)	WLC	By Dec 2030	GL4 – WLC grassland; UE1 – nature positive greenspaces
A56	Landowners/managers to assess condition of existing grasslands using 'rule of thumb', with help from supporting organisations	All stakeholders	By Dec 2028	GL5 – species diversity
A57	Landowners / managers to employ sustainable management practices to improve condition from baseline levels; stakeholder 'supporting organisations' to provide advice and signpost to appropriate grants and financial support to aid action	All stakeholders	By Dec 2034	GL5 – species diversity
Farmland Ecosystem				
A58	Create farm level environmental baselines (biodiversity is one of six main metrics) as part of Whole Farm Planning process; share biodiversity information to augment overall understanding of biodiversity across the area	Farmers; NGO's / consultancies working with farmers	By Dec 2028	FL1 – farm biodiversity baseline; CCG6 - data / species records; CCG1 – working together
A59	Provide training for all stakeholders on how to record species through iRecord / iNaturalist for addition to NBN Atlas Scotland or to submit records to TWIC directly	WLC; TWIC; NGOs	By Dec 2030	FL2 – recording priority species; CCG6 - data / species records; CCG7 – collaboration; CCG8 – improved understanding; CCG15 – citizen science

Reference	Actions	Responsibility	Timescale	Relevant Outcomes
A60	Promote creation of arable field margins through advice, Nature Network mapping, publicity, funding, signposting and support via BAP stakeholders	NGO's / consultancies working with farmers; also WLC	Ongoing from 2025	FL3 – arable field margins
A61	Promote habitat connectivity through Nature-Network mapping, information- sharing, events, signposting to grant funds / private finance initiatives, partnership working at landscape scale, shared resources	NGO's / consultancies working with farmers; also WLC; GAT	Ongoing from 2025	FL4 – connecting habitats; GL2 – species rich grassland; GL5 – grassland and priority species; WE1 – native woodland cover; WE4 – hedgerow length; WE5 – hedgerow condition
A62	Identify and map additional farmland habitats across the area, including arable field margins, hedgerows and riparian woodland as part of West Lothian habitat mapping update	WLC	2030 and 2035	FL4 – connecting habitats; FL3 – arable field margins; WE1 – native woodland cover; WE4 – hedgerow length
A63	Provide local networking/ training through BAP working groups / networking events; publicise and signpost to networking / training by organisations working with farmers / landowners	NGO's / consultancies working with farmers e.g. Soil Association, SAC Consulting, etc; also WLC	Ongoing from 2025	FL5– learning, sharing, skill- building; CCG7 – knowledge exchange
A64	Provide opportunities for communities to connect with farmers and landowners to increase knowledge of farming / the farmland ecosystem and rural land use	NGOs / programmes on food security, sustainable food, e.g. Food for Life Scotland	Ongoing from 2025	FL6 – connecting people
Woody Ecosystem				
A65	Identify and map tree planting / natural regeneration opportunities through Nature Network / Scottish Forestry / SEPA mapping, WL Forest and WoodlandStrategy and BlueSky data	WLC; NHS Lothian	By Dec 2028	WE1 – increased native woodland; AE3 – riparian woodland
A66	Restructure existing non-native woodland through restocking	Landowners / managers; WLC; FLS; WTS	By Dec 2034	WE1 – increased native woodland
A67	Expand existing woodlands through planting and/or natural regeneration	Landowners / managers; WLC; GAT; WTS; FLS	By Dec 2034	WE1 – increased native woodland; UE1 – nature-positive greenspaces
A68	Join up woodland fragments and improve connectivity between woodland habitats (physical connections or stepping stones) through planting and/or natural regeneration; including hedgerows, riparian woodland, scrub and habitat mosaics	Landowners / managers; WLC; WTS; NHS Lothian; GAT; FLS	By Dec 2034	WE1 – increased native woodland; AE3 – riparian woodland; UE1 – nature-positive greenspaces

