BEDFORD BOROUGH COUNCIL **DECISION NO. ___1793____**

RECORD OF EXECUTIVE DECISION TAKEN BY AN EXECUTIVE MEMBER

This form **MUST** be used to record any decision taken by the Elected Mayor or an individual Executive Member (Portfolio Holder).

The form must be completed and passed to the Chief Officer responsible for Legal and Democratic Services no later than NOON on the second working day after the day on which the decision is taken. No action may be taken to implement the decision(s) recorded on this form until 7 working days have passed and the Chief Officer responsible for Legal and Democratic Services has confirmed the decision has not been called in.

1. Description of decision

(1) That the draft Local Nature Recovery Strategy be approved for the purpose of public consultation.

(2) That the Chief Officer for Planning, Infrastructure and Economic Growth be authorised to make any essential minor changes to the document before publication if required.

2. Date of decision

27 March 2025

3. Reasons for decision

The recommendation to agree the draft Bedfordshire Local Nature Recovery Strategy for the purpose of public consultation is so that the general public, stakeholders, partners and others with an interest have an opportunity to contribute to the Strategy before it is finalised.

4. Alternatives considered and rejected

Preparation of the Local Nature Recovery Strategy is a statutory requirement. There are no reasonable alternatives.

5. How decision is to be funded

Engagement of BBC officers in the production of the Local Nature Recovery Strategy is being met from existing budgets.

6. Conflicts of interest

Name of all Executive members who were consulted AND declared a conflict of interest.	Nature of interest	Did Standards Committee give a dispensation for that conflict of interest? (If yes, give details and date of dispensation)	Did the Chief Executive give a dispensation for that conflict of interest? (If yes, give details and the date of the dispensation).

The Mayor has been consulted on this decision | 27 March 2025 Tom Watts

Signed ..... Date: 27 March 2025 Name of Decision Taker: **Cllr. Nicola Gribble**
Environment Portfolio Holder

This is a public document. A copy of it must be given to the Chief Officer responsible for Legal and Democratic Services as soon as it is completed.

Date decision published: .....27 March 2025.....

Date decision can be implemented if not called in: .....7 April 2025.....

(Decision to be made exempt from call in.....NO.....)

For publication

Bedford Borough Council – Report to the Portfolio Holder for Environment

Date of Report: 27 March 2025

Report by: Chief Officer for Planning, Infrastructure and Economic Growth

Subject: BEDFORDSHIRE LOCAL NATURE RECOVERY STRATEGY

1. EXECUTIVE SUMMARY

1.1 England is widely reported to be one of the most nature-depleted countries in the world following historic and ongoing declines. In response, the last Conservative government appointed 48 'responsible authorities' to lead on preparing a Local Nature Recovery Strategy (LNRS) for their area. Together the 48 strategy areas cover the whole of England with no gaps or overlaps.

1.2 Central Bedfordshire Council was appointed by DEFRA as the responsible authority for this area with Bedford Borough Council and Luton Borough Council (along with Natural England) identified as supporting authorities. Other organisations and partners have also been involved in preparing Bedfordshire's draft strategy to ensure that it has been shaped by the people who know and understand the area best.

1.3 The purpose of the LNRS is to help people see where action to recover nature would be most effective. There is no requirement that any specific action must be carried out. Instead, proposals are intended to guide where the public, private and voluntary sectors should focus their nature recovery efforts for greater collective impact.

1.4 A first draft of the Bedfordshire LNRS has been prepared in line with regulations and statutory guidance. The next step is to invite comments on the draft before it is finalised. Consultation will be led by the responsible authority (CBC).

2. RECOMMENDATIONS

2.1 That the Portfolio Holder for the Environment considers this report and the consultation document at Appendix A and, if satisfied:

(a) Approves the draft Bedfordshire Local Nature Recovery Strategy (at Appendix A) for the purpose of public consultation; and

(b) Authorises the Chief Officer for Planning, Infrastructure and Economic Growth to agree any essential minor changes to the consultation document ahead of publication if required.

3. REASON FOR RECOMMENDATIONS

3.1 The recommendation to agree the draft Bedfordshire Local Nature Recovery Strategy (LNRS) for the purpose of public consultation is so that the general public, stakeholders, partners and others with an interest have an opportunity to contribute to the Strategy before it is finalised.

4. THE CURRENT POSITION

4.1 Local Nature Recovery Strategies are a new approach to identifying ways in which nature recovery can be delivered across the whole of England. Work on the first Bedfordshire LNRS started in earnest in mid-2023 with the appointment by Central Bedfordshire Council of a dedicated LNRS Project Officer. Since then, meetings and workshops have taken place with local partners, landowners and groups to prepare a first draft of the strategy.

4.2 The draft LNRS is made up of a local habitat map that shows areas that are of particular importance for biodiversity and a written statement describing the strategy area and setting out clear biodiversity priorities.

4.3 To comply with the Regulations, consultation on the draft LNRS must now be invited. More information is available on the dedicated LNRS web site https://bedslocalnaturerecoverystrategy.commonplace.is/

5. DETAILS

5.1 The overall ambition is that Local Nature Recovery Strategies will be a powerful new tool that will help public, private and voluntary sectors to work more effectively together for nature's recovery and enable collective effort to be focussed where it will have most benefit.

5.2 Key to achieving this will be creating and maintaining genuine local collaboration with a partnership of organisations and individuals working closely with the responsible authority (CBC). If successful, this will provide a locally owned foundation to developing the Nature Recovery Network and this in turn will help to achieve wider environmental objectives using nature based solutions (such as carbon sequestration to mitigate climate change or managing flood risk) and contribute to green economic recovery objectives.

5.3 The document at **Appendix A** to this report is the first LNRS to be prepared for Bedfordshire.

5.4 Whilst the LNRS includes a statement of biodiversity priorities it is a non-binding strategy, which means that there is no requirement on the responsible authority or other landowners and partners to deliver the opportunities identified. The LNRS doesn't confer any level of additional protection on sites or prevent development from taking place. Neither does it give permission to create habitat without relevant consents.

5.5 However, once in place public bodies will have to have regard to the LNRS as they go about their business. This is part of the wider biodiversity duty which requires that the Council's plans and strategies (including but not only the Local Plan) consider how they can deliver the agreed LNRS priorities to support nature's recovery.

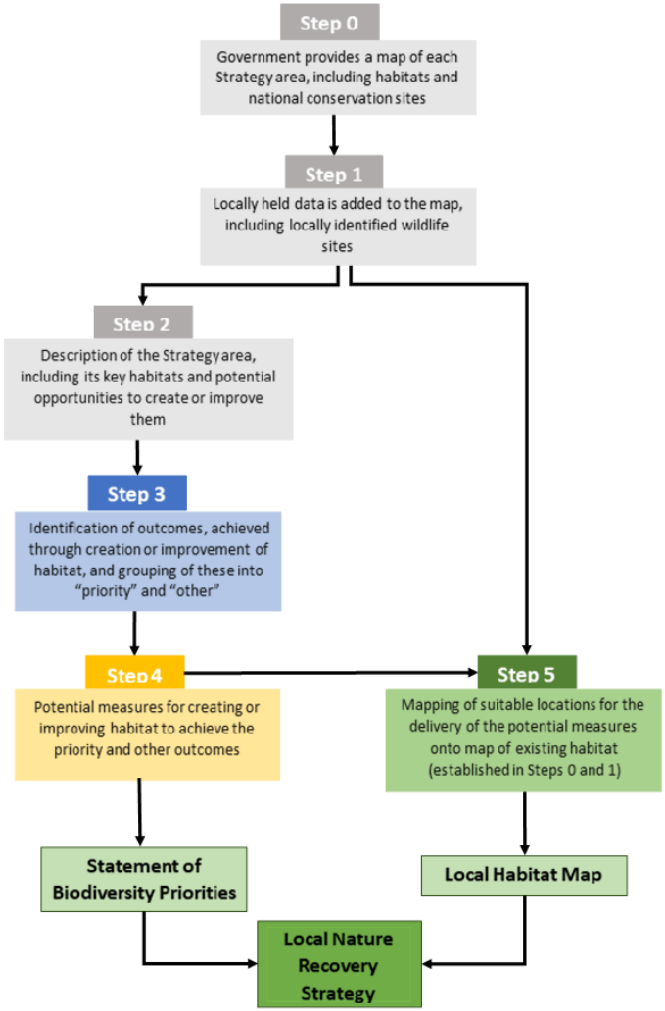
5.6 The process of preparing the LNRS in Bedfordshire has been led by Central Bedfordshire Council as the responsible authority, but many partners have been involved in reaching this stage. These include:

- Central Bedfordshire Council (responsible authority)
- Bedford Borough Council (supporting authority)
- Luton Borough Council (supporting authority)
- Natural England (supporting authority)
- Adjacent local authorities (Hertfordshire, Buckinghamshire)
- Bedfordshire Local Nature Partnership
- Environment Agency

- Forest of Marston Vale
- Forestry Commission
- Forestry England
- Wildlife Trust
- Greensand trust
- NFU
- Cranfield University
- Bedfordshire Rural Communities Charity
- Groundwork
- Local landowners, farmers and land agents including Luton Hoo Estate and Southill Estate
- NHS

5.7 National guidance sets out six steps for the creation of the LNRS as shown in Figure 1 below.

Figure 1 – Steps for producing a local nature recovery strategy



5.8 The strategy is made up of a written statement including biodiversity priorities and a local habitat map. It has three appendices:

Appendix 1 – Bedfordshire LNRS mapping methodology;
Appendix 2 – Bedfordshire LNRS Prioritisation Methodology and
Appendix 3 – Approach to engagement.

5.9 An engagement strategy has been prepared to guide the involvement of a wide range of stakeholders at appropriate stages in the strategy's production.

5.10 Different methods of engagement have been employed including one to one meetings, briefing sessions / presentations in person and on line, workshops in person and a widely cascaded invitation for those with an interest to submit comments on line. Appendix 3 gives more detail about the engagement to date.

5.11 Information has been given by releasing briefings, press releases, newsletters, posters and by creating a dedicated web site.

5.12 The information gathered from engagement during the strategy's preparation has helped to inform the scope and detail contained within the draft LNRS.

5.13 The priorities and actions cover the whole of Bedfordshire. In the Bedford Borough area these include:

- Woodland protection and creation, particularly through the north of the borough where there is existing ancient woodland and in the Forest of Marston Vale to the south of Bedford
- Wetland protection and creation along the River Great Ouse and its tributaries
- Neutral grassland creation
- River restoration and management of ponds and roadside nature reserves

5.14 Before it can be finalised there is now an opportunity for those with an interest to have their say on the draft strategy and the priorities for nature recovery that it describes.

5.15 All responses will be considered and where appropriate, changes will be made to the strategy before it is finalised later in 2025.

5.16 Implementation and monitoring of the LNRS will be important and government guidance is yet to be published on what is required and expected. Future guidance will hopefully also say more about the process of LNRS review and how often this should take place.

6. ALTERNATIVES CONSIDERED AND REJECTED

6.1 Preparation of the Local Nature Recovery Strategy is a statutory requirement. There are no reasonable alternatives.

7. KEY IMPLICATIONS

7.1 Legal Issues – relevant legal power

Preparing the Local Nature Recovery Strategy is a statutory requirement under the Environment Act 2021. It is to be prepared in accordance with The Environment (Local Nature Recovery Strategies) (Procedure) Regulations 2023 which came into force on 13th April 2023.

In line with the Regulations, Central Bedfordshire Council is the responsible authority for this area and must take reasonable steps to involve all supporting authorities in the preparation of the LNRS.

Bedford Borough Council, Luton Borough Council and Natural England are supporting authorities in this case. As the responsible authority, Central Bedfordshire Council will lead the consultation on the draft LNRS. By way of this decision, Bedford Borough Council as a supporting authority is confirming that it is content for the consultation to proceed (Regulation 11. 2(b)). The responsible authority must publish all responses to the consultation within a reasonable time of the consultation concluding.