Reference	Actions	Responsibility	Timescale	Relevant Outcomes
A69	Signpost to online resources on assessing woodland ecological condition; use suitable tools for this purpose; promotion of improved management/ condition of woodlands as biodiversity enhancements through planning	WLC; FLS; NatureScot; NTS; NGOs and consultancies working with farmers	Ongoing from 2025	WE2 – woodland condition
A70	Raise awareness of Ancient Woodland and veteran trees through working groups, training, educational resources and publicity	WLC; WTS; NatureScot	Ongoing from 2025	WE3 – Ancient Woodland and veteran trees
A71	Share ancient woodland and veteran tree mapping on WLC website and publicise	WLC	By Dec 2028	WE3 – Ancient Woodland and veteran trees
A72	Promote protection of remnants and veteran trees and seek opportunities to enhance/ connect ancient woodland sites through the planning system	WLC; WTS; NatureScot; FLS	Ongoing from 2025	WE3 – Ancient Woodland and veteran trees
A73	Map existing hedgerows in West Lothian using BlueSky data	WLC	By Dec 2025	WE4 –hedgerow length
A74	Plant up gaps between existing remnants; plant new hedgerow to join up hedges and/or woodland habitats	WLC; NHS Lothian; Landowners / managers	By Dec 2034	WE4 –hedgerow length
A75	Create West Lothian native hedgerow resource pack and publicise	WLC; stakeholders	By Dec 2027	WE4 – hedgerow length; WE5 – hedgerow condition
A76	Update map of hedgerows in West Lothian using BlueSky data (or similar)	WLC	2030 and 2035	WE4 – hedgerow length
A77	Promote use of Healthy Hedgerows app by PTES and Hedgerow Handbook for condition assessments; aim for moderate biodiversity or above – as per LBAP rule of thumb	NGOs and consultants working with farmers/ landowners; WLC	Ongoing from 2025	WE5 – hedgerow condition
A78	Improve condition of existing hedgerows through laying/ restocking with native woody species/ additional species, improving ground flora under hedgerows, buffer strips, altering cutting regimes, reducing spraying, etc	Landowners / managers	By Dec 2034	WE5 – hedgerow condition; UE1 – nature-positive greenspaces
A79	Organise urban tree planting in school grounds, for example through WLC's Access to Nature initiative	WLC	By Dec 2030	WE6 – school grounds; WE1 – native woodland; UE1 – nature positive greenspaces
A80	Promote woody habitats through publicity and creating opportunities for community engagement	WLC; WTS; landowners / managers; NHS	By Dec 2030	WE7 – publicity and engagement; CCG14/15/16 – education and engagement

Reference	Actions	Responsibility	Timescale	Relevant Outcomes
Urban Ecosystem				
A81	Promote the use of trees in urban areas to enhance biodiversity, connect habitats, manage water and reduce heat; Promote Tree Equity Standard; increase urban tree canopy cover to meet Tree Equity Standard	WLC; NHS; stakeholders	Ongoing from 2025	UE1 – nature positive greenspace; WE1 – increased native woodland
A82	Share information and promote biodiversity measures for private residential gardens, communal gardens, community gardens and allotments	WLC; Buglife; WLCAN; community garden groups	By Dec 2030	UE2 - gardens
A83	Share information and promote the management of gardens for biodiversity with WLC Housing and other social housing managers	WLC; Buglife	By Dec 2030	UE2 - gardens
A84	Signpost to resources and promote nature-based solutions for surface water management; create exemplars and promote through peer-to-peer learning events; ensure implementation via development	WLC; FRT	By Dec 2035	UE3 – blue/green infrastructure
A85	Management and maintenance plans for blue/ green infrastructure submitted with planning applications (and finance secured) - demonstrating how the design and maintenance of these areas will contribute to lasting positive effects for biodiversity	Planning applicants; WLC	Ongoing from 2025	UE3 – blue/green infrastructure
A86	Create guidance for council staff / external bodies / developers, on how to enhance blue-green infrastructure and biodiversity alongside new/existing active travel routes and transport infrastructure and join up green networks / nature networks where there are gaps	WLC; stakeholders	By Dec 2027	UE4 – transport/ active travel
A87	Build up evidence on barriers to species movement (hotspots) or collision risk zones	WLC; stakeholders	By Dec 2030	UE5 – diverse, well-connected
A88	Explore use of Urban Greening Factor or similar as a Standard for ensuring the provision of blue-green infrastructure in new developments and ecological connectivity around/through them	WLC; NatureScot	By Jan 2026	UE5 – diverse, well- connected
A89	Establish system to replace current felled trees, and future felled trees, on WLC landholdings by end 2027	WLC	By Dec 2027	UE5 – diverse, well-connected
A90	Update WLC Planning for Nature guidance; publicise this together with NatureScot's Developing with Nature guidance	WLC	By Dec 2027	UE5 – diverse, well-connected
A91	Create and distribute publicity using Developing with Nature invasive non-native species list and GB Non-Native Species Secretariat	WLC	By Dec 2030	UE6 – garden invasives; CCG11 – INNS/ biosecurity participation

Reference	Actions	Responsibility	Timescale	Relevant Outcomes
Geodiversity and Bings				
A92	Ongoing monitoring of geodiversity sites to ensure integrity of features	L&B	By Dec 2034	GB1 - monitoring of GD sites
A93	Create publicity / resources / events to promote geodiversity sites and biodiversity on these sites (and vice versa)	L&B	By Dec 2034	GB2 - promotion of GD sites
A94	Annual/biennial surveys of bing habitats, to produce an overview / rationale for management priorities – including opportunities for improving conditions for nesting birds and bing-associated mosses/ lichens	WLC	By	GB3 – understanding bings
A95	Management briefs written for each protected bing, allowing for 'natural regeneration' of sites providing unique habitat conditions only found on WL Bings	WLC	By Dec 2034	GB3 – understanding bings
A96	All abandoned/ decommissioned Bings to be assessed for Local Biodiversity Site status and safeguarded accordingly	WLC; TWIC	By Dec 2030	GB4 – protection of bings
A97	At least 1 bing designated as a Local Nature Reserve	WLC	By Dec 2030	GB4 – protection of bings
A98	Work in partnership to promote the existing Shale Trail and also individual bings, through events, activities and publicity	WLC; Scottish Shale Museum; WTS	Ongoing from 2025	GB5 – awareness of bings; GB6 – Shale Trail

APPENDICES

APPENDIX 1
POLICY CONTEXT

International Agreements

In recent years, the global response to climate change and biodiversity has gathered pace. The last global meeting (at the time of writing) COP28 – Climate Change took place in Dubai in Nov-Dec 2023 and COP15 – Biodiversity took place in Canada in Nov 2022. Both resulted in new international agreements and targets for climate change and nature recovery which both the UK and Scottish governments have signed.

Preceding COP 15, the Scottish Government led a consultation, called the Edinburgh Process. Among the key outputs was the Edinburgh Declaration, which demonstrates the commitment of subnational authorities across the world in delivering for nature over the next decade. This declaration was signed by West Lothian Council in November 2021.

National Policy

The Scottish Biodiversity Strategy establishes a national vision for biodiversity to 2045: halting biodiversity loss by 2030 and restoring biodiversity by 2045. Key processes involved include 30x30 (protecting 30% of Scotland's land and 30% of sea by 2030) and Nature Networks – linking together habitats and protected areas across local authority areas and nationally to enable species to move and to adapt to changing circumstances and the changing climate.

Agriculture is a major land use in Scotland – approx. 69% of Scotland's total land in 2023. The Scottish Government's Vision for Agriculture is to "transform how we support farming and food production in Scotland to become a global leader in sustainable and regenerative agriculture." The underpinning values and principles to this include reducing emissions and restoring nature. This will be achieved by supporting the delivery of biodiversity net gain on farmland, increasing organic farming, minimising agrochemicals, developing skills for regenerative and sustainable farming and encouraging "co-operative approaches to optimise collaboration and knowledge exchange".

Scotland's Land Use Strategy shifted the national approach to land use, by using an ecosystems approach (acknowledging the benefits we receive 'for free' from natural systems) and making links between how we own, manage and use land for conservation, energy, housing, farming, industry, transport, etc. to achieve sustainable land use at scale. It provides a vision for how land should be used across the country with a projected increase in urban woodlands, rooftop and rain gardens to green our cities and towns; an increase in forested land, integrated with agriculture; more habitats restored, connected and enhanced; better-quality peatland habitats, and a wider range of wildlife thriving in wild areas. Targets include tree planting rates to reach 18,000 hectares per year by 2024-25 and 250,000 hectares of restored peatland by 2030.

The Scottish Climate Change Plan 2018-32 recognises that Scotland's natural environment is one of our greatest national assets, and recognises the ecosystem services provided by these natural assets. It notes issues of deforestation, soil quality, peatland degradation and loss of native species. The plan influences major changes in our landscape through requirements to change how we produce energy (e.g. wind and solar farms) and also through carbon-storage, sequestration and biodiversity measures such as bog restoration and woodland creation, including agroforestry. Includes annual woodland creation target of 18,000 hectares of new woodland annually (including 4000ha of native woodland).

Scotland's Forestry Strategy (2019-2029) presents a 50-year vision to expand, protect and enhance Scotland's forests and woodlands, to deliver greater economic, social and environmental benefits to Scotland's people. One of its key priorities for action is to increase the environmental benefits derived from Scotland's forest and woodland resource, in particular protecting and enhancing associated biodiversity. Biodiversity-specific indicators for this strategy are: Woodland ecological condition score, Condition of protected forest and woodland sites and Index of Abundance for Scottish Terrestrial Breeding Birds – Woodland Species.

The Scottish National Adaptation Plan 2024-29 has just been produced. Connecting Nature is one of its 5 outcomes; recognising the impact climate change has on wildlife and habitats, that connectivity is crucial for functioning healthy ecosystems and recognising the role of green spaces in climate resilience.

National Planning Framework 4 (adopted in Feb 2023) brings spatial planning and policy together; it also brings the climate and nature crises to the forefront of decision-making through new, updated policies.

The Scottish Government's Wild Salmon Strategy sets out the vision, objectives and priority themes for action to ensure the protection and recovery of wild Atlantic Salmon populations in Scotland.