The Environment Act 2021 establishes that all public authorities have a duty to conserve and enhance biodiversity and must 'have regard to' LNRSs in the process.

7.2 Policy Issues

The Bedfordshire Local Nature Recovery Strategy does not create new policy. However, by setting out priorities for nature recovery, it will support and inform the preparation and implementation of policies in other documents such as the local plan. No changes will be required to the emerging Local Plan 2040 however, once complete, the LNRS will inform the operation of policies in the development plan that seek to protect and improve the natural environment and achieve biodiversity net gain. Once finalised, the LNRS will ensure that those areas with greatest potential for nature recovery are better reflected in future local plan policies and in decisions on planning applications.

7.3 Resource Issues

The responsible authority (Central Bedfordshire Council) has received government funding to support the preparation of the Bedfordshire Local Nature Recovery Strategy. Bedford Borough Council's input as a supporting authority has been met from existing budgets.

7.4 Risks

The draft LNRS is being presented to the three local authorities for approval to move on to the consultation stage. There is a risk that the three authorities and Natural England are unable to agree the content of the draft LNRS. Should this happen, the Regulations make provision for the Secretary of State to be called upon to provide resolution.

The LNRS has been prepared in close consultation between the responsible and supporting authorities and it is not anticipated that the Secretary of State's intervention will be required. Therefore, this close working between the different partners is sufficient to mitigate the risk of agreement and subsequent adoption of the LNRS.

7.5 Environmental Implications

The LNRS is intended to help local people see where action to recover nature in their area would be most effective.

To do this, the LNRS will identify agreed priorities for nature recovery and propose actions in the locations where it would make a particular contribution to achieving those priorities. No negative impacts are anticipated.

As a public authority, Bedford Borough Council has a duty to conserve and enhance biodiversity and must have regard to the LNRS in the process.

At the national scale, actions identified in the LNRS will contribute to the expansion of a nature recovery network. This is a commitment in the 25 Year Environment Plan.

Consultation will take advantage of on-line methods in order to engage as many people as possible and reduce the use of paper.

7.6 Equalities Impact

In preparing this report, due consideration has been given to the Borough Council's statutory Equality Duty to eliminate unlawful discrimination, advance equality of opportunity and foster good relations, as set out in Section 149(1) of the Equality Act 2010.

A screening test for equality has been completed. The equality test did not identify any significant equality impact arising from the report.

Consultation will be carried out in accordance with the Council's adopted Statement of Community Involvement, which was itself the subject of Equality Analysis.

7.7 Impact on Families

No specific impact on families has been identified.

7.8 Community Safety and Resilience

Local Nature Recovery Strategies promote and support nature-based solutions (such as carbon sequestration to mitigate climate change or managing flood risk) and contribute to green economic recovery objectives. This will help to improve the resilience of Bedford Borough's communities.

7.9 Impact on Health and Wellbeing

This report to secure approval for consultation to take place has no specific direct implications for Health and Wellbeing. However, the LNRS itself seeks to improve nature which provides water, clean air, food and raw materials for medicines, industry and buildings. Crops rely on insect pollination and the complex biological processes that create soil.

Enjoying parks, landscapes and wildlife improves health and well-being. The implementation of the LNRS will improve these 'ecosystem services' and have a positive indirect impact on the health and well-being of residents and visitors within the borough.

8. SUMMARY OF CONSULTATIONS AND OUTCOME

8.1 The following Councillors, Council units, Officers and/or other organisations have been consulted in preparing this report:

- Portfolio Holder for Environment
- Director for Environment
- Finance Manger (Business Partner) – Environment
- Manager for Legal (ACE)
- Senior Officer for Equality, Diversity and Inclusion
- Chief Officer for Education, SEND and Schools
- Manager for Community Safety & Resilience
- Public Health
- Energy Team

8.2 No adverse comments have been received.

9. WARD COUNCILLOR VIEWS

9.1 This report does not relate to an individual ward.

10. CONTACTS AND REFERENCES

Report Contact Officer:	Gill Cowie Manager for Planning and Housing Strategy 01234 718567 (47567) Gill.cowie@bedford.gov.uk
Declarations of Interest by the Report Author:	N/A
File Reference:	Local Nature Recovery Strategy
Previous Relevant Minutes:	None
Background Papers:	None
Appendices:	Appendix A – Draft Bedfordshire Local Nature Recovery Strategy

Appendix A

Bedfordshire Local Nature Recovery Strategy

2025

BEDFORDSHIRE LOCAL NATURE RECOVERY STRATEGY

Version 1.0	11/4/24	RJ & MJ
Version 1.1	25/4/24	MD&SV comments
Version 2.0	10/7/24	RJ update based on steering group comments
Version 2.1	15/8/24	RJ updated based on comments
Version 3.0	10/12/24	RJ updated based on comments from SG and CG. Includes further detail on ecosystem services and more locally referenced area descriptions
Version 3.1	27/2/25	RJ updated with comments from steering group. Layout in landscape

Foreword

Bedfordshire's diverse landscape of rolling chalk hills in the Chilterns, the sandy soils of the Greensand Ridge, the Great Ouse River Valley and the ancient woodlands in the north of the county are home to a fantastic range of habitats and species. Bedfordshire is one of the smallest counties in England but is home to heathland, wetlands, peatlands and chalk habitats along with rare species such as adders, dormice and Duke of Burgundy butterfly.

The natural environment is vital for the health and wellbeing of people and communities and for environmentally sustainable economic growth. Protecting and enhancing existing biodiversity and creating new habitats is as much for people as it is for its own intrinsic value. People rely on clean water and air, insects that pollinate and habitats and land management practices that reduce the impacts of a changing climate. But the natural environment is under considerable pressure with the population of many species declining.

The UK is one of the most nature-deprived countries in the world and within it, Bedfordshire is one of the most nature-deprived counties. The natural environment within Bedfordshire is therefore in need of being cherished, restored, protected and enhanced and new habitat created.

Local Nature Recovery Strategies are one part of the Government's Environment Improvement Plan seeking to improve the natural environment. They aim to connect and enhance the most important sites for nature by making them bigger, better and more joined up. This will help species connect across landscapes to become more resilient to the challenges of climate change and development.

The Bedfordshire Local Nature Recovery Strategy has been developed to focus on local nature recovery priorities identified by local stakeholders. Many stakeholders have had an input into the development of the strategy. It is importantly a strategy for all Bedfordshire, led by Central Bedfordshire Council in conjunction with Bedford Borough Council and Luton Borough Council. The Bedfordshire Local Nature Partnership, in addition to supporting its development, comprised the steering group for the work. A wide range of stakeholders also actively contributed to its development.

This strategy could not have been developed without the knowledge and input of dedicated land managers, farmers, environmental organisations and communities who have already delivered vital work for nature. But collectively more needs to be done.

Dr Paul Leinster CBE

Executive Summary

Bedfordshire's natural environment is one of its greatest strengths. It provides natural resources that are important for health and well-being, helps build strong communities, and supports the local economy. However, the environment is facing more pressure as the climate warms. Bedfordshire is in the middle of a biodiversity and climate crisis, and these two issues are closely connected.

Nature is essential for tackling climate change and improving health, so there is a need to focus on restoring and protecting nature. It is urgent that action is taken quickly and in new ways if nature is to remain part of life.

Local Nature Recovery Strategies (LNRS) are new plans that are a key part of the government's Environmental Improvement Plan. These plans aim to create a larger, stronger, and better-connected network of wildlife habitats across England.

LNRS focus on the most important actions needed to protect nature in Bedfordshire and help meet national goals for nature recovery. The document explains what the natural environment of Bedfordshire is like, how it has been shaped by both people and wildlife over time, and the challenges it faces. It also highlights the value of nature in Bedfordshire for local communities and the economy. A healthy environment helps reduce flood risks, provides clean air, pollination, and spaces for people to enjoy, which benefits both physical and mental health.

The strategy includes opportunities for nature recovery and how to restore some of Bedfordshire's most valuable habitats and species. Bedfordshire has a variety of habitats, including heathland, grasslands, ancient woodlands, and chalk streams.

The strategy has two main parts**: a Statement of Biodiversity Priorities** and a **Local Habitat Map.** The statement explains what the strategy aims to achieve, based on input from local stakeholders and other plans. It also details how to make these goals happen with real actions on the ground.

The Local Habitat Map shows where the actions and goals can be put into practice. The success of the strategy depends on the involvement of many different groups, including landowners, conservation organizations, local authorities, and communities. These groups will work together to decide how and where nature recovery should happen and how to make the most of national funding programs.

The success of the strategy relies on a range of stakeholders. The strategy will inform national funding schemes, local plans and strategies and provide land managers, conservation organisations, local authorities and communities with a collaborative view on how and where nature recovery and other environmental benefits are best delivered.

Image 1 - Mute swan cygnets Credit: Jon Pauling

Contents

Introduction to Local Nature Recovery Strategies

1 Introduction to Local Nature Recovery Strategies

1.1 Why nature matters

Nature underpins people's existence. It provides the clean water, fresh air and healthy soils everyone needs. By working with natural processes, the risks of flooding can be reduced, carbon captured, and agricultural pests reduced. Everyone can benefit from being more connected with nature, and spending time in the natural environment is good for people's mental and physical health (Lamont & Hinson, 2024).

However, the natural world is under increasing pressure. There is a climate and biodiversity emergency. These two are inextricably linked and the impacts can be seen all around. Increasing global temperatures are impacting on the UK environment causing more flooding, wildfires and droughts. At the same time, the nature relied on to mitigate many of these impacts is being lost.

As a result, many of the familiar and rarer species and habitats are disappearing from the landscape. Over half of the UK's species are now declining. England is now one of the most nature-depleted countries in the world (NHM, 2021) and within this context Bedfordshire is one of the most impacted areas.

1.2 State of nature in England

The 2023 State of Nature Report - the product of a collaboration of environmental organisations, academic institutions and government agencies – highlights the decline in England's wildlife over recent decades. It provides a comprehensive overview of species trends throughout the UK. In England, wildlife has declined in abundance by 32% on average since 1970. More than half of plant species assessed have seen decreases in distribution. Of the 8,840 species in England that have been assessed using International Union for the Conservation of Nature (IUCN Regional Red List criteria)[1], 13% have been classified as threatened with extinction from Great Britain. (State of Nature, 2023)

1.2.1 What has caused the decline in nature

Evidence has shown that the main causes of biodiversity decline over the last 50 years are significant changes in land management and climate change (State of Nature, 2023). These are having the greatest impacts on England's wildlife with additional impacts from water pollution, invasive non-native species and development. But this decline in nature can be stopped, and with the necessary support, recovered.

1.3 Purpose of Local Nature Recovery Strategies (LNRS)

The Government has set out its aims for nature recovery within the 25 Year Environment Plan published in 2018, revised in the subsequent Environment Improvement Plan (EIP)[2]. These plans and the accompanying Environment Act 2021 legislation set out the requirements for Local Nature Recovery Strategies.

LNRS aim to bring together a wide range of stakeholders to set priorities for nature recovery in a local area and identify the best locations to deliver actions on the ground. Bringing together expertise and knowledge from a range of individuals and organisations, the LNRS will help identify what actions deliver the most for nature in Bedfordshire.

Each county in England will have an LNRS, creating a network of habitats across the country going beyond administrative borders. Each LNRS should look within its county but also beyond its borders to contribute to the ambition of a Nature Recovery Network. This Nature Recovery Network expands and joins up the most valuable terrestrial and freshwater sites for wildlife conservation.

[1] IUCN Red List of Threatened Species https://www.iucnredlist.org/en

[2] The EIP is being reviewed by the incoming Labour government 2024.

These strategies are an important driver for delivering change for nature. They will guide and work alongside other mechanisms such as the Environmental Land Management Scheme (ELMS), Biodiversity Net Gain (BNG), River Basin Management Plans (RBMP) and Local Development Plans. The government is committed to reviewing Local Nature Recovery Strategies 3-10 years after they are completed.