National legislation presents key legal requirements for all public bodies to comply with:

The Climate Change (Scotland) Act 2009 requires that the council must, in exercising its functions, act: "in the way best calculated to contribute to the delivery of net-zero by 2045... (and) in a way that it considers is most sustainable".

The Nature Conservation (Scotland) Act 2004 states that "It is the duty of every public body and office-holder, in exercising any functions, to further the conservation of biodiversity so far as is consistent with the proper exercise of those functions." The Wildlife and Natural Environment (Scotland) Act 2011 requires public bodies in Scotland to provide a publicly available report every three years, on the actions which they have taken to meet this biodiversity duty.

The Natural Environment Bill, scheduled to be tabled in 2024, will put in place new legislation to restore and protect nature, as well as introducing targets to drive action.

Local Policy

West Lothian Council declared a Climate Emergency in 2019 and a Nature Emergency in 2023. Therefore, action for sustainability in its widest sense is a priority. The following local strategies and plans influence, and are in turn, influenced by this LBAP:

The WLC Climate Change Strategy 2021-28 provides a framework for the council's actions as a public sector organisation aimed at reducing greenhouse gas emissions and preparing for the unavoidable impacts of changing weather patterns. The council's interim emissions targets are 61% reduction by 2028, 65% reduction by 2030, 86% reduction by 2040, net-zero by 2045. Within the strategy are actions relating to Energy, Transport, Waste, Adaptation, Resilience & Biodiversity and Land Use. This LBAP is one of the actions listed in the strategy, together with the Natural Capital Assessment, and actions for increasing woodland cover and restoring habitats.

The LBAP will also contribute to the council's Local Outcomes Improvement Plan, under the pillar of Creating Net-Zero Carbon Communities. Specifically, this means using nature-based solutions to help achieve net zero carbon and to mitigate and adapt to climate change impacts.

The WLC Open Space Plan contains audits of all parks and open spaces over 0.2ha and strategically plans public parks and open spaces across the area for the primary purposes of health, play, recreation, sociability and access, with additional multifunctional benefits such as flood resilience, biodiversity, etc. WLC requirements for Active Open Space are: 6 acres (2.4ha) per 1000 population, 500m from dwellings, taken from the Fields in Trust 6 acre standard. The Fields in Trust benchmark guidelines for Natural and Semi-natural informal outdoor space (Woodland, scrub, grassland, wetlands, open and running water and open access land) are 1.8ha per 1000 population, 720m from dwellings.

The WLC Food Growing Strategy takes stock of community food growing provision (such as community gardens and allotments) across the area and aims to facilitate further opportunities through strategic planning and by setting a West Lothian standard.

The WLC Forestry and Woodland Strategy (being drafted) will be informed by this LBAP, which will help to steer future woodland creation and ensure that woodlands of high conservation value are protected and form part of ecologically functional Nature Networks.

APPENDIX 2
COMPARISON OF HABITAT AREAS IN 1994 AND 2023

(source : West Lothian phase 1 habitat survey 1994; West Lothian Baseline Habitat Map by WSP / NCS 2023)

	Area (ha) 1994	% Cover 1994	Area (ha) 2023	% Cover 2023
West Lothian [1.] Habitat Types	42,504	100%	43,170	100%
Woodland and Scrub	6,741	14.0%	9,054	21.0%
Grassland and Marsh	17,757	36.0%	17,408	40.3%
Tall Herb and Fen	299	0.6%	3	0.0%
Heathland	1,399	3.0%	176	0.4%
Mires and peatlands	2,201	4.0%	2,303	5.3%
Swamp	70	0.1%	3	0.0%
Open Water	500	1.0%	603	1.4%
Coastland	273	0.5%	281	0.6%
Rock and spoil	316	0.6%	372	0.9%
Miscellaneous (cultivated land etc)	13,296	27.0%		
Arable			4,986	11.5%
Urban unsurveyed areas	5,611	13.2%		
Miscellaneous (amenity grassland, built up area, infrastructure, gardens, other)			7,819	18.1%
Unclassified (under development)			164	0.4%

APPENDIX 3
NATIONAL PRIORITY HABITATS FOUND IN WEST LOTHIAN

The current Scottish Biodiversity List national priority habitats known to be present in West Lothian are:

Habitat name	UK Hab code	Status
Other lowland mixed deciduous woodland	w1f7	Conservation action needed
Lowland meadows	g3a	Conservation action needed
Lowland dry acid grassland	g1a	Conservation action needed
Lowland heathland	h1b5	Conservation action needed / Avoid negative impacts
Upland heathland	h1b6	Conservation action needed / Avoid negative impacts
Blanket bog (degraded)	f1a5/6	Conservation Action needed / Avoid negative impacts
Lowland raised bog (degraded)	f1b5/6	Conservation action needed
Lowland fen	f2a	Conservation action needed
Purple moor grass and rough pasture	f2b	Conservation action needed
Wood pasture and parkland		Conservation action needed
*Upland oak woodland	w1a	Conservation action needed / Avoid negative impacts
*Upland ash woodland	w1b6	Conservation action needed / Avoid negative impacts
*Upland birch woodland	w1e	Conservation action needed
*Lowland calcareous grassland	g2a5	Conservation action needed / Avoid negative impacts
*Coastal saltmarsh	t2a	Avoid negative impacts
*Eutrophic standing waters	r1a	Conservation action needed / Avoid negative impacts
*Ponds		Conservation action needed
*Rivers	r2a	Conservation action needed
*Hedgerows	h2a	Watching brief only
*Arable field margins	c1a5/6/7	Conservation action needed
*Open Mosaic Habitats on Previously Developed Land (OMHPDL)	u1a	Watching brief only
*Traditional orchards		Watching brief only
*Wet woodland	w1d	Conservation action needed / Avoid negative impacts

APPENDIX 4
PRIORITY AND INDICATOR SPECIES LISTS FOR EACH ECOSYSTEM

Some of these species may be found in more than one habitat, as species may change habitats depending on the season, the part of its lifecycle it's in, abundance/lack of food or other pressures. If a priority species is found in a different habitat from that listed below, it remains a priority.

Ecosystems	**Priority species** species found in West Lothian on the Scotsh Biodiversity List (2020) that are labelled 'conservaton acton needed' and/or 'avoid negatve impacts'	**Indicator species** other locally important animal species* and plants that are typically found in these habitats and can indicate the health, conditon or long life of the habitat *Listed on the SBL (2020) under 'watching brief only' or red/amber listed on the BoCC or regional red-listed IUCN species or Bern Conventon lists
Aquatic	Daubenton's bat *Myotis daubentonii* Water vole *Arvicola amphibious* Otter *Lutra lutra* Osprey *Pandion haliaetus* Red-throated diver *Gavia stellata* Slavonian grebe *Podiceps auratus* Golden plover *Pluvialis apricaria* Bar-tailed godwit *Limosa lapponica* Sandwich tern *Sterna sandvicensis* Scaup *Aythya marila* Curlew *Numenius arquata* Common scoter *Melanitta nigra* Kingfisher *Alcedo atthis* Grasshopper warbler *Locustella naevia* Atlantic salmon *Salmo salar* Brook lamprey *Lampetra planeri* Brown/Sea Trout *Salmo trutta* Common toad *Bufo bufo* Great crested newt *Triturus cristatus* Slender mud snail *Omphiscola glabra*	Rivers and streams: Dipper *Cinclus cinclus* Grey wagtail *Motacilla cinerea* Water crowfoots (several spp) Eurasian Beaver *Castor fiber* Ponds, Lochs, Reservoirs, Wetlands: Snipe *Gallinago gallinago* Moorhen *Gallinula chloropus* Reed bunting *Emberiza Schoeniclus* Smooth newt *Triturus vulgaris* Minor shoulder-knot (moth) *Brachylomia viminalis* Marsh cinquefoil *Potentilla palustris* Bogbean *Menyanthes trifoliata* Coast: Pink-footed goose *Anser brachyrhynchus* Shelduck *Tadorna tadorna* Knot *Calidris canutus* Redshank *Tringa totanus* Oystercatcher *Haematopus ostralegus* Turnstone *Arenaria interpres* Ringed plover *Charadrius hiaticula* White-line dart (moth) *Euxoa tritici* Dark Spinach (moth) *Pelurga comitata* Sea thrift *Armeria maritima* Sea mayweed *Tripleurospermum maritimum* Eelgrass *Zostera marina* Dwarf eelgrass *Zostera noltii*