1.3.1 What it includes and how it has been produced

The government have appointed Responsible Authorities to lead on the development of each county's LNRS – 48 in total across England. Central Bedfordshire Council is the Responsible Authority for Bedfordshire, working with the Supporting Authorities of Luton Borough Council, Bedford Borough Council and Natural England and alongside a wide range of other stakeholders, including the Bedfordshire Local Nature Partnership which constitutes the steering group for the LNRS, land managers and farmers and local town and parish councils.

Responsible Authorities must follow the regulations set out in the Environment (Local Nature Recovery Strategies) (Procedure) Regulations 2023. These strategies must include:

- An area description – describing the important natural and landscape features of the county and opportunities for recovery.
- A Statement of Biodiversity Priorities – what the strategy is seeking to achieve and how these could be delivered.
- A Local Habitat Map - includes the most valuable existing sites for nature and opportunity areas where habitats can be created and expanded.

1.4 Strategy area and local authority boundaries

Bedfordshire covers an area of 1,235 km^2 has a population of 709,491. There are 3 unitary authorities within Bedfordshire (*figure 1)*. Central Bedfordshire has a population of 294,300, Bedford Borough 189,891 and Luton Borough 225,300 (Office for National Statistic, 2021).

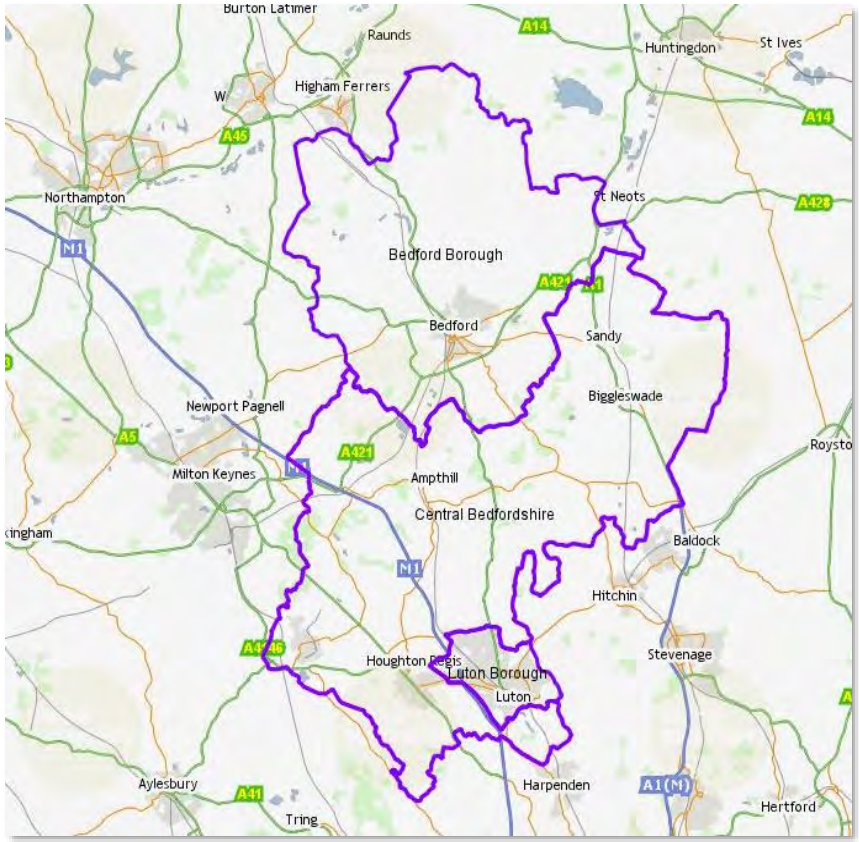


Figure 1– map showing the three local authorities within Bedfordshire

1.5 Nature Recovery Network

The focus of LNRS is to identify actions and locations to create or improve habitats that provide greatest benefit for nature and the wider environment. They seek to identify where habitats can be created, restored and linked – following the principles of more, bigger, better and more joined up, as set out in the Lawton review (Lawton, et al., 2010) to help species recovery. This is represented in *figure 2* below.

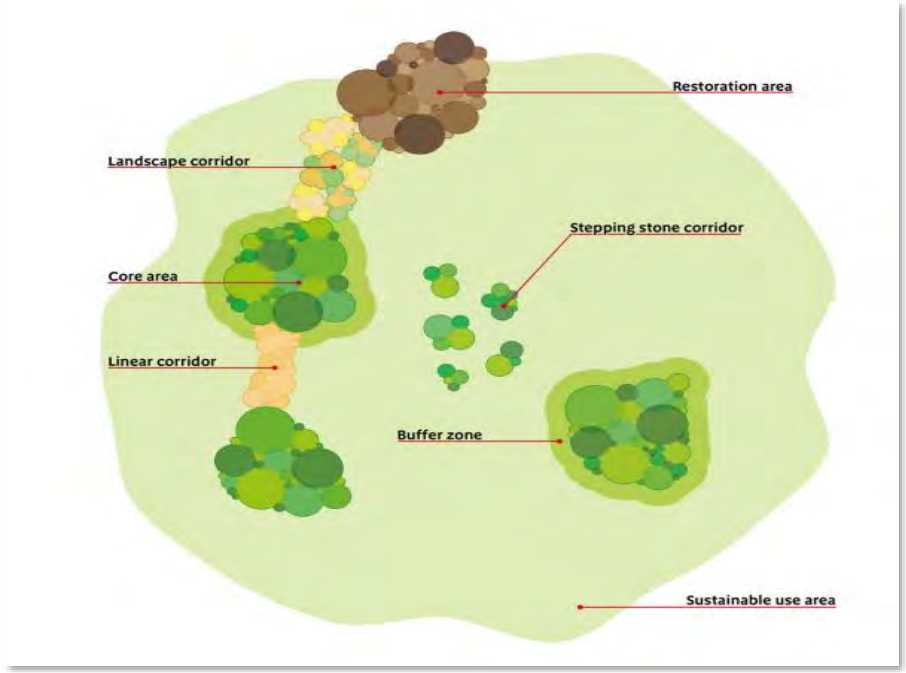


Figure 2 The components of ecological networks (Lawton, et al., 2010)

1.5.1 Steps in developing the strategy[3]

The Government published statutory guidance to direct responsible authorities in the development of each strategy. This guidance sets out 5 steps to follow. These are set out below in *Figure 3.* Step 2 in this guidance is not required as part of the development of this initial LNRS but will part of the review process for future LNRS.

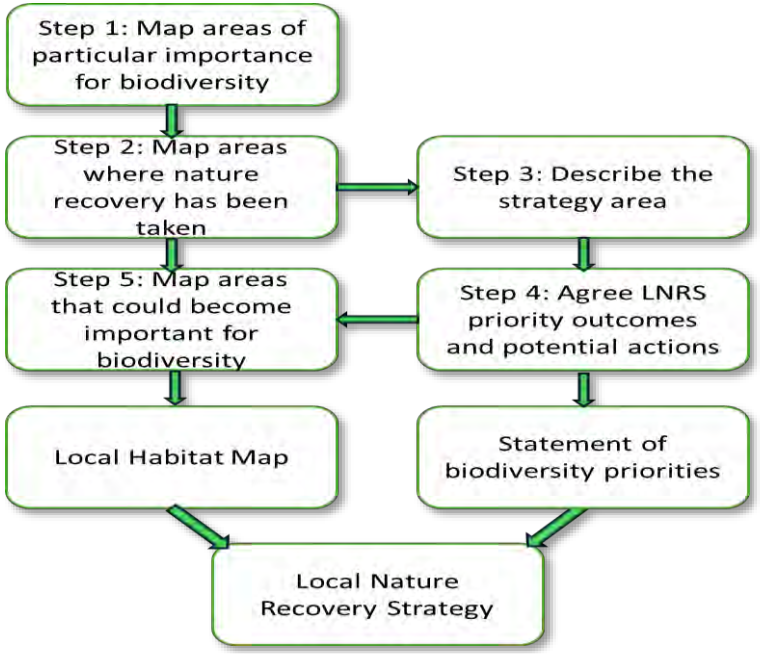


Figure 3– Defra statutory guidance on the proposed method of production.

[3] Government published statutory guidance for responsible authorities in Spring 2023. Local nature recovery strategy: what to include - GOV.UK

1.6 How to use the strategy

This strategy is for anyone with an interest in or opportunity to support nature's recovery in Bedfordshire. It sets out a range of measures that will help nature recover in Bedfordshire and where to carry them out. By sharing these measures, it will help those looking to protect and enhance species and habitats and to join up their work with others to deliver more for nature.

Figure 4 sets out the steps those using the strategy could follow to identify the priority nature recovery measures and locations to deliver them. Linking the most important measures for local nature recovery with the locations where they are best delivered is the central to the LNRS.

Figure 4– step by step process in getting the most from the strategy

1.7 Key Audiences

1.7.1 Farmers, land managers and land agents

Approximately 65% of Bedfordshire is farmed in some way. The LNRS sets out ambitions for nature recovery, what the best actions for nature recovery are, and where they can be delivered. Many farmers and land managers are already delivering actions for wildlife on their land. This strategy aims to build on this work by guiding decision making with nature in mind.

The LNRS itself will not dictate what is done on their land. It is a strategy to help inform future nature recovery. The opportunity mapping is for guidance to aid decision making by identifying what actions will deliver the most for nature in different parts of Bedfordshire. Working with nature provides a range of benefits from pollination to soil quality. Farmers and land managers are therefore encouraged to engage with and use the LNRS.

1.7.2 Conservation organisations

Conservation organisations such as the Bedfordshire, Cambridgeshire and Northamptonshire Wildlife Trust (BCNWT), the Forest of Marston Vale and the Greensand Trust have extensive knowledge of the needs of wildlife and how nature recovery can be delivered. This has helped to develop the strategy. Bringing this information together provides conservation organisations with a strategic view of how nature reserves and other land could be managed. They are also landowners, managing some of the best locations for nature in Bedfordshire.

1.7.3 Local authorities

Local authorities have a vital role in helping nature recover as policy makers, Local Planning Authorities and land managers. In England, all local authorities must consider what they can do to conserve and enhance biodiversity. This is the 'biodiversity duty' that the Environment Act 2021 introduces.

This means that, as a public authority, they must:

- Consider what they can do to conserve and enhance biodiversity
- Agree policies and specific objectives based on their consideration
- Act to deliver your policies and achieve their objectives.

Local authorities must take account of Local Nature Recovery Strategies when developing local policies, plans and investment. They must consider how these strategies may affect local authority owned or managed land, or actions they could take to conserve and enhance biodiversity.

In addition, the LNRS can provide additional biodiversity net gain (BNG) value by identifying areas of opportunity where values are raised.

1.7.4 Local communities and town and parish councils

Everyone can make a difference for nature and provide places for wildlife, whether in urban or rural locations. Local communities are some of the most passionate advocates for supporting wildlife locally and stewarding their land for nature.

This strategy aims to provide guidance on what opportunities may be available on the land they manage. In particular, practical on the ground actions that could contribute to nature's recovery.

1.8 Local Habitat Map

The Local Habitat Map represents the mapping part of the LNRS and should be viewed in conjunction with this document and consists of two main elements.

1.8.1 Areas of Particular Importance for Biodiversity

The first element is the "Areas of Particular Importance for Biodiversity" (APIB). The APIB are sites that either receive statutory protection including Sites of Special Scientific Interest (SSSI) and National and Local Nature Reserves or are locally important sites such as Local Wildlife Sites and irreplaceable habitat.