Ecosystems	Priority species	Indicator species
Bog and heath	Short eared owl *Asio flammeus* Merlin *Falco columbarius* Hen harrier *Circus cyaneus* Peregrine falcon *Falco peregrinus* Red grouse (scotica) *Lagopus lagopus scotica* Golden plover *Pluvialis apricaria* Curlew *Numenius arquata* Adder *Vipera berus* Common lizard *Zootoca vivipara* Slow worm *Anguis fragilis* Large heath (butterfly) *Coenonympha tullia* Mountain bumblebee *Bombus monticola* Lichens - *Cladonia arbuscular, Cladonia uncialis* Marsh saxifrage *Saxifraga hirculus* [actively monitored on Craigengar SSSI. RBGE species programme] Hairy stonecrop *Sedum villosum* [Nationally scarce, near threatened]	Bog habitat: Small pearl-bordered fritillary (butterfly) *Boloria selene* Red carpet (moth) *Xanthorhoe decoloraria* Hare's tail cotton grass *Eriophorum vaginatum* Common cotton grass *Eriophorum angustifolium* Round-leaved sundew *Drosera rotundifolia* Bog asphodel *Narthecium ossifragum* Cranberry *Vaccinium oxycoccos* Sphagnum mosses (various spp) Heath: Dark brocade (moth) *Mniotype adusta* Blaeberry *Vaccinium myrtillus* Crowberry *Empetrum nigrum* Cowberry *Vaccinium vitis-idaea* Bearberry *Arctostaphylos uva-ursi* Lichens - *Cladonia portentosa, C. arbuscula, C. uncialis* Mosses - *Sphagnum compactum, S. tenellum*
Grassland	Pipistrelle bat *Pipistrellus pipistrellus* Soprano pipistrelle bat *Pipistrellus pygmaeus* Brown hare *Lepus europaeus* Barn owl *Tyto alba* Merlin *Falco columbarius* Hen harrier *Circus cyaneus* Peregrine falcon *Falco peregrinus* Kestrel *Falco tinnunculus* Grey partridge *Perdix perdix* Curlew *Numenius arquata* Linnet *Carduelis cannabina* Skylark *Alauda arvensis* Lesser butterfly orchid *Platanthera bifolia* Greater butterfly orchid *Platanthera chlorantha* Salad burnet *Poterium sanguisorba*	Acid grassland: Grasses - Fine-leaved bent *Agrostis capillaris*; Fescue spp; Mat grass *Nardus stricta* Tormentil *Potentilla erecta* Heath bedstraw *Galium saxatile* Harebell *Campanula rotundifolia* Devils-bit scabious *Succisa pratensis* Bitter vetch *Lathyrus linifolius* Neutral grassland: Grasses - Sweet vernal grass *Anthoxanthum odoratum*; Crested dog's tail *Cynosurus cristatus* Common bird's foot trefoil *Lotus corniculatus* Common knapweed *Centaurea nigra* Selfheal *Prunella vulgaris* Red clover *Trifolium pratense* Narrow-bordered five-spot burnet (moth) *Zygaena lonicerae* Green-winged orchid *Orchis morio* [scarce / SBL] Calcareous grassland: Quaking grass *Briza media* Meadow cranesbill *Geranium pratense* Wild thyme *Thymus polytrichus* Lady's bedstraw *Galium verum* Common Rock rose *Helianthemum nummularium* Kidney vetch *Anthyllis vulneraria* Grass rivulet (moth) *Perizoma albulata* Marshy grassland: Rushes - Soft *Juncus effusus*; Sharp flowered *Juncus acutiflorus* Meadowsweet *Filipendula ulmaria* Valerian *Valeriana officinalis* Angelica *Angelica sylvestris* Melancholy thistle *Cirsium heterophyllum* Sneezewort *Achillea ptarmica* Marsh spotted orchid *Dactylorhiza maculata* Marsh bedstraw *Galium palustre* Ragged robin *Silene flos-cuculi*