Local Wildlife Sites (LWS) are currently not included within the online mapping platform. Defra are unable to satisfy the LWS data holders for Bedfordshire that the requirement to share Local Habitat Maps as open source data will not significantly impact on their commercial operation. However, they are considered a APIB and are included in the APIB Map in *figure 5* below. For full details of Local Wildlife Sites including locations, contact the Bedfordshire and Luton Biodiversity Recording and Monitoring Centre brmc@bedsbionet.org.uk - 01234 362777

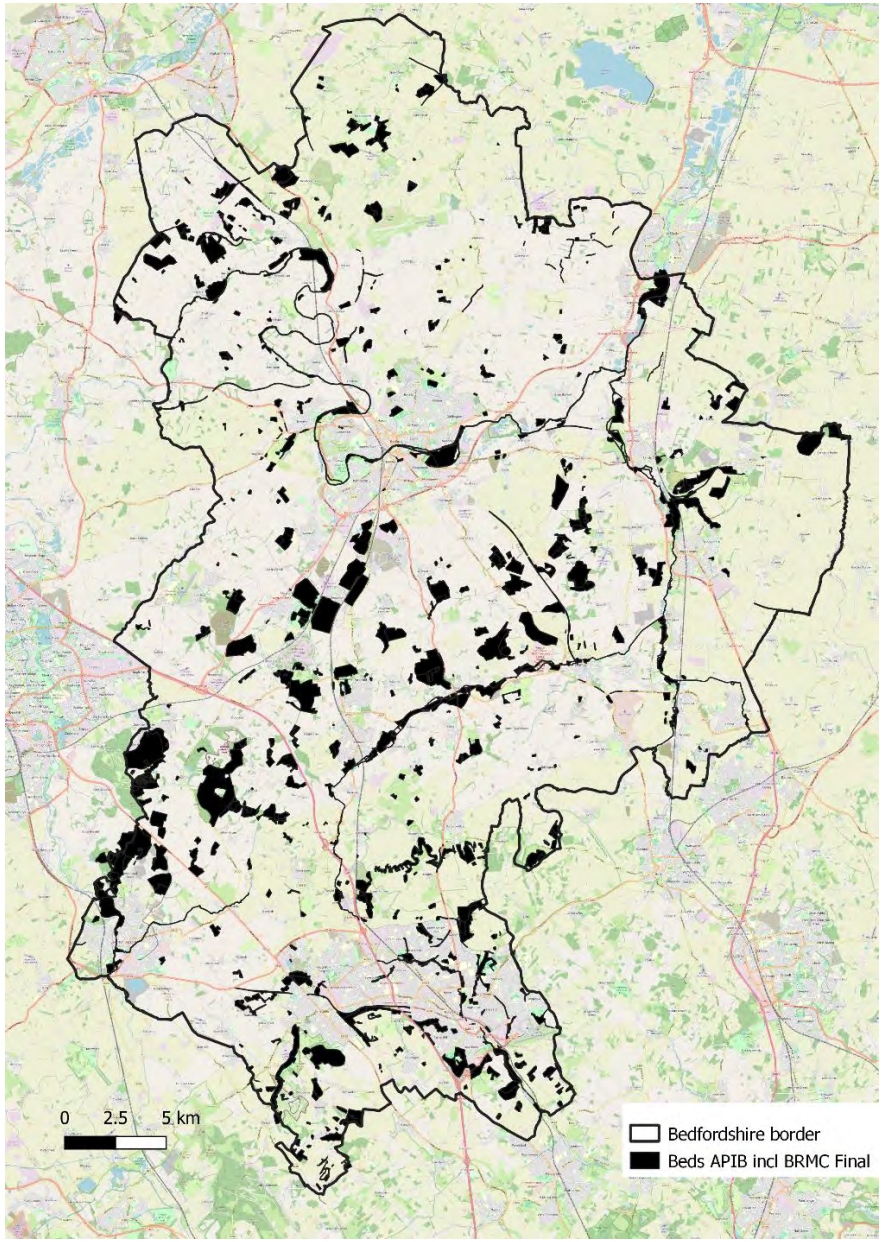


Figure 5 - Map showing the Areas of Particular Importance in black with the Bedfordshire Boundary. ©Crown Copyright and database rights 2023. Ordnance Survey AC0000806481 Bedford Borough Council and AC0000851074 Central Bedfordshire Council and AC0000808846 Luton Borough Council. Contains public section information under the Open Government Licence v3.0

1.8.2 Mapped Measures

The second element shows where nature recovery opportunities may be possible by delivering the measures set out in *Section 5 Statement of Biodiversity Priorities.* These measures are practical, on the ground actions that would contribute towards nature recovery. They focus on both maintaining and improving existing habitat and creating new places for nature to thrive.

Not all priority outcomes and measures have been mapped due to either a lack of data, the datasets are too broad or there are concerns that the mapping may misrepresent the on-the-ground management.

To view the Local Habitat Map press 'control' a click on the  symbol. You will be able to select different layers which will turn on or off the APIBs and the different mapped measures.

1.8.3 Local knowledge and ground-truthing

This strategy provides an overview of the potential actions for nature and opportunity areas to deliver them based on the best information available. It provides guidance for farmers, land managers and local authorities and communities to make informed decisions and consider how these may work on the land they care for. Local knowledge from those who know the land best is crucial for the subsequent detailed planning required to put the measures in place.

1.8.4 What it means if land is mapped in the Local Habitat Map

The mapped measures shown in the Local Habitat Map have been developed from a range of sources including existing habitat, soil types and stakeholder input (*see appendix 2 – Bedfordshire LNRS Mapping Methodology)*. They do not impose any requirements on the land that has been identified or compel land managers to deliver the measures. They have been developed to help inform land management choices for nature recovery. Areas within the map do not receive any additional statutory protection and will still require any relevant permits or planning permission and must meet any other requirements such as landscape character and protect historic sites.

The LNRS also aims to direct habitat creation required through Biodiversity Net Gain (BNG)[4]. Where developers are required to deliver BNG then they will receive an 'uplift' if they deliver this in areas where measures have been mapped.

1.8.5 Areas of Bedfordshire without measures – 'white space'

Nature recovery measures can be delivered anywhere in Bedfordshire. However, limited resources amongst key organisations such as conservation charities, local authorities and farmers and land managers means that an element of focus is required to drive measures in the areas they will have the biggest impact. The purpose of the Local Habitat Map is to show the best places to deliver the measures within the Statement of Biodiversity Priorities.

While the Local Habitat Map provides focused areas, many of the mapped measures could be delivered outside these areas and would still deliver good opportunities to provide bigger, better and more joined up habitat.

[4] BNG is an approach to development. It makes sure that habitats for wildlife are left in a measurably better state than they were before the development. Developers must deliver a BNG of 10%. This means a development will result in more or better-quality natural habitat than there was before development. www.gov.uk/guidance/biodiversity-net-gain

Area Description Nature, People and Landscape

2 Area Description – Nature, People and Landscape[5]

2.1 Overview

Located in the East of England region, Bedfordshire is one of the country's smallest counties, covering an area of approximately 1,235km^2. The county is divided into the 3 administrative areas of Bedford Borough Council, Luton Borough Council and Central Bedfordshire Council, with major infrastructure such as Luton Airport, M1 motorway and major roads such as the A1. In addition, attractions including Centre Parcs, Whipsnade Zoo and Woburn Safari Park draw in millions of visitors a year but also provide benefits for wildlife. Bedfordshire is home to over 700,000 people and many more commuters and visitors.

Bedfordshire's diverse nature and landscape is influenced heavily by the underlying geology as well as having been shaped by man's interaction with the landscape in both the past and present. There are significant heritage sites and evidence of historic land management, linked to many of Bedfordshire's habitats. Tools dating back to the Palaeolithic era have been found in the county and numerous manors (Bedfordshire Archives, n.d.). The combination of geology and heritage shape the habitats and species found in Bedfordshire today.

The habitats in Bedfordshire have changed significantly over recent decades. Habitat loss, agricultural intensification, industrial usage, housing, infrastructure and water, air and light pollution has resulted in a very fragmented network of remaining sites. The wildlife rich areas, particularly in the Greensand Ridge and the Chilterns, also suffer from significant recreational pressure (Beds LNP, 2015).

2.2 Protected Areas

The UK has many different types of statutory and non-statutory protected areas. This includes international, European, UK and locally designated areas with different levels of protection. [6]

Bedfordshire has one of the lowest proportions of nationally protected habitat in England as shown in *figure 5*. Around 346 ha are designated as Local Nature Reserves in Bedfordshire (0.28% of the total land area). A further 173 ha (0.14%) of land designated as National Nature Reserves and 1,374 ha (1.11%) designated as Sites of Special Scientific Interest (SSSI). This is well below the national average for SSSI coverage (8.1%) (England, Natural England Standards, 2015).

In contrast, Bedfordshire has a high number and coverage of Local Wildlife Sites. These sites do not receive statutory protection but can be some of the best for wildlife in the county. There are 415 County/District wildlife sites covering around 7% of the county. More than the national average (5% coverage) in England as a whole (The Wildlife Trust, 2016) and 35 Roadside Nature Reserves.

Some of these designations overlap but the total amount of land receiving some level of protection amounts to 7,490 ha, or 6.06% of the total area of Bedfordshire (Bedfordshire Recording and Monitoring Centre, 2024).

In addition, 6,365 ha (5.15%) of the Chilterns National Landscape falls within Bedfordshire.

[5] Step 4 in the statutory guidance *figure 3*

[6] Further information about the status of protected sites is available from the Wildlife Trust Protected areas | The Wildlife Trusts

National statutory protected sites		
	Bedfordshire	**England**
SSSI	42 (1.11%)	4100 (8.1%)
NNR	3 (0.14%)	221 (0.8%)
Local statutory protected sites		
LNR	20 (0.28%)	1720 (0.3%)
Local non-statutory sites		
Local wildlife site (county wildlife sites, district wildlife sites)	408 (7%)	43,000 (5%)

Figure 6 - Number of protected sites in Bedfordshire compared to England as a whole. (x%) indicates percentage of land cover from designation

In addition, the condition of these protected sites is assessed. Just over half of the units[7] within the nationally import SSSIs are in favourable condition as shown in *figure 6* below.

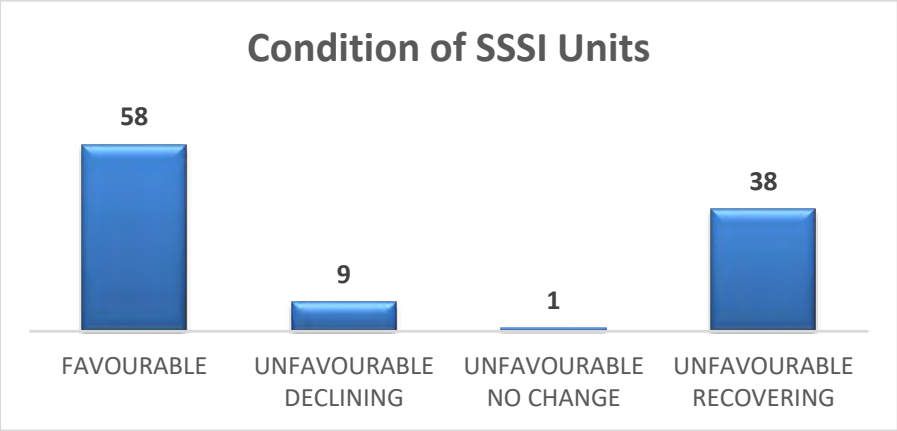


Figure 7 - chart showing the condition of units within Bedfordshire's SSSI.

These protected sites are the core of Bedfordshire wildlife. As described in the Local Habitat Map, they are the Areas of Particular Importance for Biodiversity. Keeping these sites in good condition and then buffering, expanding and connecting through habitat creation is central to this strategy.

Image 2 – Pyramidal Orchid Credit: Richard James

[7] Each SSSI is made up of different units which are assessed for their condition. These range from favourable to unfavourable declining.

2.3 Land use change over time

Bedfordshire, like many counties, has experienced significant land use change over the last 100 years. This has had an impact on the diversity of wildlife within the county. As shown in *Figure 7* there has been a significant decrease in the amount of semi-natural grassland with an increase in arable, improved grassland and built-up areas. Bedfordshire has important remnant areas of acid, neutral and calcareous grassland. These habitats are home to a variety of plants, animals and fungi such as pasqueflower, chalkhill blue and adders that require specific grassland management. Improving, increasing and linking these areas provides an opportunity to deliver nature recovery for some of Bedfordshire's priority species. As a result of these significant changes in land use, the biodiversity crisis is very much impacting Bedfordshire. However, significant initiatives are already underway, in the Marston Vale, the Chilterns and the Greensand Ridge.

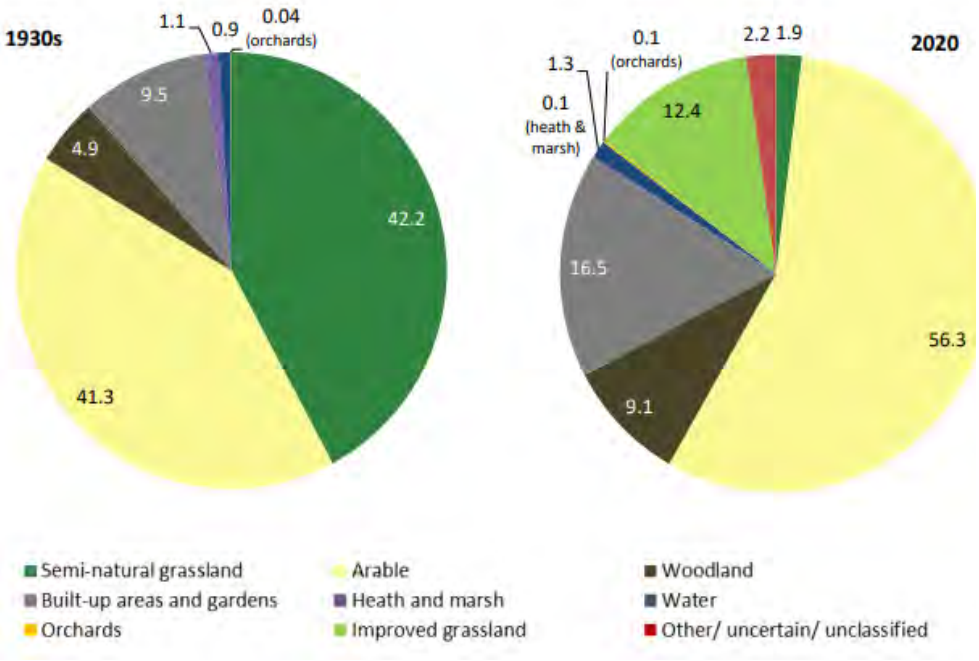


Figure 8 - Comparison in habitat type in Bedfordshire between 1930s and 2020 (Dr Jim Rouquette, 2021)

2.4 North Bedfordshire

Across the north of the county is a network of woodland areas *Figure 8.* This falls largely within the Yardley and Whittlewood Ridge National Character Area (England, National Character Area Profiles, 2015) Only around 7755 hectares of the ridge sit within Bedfordshire, but of that just under 10% is woodland or scrub. Santa Pod raceway and Colworth Science Park are both located within the ridge in Bedfordshire.

There is a variety of semi-natural habitats including ancient and lowland mixed deciduous woodland, wood pasture and parkland, hedgerows, veteran trees and lowland meadow.

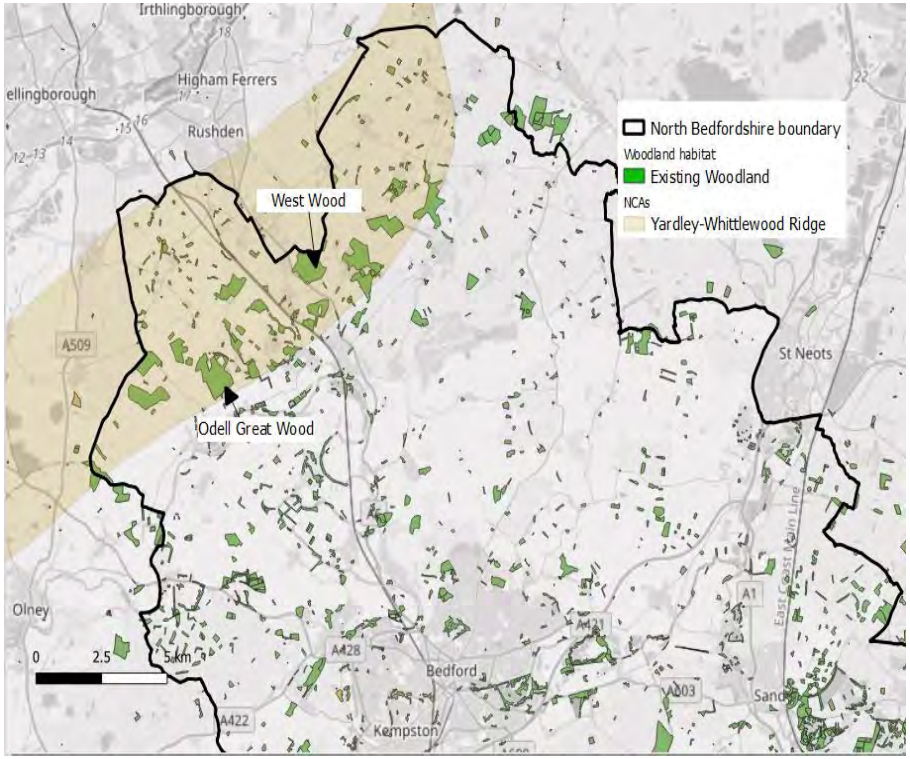


Figure 9 Map of North Bedfordshire covered by the Yardley and Whittlewood Ridge National Character Area and existing woodland.

2.4.1 Key locations

Odell Great Wood SSSI is a privately owned wood is an ash-maple woodland, typical of those that develop on clay in central England. Around 86 hectares is protected as a Site of Special Scientific Interest, and this is complemented by a network of other woods and grasslands. This makes the site one of the largest remaining ancient woodlands in the county.

West Wood is only slightly smaller (84Ha) than the nearby Odell Great Wood. An oak / ash woodland, with an understory with a high proportion of hazel, the site has been restored significantly through the removal of conifers. The site is managed by Forestry England, who intend to manage the rides to maintain significant open space, which should favour some invertebrates.

Strawberry Hill was taken out of farming in the early 1980s, Strawberry Hill was allowed to scrub up through natural succession. A complex pattern of primarily blackthorn and hawthorn scrub, with oak and ash in sections, has developed. The site currently maintains significant populations of blackcap, turtle dove, many warblers, and more than 30 territories of breeding nightingales. Lack of management may see that interest decrease in future years, and the BCNWT is currently seeking to secure the future of the site to allow management, and unmanaged reversion to be compared for their wildlife value, and carbon storage, which is less understood in scrub habitats.

Yelden Meadows SSSI is a small site designated for its variety of grassland flora. Management with a hay cut in summer, and then aftermath grazing, has maintained the site in favourable condition with a flower community typical of old meadows. Species include meadow brome field wood-rush cuckoo-flower, pignut, dropwort, yellow rattle, pepper saxifrage and lady's bedstraw.

Yelnow New Wood was planted on former arable land in 1991. The 39 hectares are a mix of deciduous and conifer woodland on heavy clay soils.

2.5 Great Ouse Valley

The majority of Bedfordshire is within the River Great Ouse catchment as shown in *figure 9*. Shallow river valleys have created a gently undulating lowland plateau. *Figure 9* excludes the Greensand Ridge (Section 2.4) and sections of Bedfordshire Chalk (Section 2.5).

The Bedfordshire section of the Great Ouse management catchment, Upper Bedford Ouse, is made up of 4 operational catchments: Bedford Ouse, Lower Ouse, Ivel and the Ouzel and Milton Keynes catchments as shown in *figure 10*. (Environment Agency, 2022)

Clay is the predominant underlaying geology with much of this area falling within the Bedfordshire and Cambridgeshire Claylands. Historic brickfields through the Marston Vale have created a distinctive post-industrial landscape with man-made waterbodies and now restored landfill sites. Restoration of sand and gravel workings has left a series of flooded and restored waterbodies within the river valleys. (England, National Character Area Profiles, 2015)

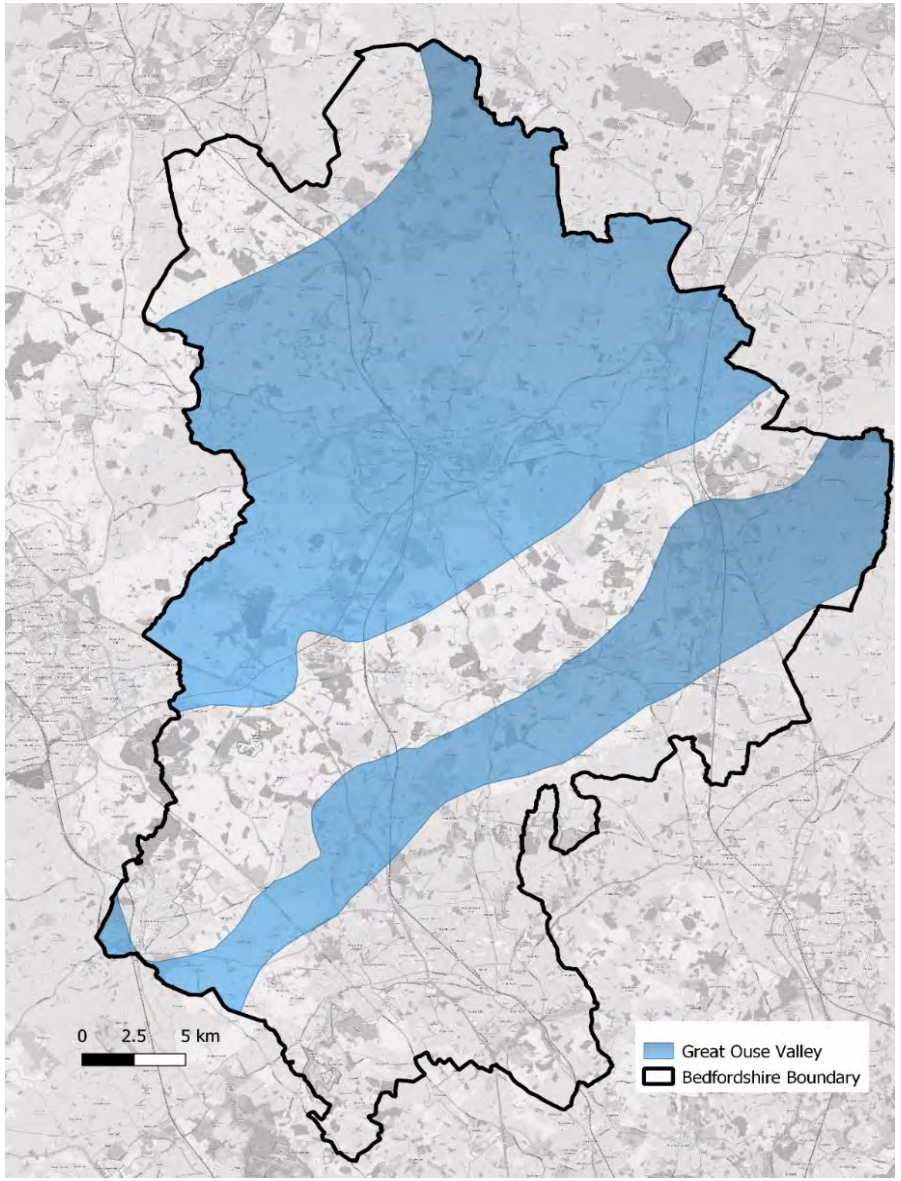


Figure 10 - Area broadly represents the Great Ouse Valley not including sections of the valley within the Greensand Ridge, Chilterns or East Anglia Chalk NCA

Arable farming is the dominant land use with less than 5% of the area identified as priority habitat by Natural England. More than half of that is deciduous woodland. There is a range of habitats found in this area including woodlands, grasslands, wetlands and rivers. Recent man-made habitats include the woodland plantations in the Marston Vale, the mosaic habitats of old brickpits and the gravel pits of the Great Ouse valley.