Ecosystems	Priority species	Indicator species
Farmland	Brown hare *Lepus europaeus* Water vole *Arvicola amphibious* Brown long-eared bat *Plecotus auritus* Barn owl *Tyto alba* Merlin *Falco columbarius* Hen harrier *Circus cyaneus* Peregrine falcon *Falco peregrinus* Grey partridge *Perdix perdix* Woodcock *Scolopax rusticola* Lapwing *Vanellus vanellus* Curlew *Numenius arquata* Skylark *Alauda arvensis* Tree sparrow *Passer montanus* Linnet *Carduelis cannabina* Corn bunting *Emberiza calandra* Corncrake *Crex crex* Redwing *Turdus iliacus* Swift *Apus apus* Starling *Sturnus vulgaris* Yellow wagtail *Motacilla flava* Common toad *Bufo bufo* Great crested newt *Triturus cristatus* Small heath (butterfly) *Coenonympha pamphilus* Pearl-bordered fritillary (butterfly) *Boloria Euphrosyne*	Twite *Linaria flavirostris* Oystercatcher *Haematopus ostralegus* Pink-footed goose *Anser brachyrhynchus* Redshank *Tringa totanus* Snipe *Gallinago gallinago* Reed bunting *Emberiza schoeniclus* House sparrow *Passer domesticus* Whitethroat *Sylvia communis* Dunnock *Prunella modularis* Yellowhammer *Emberiza citrinella* Bullfinch *Pyrrhula pyrrhula* Meadow pipit *Anthus pratensis* Small pearl-bordered fritillary (butterfly) *Boloria selene* Sword-grass (moth) *Xylena exsoleta*
Woody ecosystem	Common pipistrelle bat *Pipistrellus pipistrellus* Soprano pipistrelle bat *Pipistrellus pygmaeus* Natterer's bat *Myotis nattereri* Noctule bat – *Nyctalus noctula* Daubenton's bat *Myotis daubentonii* Brown long-eared bat *Plecotus auritus* Red squirrel *Sciurus vulgaris* [records unconfirmed] Pine marten *Martes martes* Black grouse *Tetrao tetrix* Wood warbler *Phylloscopus sibilatrix* Willow tit *Poecile montanus* Woodcock *Scolopax rusticola* Tree sparrow *Passer montanus* Song thrush *Turdus philomelos* Spotted flycatcher *Muscicapa striata* Lesser redpoll *Acanthis cabaret* Tree pipit *Anthus trivialis* Cuckoo *Cuculus canorus* Siskin *Spinus spinus* Great crested newt *Triturus cristatus* Greater butterfly orchid *Platanthera chlorantha* Pearl-bordered fritillary (butterfly) *Boloria euphrosyne* Intermediate wintergreen *Pyrola media*	Woodland: Tawny owl *Strix aluco* Dog's mercury *Mercurialis perennis* (Ancient woodland) Sanicle *Sanicula europaea* (Ancient woodland) Wood anemone *Anemone nemorosa* (Ancient woodland) Common twayblade *Listera ovata* (Ancient woodland) Moschatel *Adoxa moschatellina* (Ancient woodland) Scrub and Hedgerow: Fieldfare *Turdus pilaris* Juniper *Juniperus communis* European hedgehog *Erinaceus europaeus* Yellowhammer *Emberiza citronella* Whitethroat *Sylvia communis* Dunnock *Prunella modularis* Garden tiger (moth) *Arctia caja* Honeysuckle *Lonicera periclymenum* Common ivy *Hedera helix* Dog rose *Rosa canina* Primrose *Primula vulgaris* Garlic mustard *Alliaria petiolata*

Ecosystems	Priority species	Indicator species
Urban	Common pipistrelle *Pipistrellus pipistrellus* Soprano pipistrelle *Pipistrellus pygmaeus* Water vole *Arvicola amphibious* Otter *Lutra lutra* Kestrel *Falco tinnunculus* Swift *Apus apus* Starling *Sturnus vulgaris* Siskin *Spinus spinus* Song thrush *Turdus philomelos* Great crested newt *Triturus cristatus* Common toad *Bufo bufo*	European hedgehog *Erinaceus europaeus* House martin *Delichon urbicum* House sparrow *Passer domesticus* Bullfinch *Pyrrhula pyrrhula* Smooth newt *Triturus vulgaris* Dark spinach moth *Pelurga comitata* – urban / wasteground Red mason bee *Osmia bicornis*
Oil shale bings and geological sites (inc old quarries)	Brown hare *Lepus europaeus* Kestrel *Falco tinnunculus* Peregrine falcon *Falco peregrinus* Lapwing *Vanellus vanellus* Golden plover *Pluvialis apricaria* Spotted flycatcher *Muscicapa striata* Skylark *Alauda arvensis* Grey partridge *Perdix perdix* Song thrush *Turdus philomelos* Linnet *Carduelis cannabina* Grayling (butterfly) *Hipparchia Semele* Salad burnet *Poterium sanguisorba* Greater knapweed *Centaurea scabiosa* Hoary plantain *Plantago media* Greater butterfly orchid *Platanthera chlorantha*	Bings: Nationally scarce lichens - *Micarea lithinella*, *Steinia geophana*, *Stereocaulon nanodes*, *Stereocaulon saxatile*, *Stereocaulon leucophaeopsis, Bacidia viridescens* Rare moss - *Buxbaumia aphylla* Wormwood *Cucullia absinthii* [locally rare] Early purple orchid *Orchis mascula* Silver birch *Betula pendula* Common twayblade *Listera ovata* Goat willow *Salix caprea* Melancholy thistle *Cirsium heterophyllum* Pillwort *Pilularia globulifera* [nationally scarce] Bird's-foot trefoil *Lotus corniculatus* Kidney vetch *Anthyllis vulneraria* Biting stonecrop *Sedum acre* Broad-leaved helleborine *Epipactis helleborine* Other rocky areas: Anomalous (moth) *Stilbia anomala* *Lecanora epanora* (lichen)

APPENDIX 3
GLOSSARY OF TERMS

'Active woodland' – in this document this term means woodland with living trees in it.

Adaptive management – a process that uses monitoring and evaluation to improve conservation efforts, involving testing assumptions, learning from the results and adapting management strategies. It is not about changing goals, it is about changing the path being used to achieve the goals in response to changes.