The Great Ouse is a major feature in Bedfordshire. The Ouse along with its tributaries add considerably to the diversity of wildlife habitats. These include wet woodland, fens, peatland, reedbeds and the river itself. In addition, small parts of the Nene, Lee and Cam and Ely Management catchments are found in Bedfordshire.

Image 3 - River Ouse through Bedford Embankment

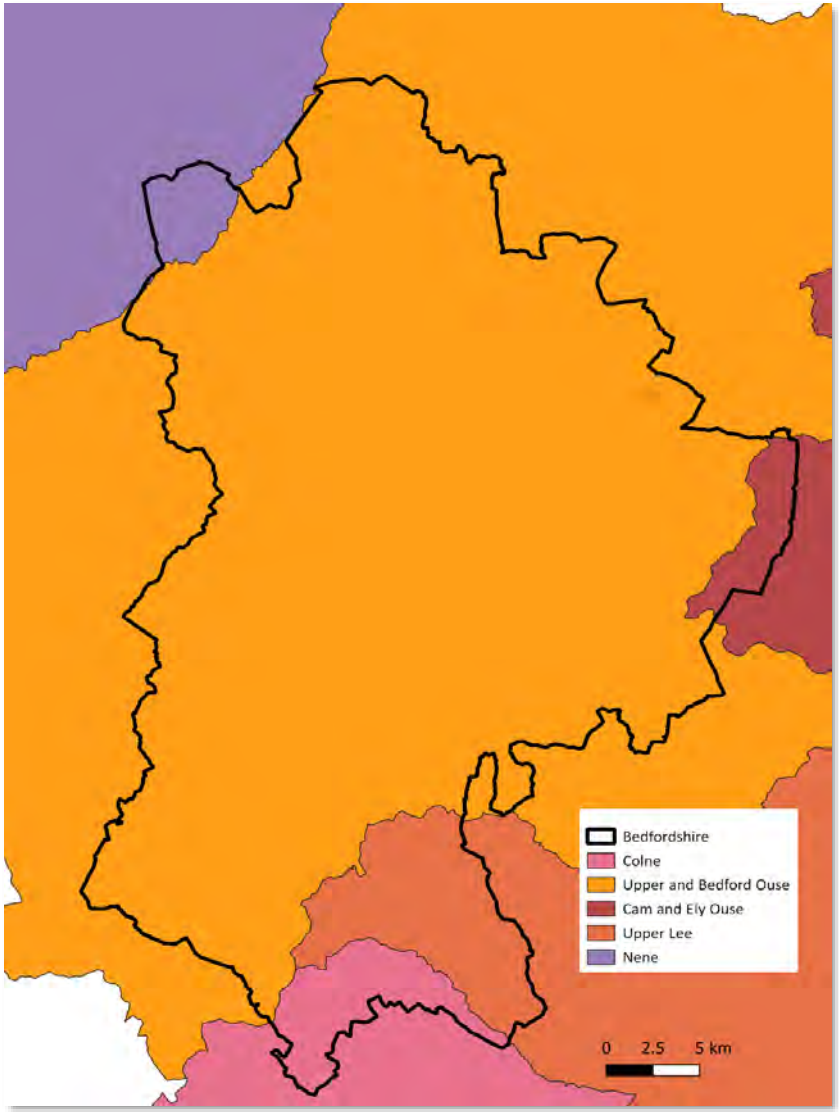


Figure 11 – Water Framework Directive Management catchments in Bedfordshire

2.5.1 Key locations

The Forest of Marston Vale stretches across much of central and western Bedfordshire as shown in *Figure 11*. It was established in the early 1990s as a Community Forest to revitalise the area, and with a significant target to increase tree cover The mix of existing brick pits in the Marston Vale provides significant areas of wildlife-rich habitat, much of which is formed of mosaics of shrubs, open ground and grassland, with extensive areas of water. As well as providing a home of significant populations of great crested newt, a species which while thriving here has declined significantly across Europe, these areas are important for their communities of invertebrates and birds. Having planted over 2 million trees to 2024, significant community woodlands have been created to enhance the existing habitats, some of which are now becoming relatively mature woodland.

At the time of designation tree cover within the Marston Vale was approximately 3%, well below the national average. The Community Forest has achieved approximately 16% tree cover and is working towards 30% tree cover. Although the most recent plantations are very young, they support enhanced wildlife communities very rapidly, which then mature alongside the woodland. (Forest of Marston Vale, 2018) .

Figure 12 - Map of Forest of Marston Vale area (in green) within Bedfordshire boundary

Felmersham gravel pits SSSI was created towards the end of the second world war, when gravel was extracted, possibly for the creation of nearby airfield runways, these gravel pits are fed from groundwater which has remained very low in nutrients, being isolated from fertiliser runoff which goes into the river. The pits support a range of plants which are unusual in the county, including bladderwort and whorled-water milfoil, and at least 18 species of dragon and damselfly. The site was 'enhanced' by a well-meaning local with the addition of a number of plants including Water Soldier, which now dominates parts of the lakes. There is concern this will affect the natural plant and insect communities, but the Norfolk hawker dragonfly, which is expanding into the county, may benefit as it uses the plant to lay its eggs.

Harrold Odell Country Park LNR is a good example of wildlife management integrated with high visitor numbers. The site has over 160 species of bird recorded, and the nature reserve areas supports marsh and bee orchids (the county flower of Bedfordshire). As otters returned to the Ouse, this was one of the earlier sites where it was possible to have regular views, and a family is often spotted crossing the river. When the rare Clouded Fusehorn sawfly was declared extinct in the UK in 2022, it was immediately discovered on willow at the country park.

Priory Country Park is one of the key sites for natural greenspace within Bedford itself. While the larger lake supports wildfowl that are used to the high levels of public use, and sailing on the water, the finger lakes provide a more secluded habitat. The park is enclosed by the Great Ouse on three sides, and the New Cut of the river to the north which is a byproduct of the creation of an embankment for the railway in the 1840s.

Image 4 - Priory Country Park - Credit Ben Woodfine

Wrest Park was designed, at least in part, by 'Capability' Brown, the landscaped gardens have a monument to the famous landscaper. Now owned by English Heritage, the site retains some parkland, and the formal gardens boundary is largely canalised which provide freshwater habitat.

Potton Wood SSSI lays just outside the Greensand Ridge, the woodland demonstrates the impact of the clay soil, with its wet ash-maple community typical of heavier soils in central England. Although largely ancient woodland, the site demonstrates the impact of active management, with significant areas of it being secondary woodland over ridge and furrow – developed through cultivation as farmland in the Middle Ages. More modern management has included significant coniferization of parts of the wood. The site supports the only oxlips plants in Bedfordshire, which hybridise with primroses.

Fancott Woods and Meadows SSSI is a remnant of the species-rich grassland which would have been much more prevalent throughout the clay soils which dominate much of Bedfordshire. The meadows are on an ancient ridge and furrow site and are surrounded by a band of woodland which shelters the site. One of few sites in Bedfordshire to retain green winged orchids, other species found here which would once have been characteristic of the countryside in the county, but are now very restricted, include pepper saxifrage saw-wort dropwort and adder's-tongue fern plants.

Rushymeade LWS is an ancient meadow on the south-eastern slopes of Pulloxhill. Rushymeade is owned by the Pulloxhill Parish Council for the enjoyment of the village. It is just over sixteen acres of open meadow land, boggy ground and shrubby areas where a wide variety of wildlife and birds can be seen. A further four acres of private grassland, with permissive access, makes up the whole area.

2.6 Greensand Ridge

The Greensand Ridge lies almost entirely within Bedfordshire with its south-west extent into Buckinghamshire, and north-east into Cambridgeshire (*figure 12)*. Rising above the surrounding clay vales, the ridge lies on Woburn Sand, creating relatively low nutrient, free draining soils. The Rivers Ouzel and Ivel cut through the ridge, running in a northwards direction, while the River Flit flows eastwards through the southern edge (having originated from the chalk) towards its confluence with the Ivel, becoming more significantly influenced by its acidic geology. Along the Flit valley there are areas of peat, which although relatively small compared to the fens much further to the east, are highly important deep peat formations, providing a key habitat for wildlife and storing carbon. The scarp slope, to the northwest, overlooks the Marston Vale and provides an attractive wooded skyline.

The acidic soils are less productive than the surrounding clay, and although agriculture is still the predominant use of the land, a higher proportion of the land retains significant wildlife value, with just under 16% of the landcover identified as priority habitat, compared with just under 5% of the claylands.

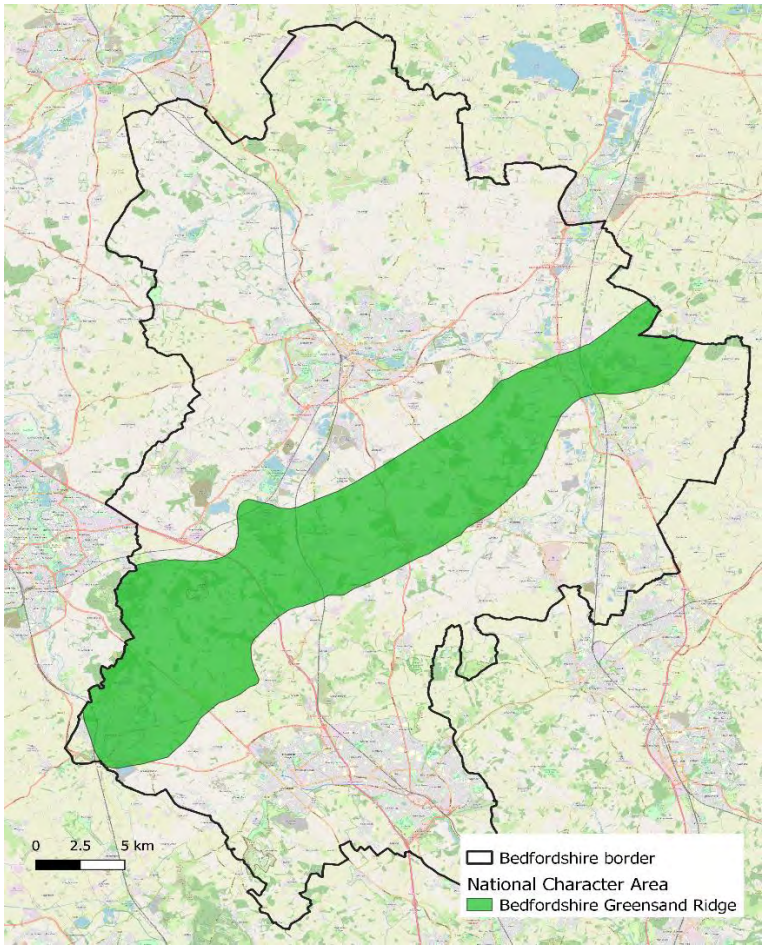


Figure 13 - Map showing the Greensand Ridge along with the Bedfordshire Boundary

In 2012 the Ridge was formally recognised as a 'Nature Improvement Area' (NIA) (Greensand Trust, RSPB, BCN Wildlife Trust, Central Bedfordshire Council, 2017) because of this existing value, and the potential to restore and connect ecological networks at the landscape scale. Historically the ridge supported extensive heathland areas. These are now much reduced, but important heathlands remain along the ridge. The ridge is relatively well wooded for central England, with around 10% cover, however a significant amount of this is coniferous plantation. Large but isolated areas of ancient woodland remain, especially where boulder clay deposits made clearance for agriculture use less attractive. Coniferous forestry is beginning to be re-planted as broadleaved or mixed woodland in places.

The Greensand Ridge has been heavily influenced, in many ways, by large country estates and their associated parkland. It contains the highest proportion of parkland of any National Character Area. Some remain managed as farms, forestry and parkland, such as the Southill Estate, others such as Woburn have developed as major tourist centres. The Lodge at Sandy has become the headquarters of the RSPB and has a significant habitat creation focus on the land adjacent.

2.6.1 Key locations

Kings and Bakers Woods SSSI has a good mix of habitat. The sessile oak woodland is more typical of western England and is rare in the east. The once more dominant small leaved lime remains in the understory. Drier, sandy areas support heather and bilberry. The ownership of this complex of woodland, acid grassland and heath are complicated, due to the sale of the site in small lots several decades ago. Areas with public access have been designated as a National Nature Reserve, reflecting the quality of the habitat.

Rushmere Country Park covers over 170ha of woodland, heathland, grassland and lakes. Ongoing heathland restoration is taking place on areas planted with conifers, and broadleaved woodland restoration. The site is a popular Country Park, with over 300,000 visits per annum, but access is managed through a zoning system to provide areas where nature recovery is the priority. Rushmere is adjacent to Rammamere Heath SSSI, which is largely in Buckinghamshire, and significant areas are included within the Kings Wood and Rushmere NNR**.**

Aspley / Woburn sites are a complex of woodland, heathland and acid grassland, surrounding the village of Woburn. This includes the Wavendon Heath Pond SSSI designated for its acidic mire and supporting plant communities, uncommon throughout eastern England, two meadows of unimproved and semi-improved acid grassland, and an area of damp birch woodland. Significant areas of ancient woodland have been replanted with conifers, but there are also large areas of, mostly plantation, deciduous woodland.

Flitwick Moor SSSI and the Flit Valley covers 67 ha of nature reserve, woodlands of oak and birch and dense stands of bracken occur on the drier areas. Alder woods have developed in the wetter areas, and acidic springs contrast with alkaline areas. Wetland habitat extends alongside the Flit down the valley, through Clophill Lakes, a former Fullers Earth quarry now being developed as a nature reserve by the Greensand Trust, and beyond to Shefford.

Cooper's Hill SSSI and Ampthill Park consists largely of dry acid grassland (the largest single area of acid grassland in Bedfordshire), with fringes of woodland and areas of acidic flushes. Coopers Hill has large areas of open heath, historically grazed, but now managed mechanically by the BCNWT. A damp area is the only remaining location for marsh violet in the county.

Maulden Wood and Pennyfather's Hill SSSI lies on clay and greensand areas. There are large areas of broadleaved woodland, and areas on the drier soils where planting of more open areas with conifer has taken place. These woodland areas are interlaced with dry grassland and heathland, and the mosaic habitat is important for a range of invertebrates. The

nearby Chicksands Wood supports stands of goat and grey willow, which in turn provide the habitat for the purple emperor butterfly.

Southill Lake and Wood SSSI are part of the Southill Estate near Sandy. Southill Park House and its formal landscape, include widespread planted broadleaved woodlands. Elsewhere on the estate there are large remnant ancient woodlands which, like many others on the greensand ridge, have been replanted in part with conifers. Dry grasslands survive around Warden Abbey, and the nature reserve at Old Warden Tunnel lies on a cutting that exposes the chalk found further south in the county. Recently, it has developed wetland habitats and welcomed newt ponds established by the Newt Conservation Partnership for NatureSpace Partnership's district licensing scheme

Sandy Warren SSSI and Lodge Nature Reserve. The removal of forestry plantation around the RSPB's headquarters near Sandy has created the largest area of heathland and acid grasslands in Bedfordshire (approx 40ha). This restoration led to one breeding attempt by rare nightjar, and the reintroduced natterjack toad. Along with Sandy Warren SSSI The RSPB are working with Tarmac to restore the nearby Sandy Heath Quarry to create 80ha of wildlife rich grassland.

2.7 The Chilterns limestone and chalk in south Bedfordshire

South Bedfordshire sits on top of a seam of chalk and limestone which runs from the Wash in Norfolk to Salisbury Plain in Wiltshire. This area is covered by 2 National Character Areas (NCA), the Chilterns and East Anglia Chalk. It is home to chalk streams, flower-rich grasslands and varied deciduous ancient woodlands. The areas within Bedfordshire is shown in figure 13.

Historic downland preserves prehistoric archaeology and supports high numbers of rare and scarce chalk grassland vascular plants, mosses and liverworts. Diversity is enhanced by a mosaic of chalk grassland, scrub and woodland.

The chalk bedrock is home to specialist animals and plants such as the pasqueflower, Chiltern gentian, juniper, chalkhill blue butterfly and native box. Red kites are easily seen throughout the area in large numbers following reintroductions in Oxfordshire in the 1990s.

Chalk streams which emerge from the aquifers include the rivers Hiz and Ivel. These rivers support a small network of wildlife rich sites, with quarried sites providing the other wildlife interest in the area. Historic modifications include historic mills, watercress beds, culverts and habitat enhancement which have all impacted on wildlife over the years. (Natural England, 2013).

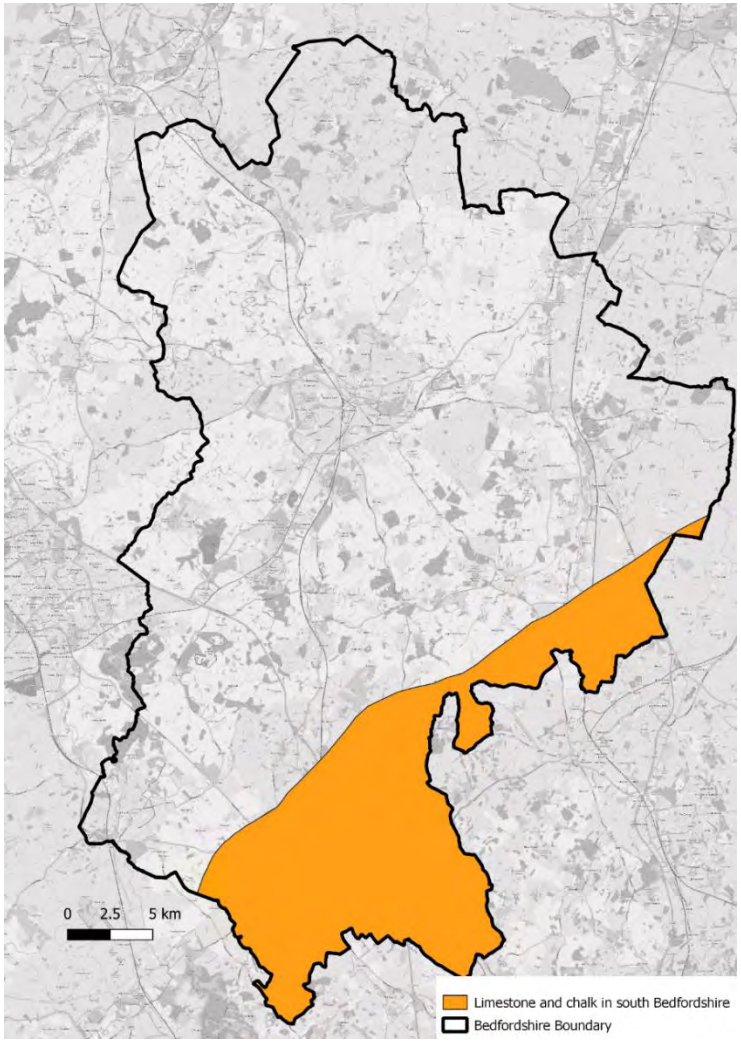


Figure 14 - Limestone and Chalk areas in southern Bedfordshire

2.7.1 Key locations

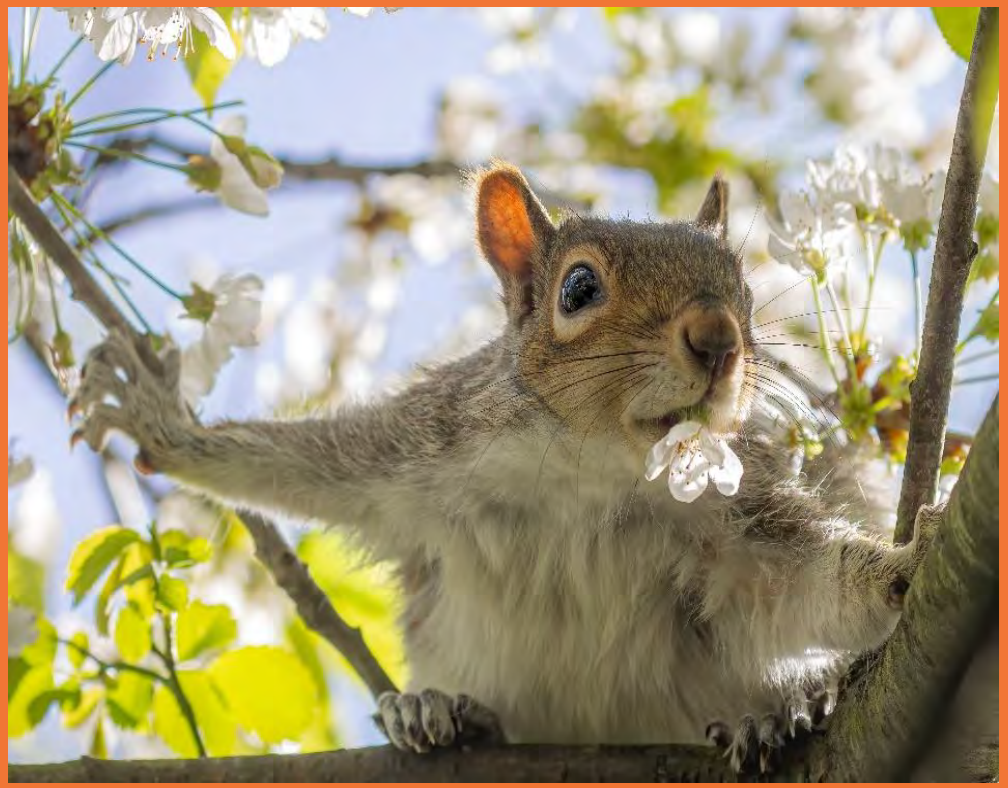
The Chilterns' scarp slope sites make up a chain of key sites from Dunstable Downs and Totternhoe in the South West, with Blows Down, Galley and Warden Hills, Bradgers Hill and the South Bedfordshire Golf Course maintaining the chain through Dunstable and Luton. Finally, Sharpenhoe Clappers, Sundon Chalk Quarry, Barton Hills and Ravensborough bank, Pegsdon / Deacon Hill and Knocking Hoe complete the chain to the North East. Sitting between Barton and Pegsdon, the Hexton Estate already provides habitat linkage, but the recent acquisition by Natural England will provide opportunities to significantly enhance this. These sites support a range of key habitats, but primarily chalk grassland and scarp slope woodlands and streams.

Disused quarry sites can be beneficial to wildlife. The key quarry sites include Houghton Regis Quarry, Kensworth and Sundon quarries. The sites support very varied habitats, linked by their low nutrient status. The open ground element is very important and is threatened by lack of management.

Luton and Dunstable retain significant wildlife-rich habitat within the urban envelope. The most significant are designated as Sites of Special Scientific Interest, with Dallow Downs and Winsdon Hill and Cowslip Meadow having been relatively recently added. These sites provide many of the range of key habitats found across the Chilterns, with species rich woodland, grassland and wetlands. Management of these urban sites is particularly challenging, given the difficulty of securing grazing within the urban envelope, and therefore a disproportionate amount of management time, either mechanical or by volunteers, is required to maintain them. South Beds Golf Course, which abuts Galley and Warden Hills, maintains species-rich grassland across much of the rough areas, with pyramidal orchids in abundance. At Wigmore Valley Park the relatively recently created grassland, particularly on the old landfill site, have been allowed to remain nutrient poor and have therefore developed significant wildlife, including populations of bee orchids. The road verges in Luton provides a particularly important network of habitat. Nutrient deposition has affected the quality of some of the verges, but many retain low nutrient habitats.