Agroforestry – a land management approach that combines trees and shrubs with crop and/or livestock farming on the same piece of land.

Bings - large, red shale spoil-heaps, resulting from industrial shale mining in the area.

Blue - green infrastructure - defined by the European Commission as a 'strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services'. This includes woodlands, street trees, play spaces, allotments, community growing spaces, playing fields, road verges, swales, green walls and living roofs, rivers, canals, streams, wetlands, sustainable drainage, active travel and recreational routes, and much more.

Condition assessment – see Habitat condition below

Culvert – a tunnel carrying a stream or open drain under a road, railway or other travel corridor. Culverts are built underground and can be made from reinforced concrete, pipes, or other materials.

Ecosystem - The Convention on Biological Diversity gives the following definition: "A dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit." This means all the living organisms in a given area – including humans – and the ways in which they affect each other and the environment.

Ecosystem services – The benefits people obtain from ecosystems. These include provisioning services such as food and water; regulating services such as regulation of floods, drought, land degradation, and disease; supporting services such as soil formation and nutrient cycling; and cultural services such as recreational, spiritual, religious and other non-material benefits.

Favourable Condition – the situation in which a habitat or species is thriving and is expected to continue to thrive in the future, within a defined area of habitat or population e.g. within a protected site.

Geodiversity - The variety of the geological and physical elements of nature, such as minerals, rocks, soils, fossils and landforms, and the natural processes which form and alter them. Together with biodiversity, geodiversity constitutes the natural diversity of planet Earth.

Habitat - the natural environment of an organism, providing it with the provisions it needs to survive, such as food, water, shelter and space.

Habitat condition - provides one means of assessing habitat quality. A habitat condition assessment is like a health check-up. It uses set criteria to measure a habitat's state against its ideal ecological health. The number of criteria met by a habitat will decide its condition, which is usually classed as poor, moderate, or good. Condition takes into account problems such as levels of pollution and invasive species, as well as more positive qualities such as the number of species. It is strongly influenced by present and past management.

Habitat quality – Measures the ability of an area's resources and provisions to support a particular organism's survival, reproduction, and occupancy. It's a measure of how an area of habitat influences a species.

INNS – Invasive Non-Native Species. These are defined as those species found outside their normal or native range as a direct result of human activity. When a non-native species is established and then becomes a problem to the local ecosystem or economy, it is labelled 'invasive'.

Mitigation - Measures which aim to reduce impacts to the point where they have no negative effects.

Mosaics - a habitat mosaic is a spatial pattern of different habitats that are found close together.

Native species - A species that is within its known natural range, and occurs naturally in a given area or habitat, as opposed to an introduced species or invasive species. A British native species is often defined as one which colonised the British Isles naturally since the last glaciation over 10,000 years ago.

Nature Networks - "A Nature Network connects together nature-rich sites, including restoration areas and other environmental projects, through a series of areas of suitable habitat, habitat corridors, and stepping-stones." As defined by NatureScot

Paludiculture - farming and agroforestry systems designed to generate a commercial crop from wetland conditions using species that are typical of (or tolerant of) wetland habitats.

Pollination - the process by which whole pollen grains are transported to flowers of the same species for the purpose of sexual reproduction in plants. Pollen may be transported by wind or by pollinators such as insects, birds and mammals.

Population - A group of individuals of the same species, occupying a given area over the same period of time, which are capable of breeding with each other.

Priority habitats - habitats that have been selected for conservation and listed on the Scottish Biodiversity List (2020).

Priority species – in this document 'priority species' refers to species which meet set criteria and have been listed on the Scottish Biodiversity List, which are labelled 'conservation action needed' or 'avoid negative impacts' and are known in West Lothian.

Protected species - species protected by law including plants, animals and fungi.

Recently felled woodland – refers to the areas left after recent felling, usually from either commercial forestry operations or woodland re-structuring operations. Overall, the areas are still categorised as 'woodland' as it's assumed there is a requirement to replace the trees.

Regenerative farming - a holistic approach to farming that works with nature to produce food, whilst also restoring and regenerating the land, soil, water, and other natural resources.

Resilient ecosystems - Ecosystems which are functioning well, enabling them to recover from disturbance or disaster. Increasing the robustness of our ecosystems is increasingly important if we are to mitigate and adapt to the scientifically predicted ecological impacts of climate change and human population growth.

Species - In biology, this is a classification made up of related organisms that share common characteristics, are capable of interbreeding and produce fertile offspring.

Succession - Ecological succession is the process by which the mix of species and habitat in an area naturally changes over time.

Temperate regions – zones between tropical and polar regions, with a moderate climate and distinct seasons.

Threatened species - Umbrella term for any species categorised as Critically Endangered, Endangered or Vulnerable by the IUCN Red List of Threatened Species.

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West Lothian Council