Image 5 – Tottenhoe Chalk escarpment Credit: Melanie Douglas

Pressures on nature in Bedfordshire



3 Pressures on nature in Bedfordshire

Nature faces a wide range of pressures and like many counties, this has had a significant impact on wildlife in Bedfordshire. For most species, it is a combination of pressures from a changing climate, pollution, habitat loss, fragmentation and quality and invasive species that have had an impact. Addressing these pressures relies on a wide range of stakeholders. While the LNRS can be a key strategy for addressing habitat loss and fragmentation, other pressures may be best addressed through other plans and policies either locally, nationally or internationally.

3.1 Pressures on the natural environment

Habitat fragmentation and isolation, where habitats are separated by roads, buildings or other structure or other habitats is a concern in Bedfordshire. Although some sizable networks of woodland and grassland remain, some of the key sites are small and isolated. These isolated fragments can be vulnerable to climate change, disease and invasive species. Species losses from these sites cannot be balanced by recruitment from adjacent or nearby sites, and ongoing declines in species diversity are likely to continue slowly but inexorably.

Direct habitat loss is perhaps the most obvious cause of decline in wildlife. Removing habitat, particularly the less abundant types such as heathland and wildflower meadows, take away the food, shelter and breeding sites of some of our most threatened species. This leads to declines in biodiversity and can impact wider ecosystems.

Recreational pressure is a significant issue. The low level of accessible natural greenspace increases the pressure on those sites which are open to the public leading to issues from recreational disturbance. This can be direct, but also through the prevention of grazing management on sites where that is necessary for habitat maintenance. It is a particular issue for heathland and grassland sites where the impact is both from the direct impact such as disturbance from people but nutrient enrichment from dog faeces and urine.

Water abstraction commercial and domestic use particularly affects the chalk streams and other groundwater-fed watercourses by reducing flow, which impacts river ecology particularly during dry summers but also in winter in some watercourses. This can also impact wetlands and ground water. Although some abstraction reductions have taken place.

Water quality is a significant concern in all waterbodies, where nutrients applied to fields, runoff from roads and discharges from sewage treatment works and combined sewer overflows in the catchments flow into streams and rivers. High nutrient levels (predominantly phosphate) reduce biodiversity and restrict opportunities to create and enhance wetland habitats through floodplain re-connection. Two waterbodies are classified as being in Bad ecological status, with 7 in good ecological condition based on the Water Framework Directive[8] criteria. The remaining are classified as moderate (45) and poor (6).

Deer are a significant problem including introduced Muntjac and Chinese Water Deer which were introduced into Bedfordshire. Increasing populations of most deer species are an issue for coppiced and newly planted woodlands, preventing growth and regeneration, and can cause major shifts in, or even complete loss of, the ground flora communities. This all has an impact on bird and invertebrate communities.

Tree pests and diseases such as ash dieback will have a significant impact on the make-up of the woodlands, some of which have ash as a significant

[8] The Water Framework Directive is an EU directive that aims to establish a framework for the protection of all water bodies. It has subsequently been made UK law as The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017

component of their canopy. Ash dieback is likely to have an impact on hedgerows too, as large trees in hedges provide an important ecological niche, and ash is one of the most common feature trees. This exacerbated by climate change and the emergence of novel diseases.

Quarry infilling/lack of management can lead to loss of open mosaic and early successional habitats and missed opportunities to create new and link up existing habitats.

Invasive Non-Native Species are a significant problem, with Himalayan balsam and skunk cabbage along the Flit Valley, and Piri Piri Burr now being found adjacent to Coopers Hill. Giant hogweed and Japanese knotweed are widespread across much of England.

Grey squirrels are widespread and cause damage to trees. Asian Hornets are an emerging threat with the potential to impact bee colonies and other native species. Mink have caused significant declines in water voles in the county. and signal crayfish have impacted on native, white-clawed crayfish, causing its extinction in Bedfordshire (NNSS, 2024)

Encroachment of heathland and grassland by bracken and birch and oak scrub is difficult to manage, particularly in areas where grazing is not possible. Scrub encroachment is valuable in certain areas but management to ensure it is not impacting on priority habitats is essential.

Lack of woodland management has led to the loss of some key species in the area. Many species require woodland management such as coppicing to create more open areas where light can reach the woodland floor and promote understory growth.

Image 6 - Grey squirrel feeding on blossom Credit: Jon Pauling

3.2 The impacts of Climate Change

Human induced climate change is having an impact on nature and people in Bedfordshire. Temperatures have increased over recent decades as

shown by *Figure 15* below. We are likely to experience warmer, wetter winters, hotter drier summers and more intense weather events. These changes will impact on wildlife by altering habitats and benefits certain species and animal and plant behaviour. Nature recovery should be delivered with climate adaption and mitigation in mind to increase the resilience of people and wildlife.

Some of the likely impacts of the changing climate within Bedfordshire are:

- A reduced refilling of the underground aquifer, with reduced summer rain, and increased rainfall in winter being largely lost in run off
- Shifts in land management practices such as keeping livestock off the downland areas in summer, exacerbating changes in plant communities.
- More frequent drought periods altering the species composition of woodlands and grassland, favouring tolerant species, and increase susceptibility to pests and diseases.
- Changes in species composition of different habitats, particularly grassland and heathland. For example, plant communities within wet grassland may change if the area becomes drier, favouring drought tolerant species.
- Negative impacts on food chains causing them to become unsynchronised. For example, caterpillars may emerge too early for birds to be able to feed them to their young.
- Warmer winters may result in increased bracken invasion of grasslands and heathland, and the variety and amount of native tree species in woodlands may decline due to the increase in hotter and drier summers.
- Changing rainfall patterns, with more frequent, intense rainfall events, are already increasing flooding and soil erosion.

The stripes below show how the temperature in Bedfordshire has changed between 1884 and 2023. Each stripe represents a year and shows whether it was hotter (red) or colder (blue) than the average over the period 1981-2000.

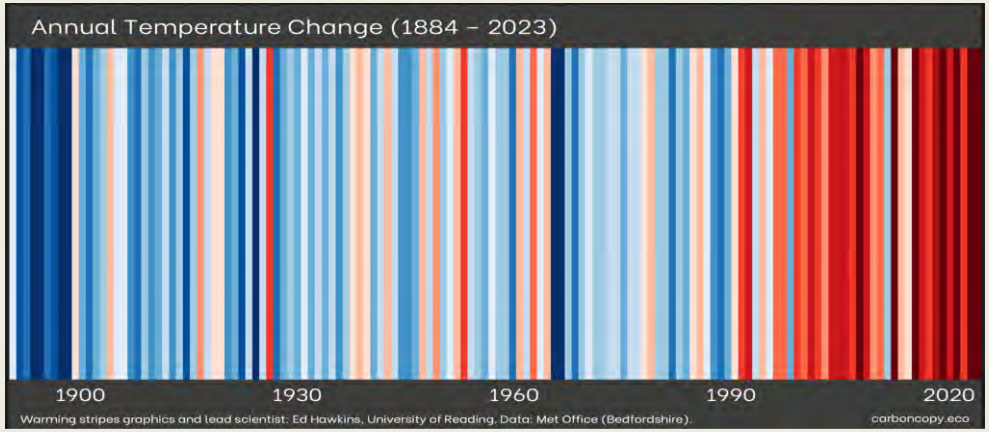


Figure 15 - A chart showing climate stripes. Stripes indicating whether temperature in Bedfordshire between 1884 and 2023 was above (red) or below (blue) the average over the period 1981-2000 (Ed Hawkins, 2024)

4 Working with nature

4.1 Nature based solutions

The International Union for Conservation and Natural Resources (IUCN) define nature-based solutions as actions to protect, sustainably manage and restore natural and modified ecosystems in ways that address societal challenges effectively and adaptively, to provide both human well-being and biodiversity benefits.

In other words, working with nature to mitigate the impacts of climate change and other challenges facing society including flooding, drought and removing carbon from the atmosphere.

The government's Environment Improvement Plan acknowledges the importance of nature-based solutions. It sets out targets to develop a comprehensive suite of investment standards, learning from existing practices and innovations, to support investment across the full range of Nature-based Solutions (Government, 2023)

The LNRS therefore has a key role in promoting actions that will provide other environmental benefits as well as helping species and habitats in Bedfordshire recover[9].

Natural Flood Management (NFM)for example, is way to reduce the flow of water over land by restoring some of the natural processes within a river catchment. This could include installing 'leaky' dams, creating and improving woodland, restoring soil health and recreating river meanders. These measures would not only slow the flow of water but would also improve biodiversity and water quality, store carbon and provide public amenity, particularly if carried out in or near urban areas.

4.2 Natural Capital

Natural Capital describes the natural assets in the world around us that have value to society, such as woodland, rivers, biodiversity, land and minerals. Natural Capital includes both the living and non-living aspects of ecosystems services[10].

The Office for National Statistics estimates that the stock of natural assets in the UK is worth £1.8 trillion to the economy. This is the value of wood, fresh water, clean air and green spaces.[11]

4.3 Ecosystem Services

Ecosystem services are defined as services provided by the natural assets that benefit people. They include food and fuel provision and the cultural services that provide benefits to people through recreation and cultural appreciation of nature. Other services provided by ecosystems are not so well known. These include the regulation of the climate, purification of air and water, flood protection, soil formation and nutrient cycling.

Ecosystem services can be classified in different ways, but they are often split into groups including *Provisioning, Regulating* and *Cultural* depending on the type of service ecosystems provide. In most cases, different habitats will provide multiple benefits. The main ecosystem services that each habitat provides are highlighted in the Statement of Biodiversity Priorities.

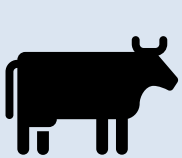
[9] Further information about the ecosystem services within each habitat in Bedfordshire can be found within Natural England's Bedfordshire Natural Capital Atlas 2021 Natural Capital Atlases: Mapping Indicators for County and City Regions - NECR318 (naturalengland.org.uk).

[10] THE GREEN BOOK CENTRAL GOVERNMENT GUIDANCE ON APPRAISAL AND EVALUATION https://assets.publishing.service.gov.uk/media/6645c709bd01f5ed32793cbc/Green_Book_2022__updated_links_.pdf

[11] UK Natural Capital Accounts https://www.ons.gov.uk/economy/environmentalaccounts/bulletins/uknaturalcapitalaccounts/2024

4.3.1 Provisioning

These are tangible goods that people can harvest from the environment such as food, wood and fibre, water and fuel. Bedfordshire is approximately 65% farmland which provides vital resources for people.



Livestock
Reared animals and their products which provide food for human consumption. This includes cattle, dairy products and honey

Water Supply
Water taken from rivers and aquafers for domestic and commercial use such as irrigation and water for cattle

Timber and other materials
Materials from plants and algae such as wood, hay and paper

Cultivated Crops
Food such as cereals, fruit and vegetables grown for

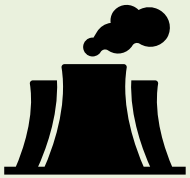
4.3.2 Regulating

Regulating services that occur in the ecosystem that lead to benefits such as climate regulation, flood management, and water filtration. For example, where air quality may be lower such as along major roads, trees and other vegetation can help absorb pollutants.

Water quality
Clean water for drinking water, leisure and wildlife benefits

Biodiversity
Important in its own right and underpins all other services from food production to tourism

Pollination
Pollination of crops from cultivated crops to hay and silage.



Air quality
good air quality by absorbing carbon benefits people and wildlife

Climate regulation
Mitigation of extreme weather events, reducing temperatures

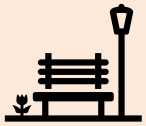
Erosion control
Stabilising soils benefitting farmland, infrastructure and reduces water pollution

Flood protection
Reduced flood risk through slowing the flow of water over land and in rivers

Noise regulation
Reduced noise impacts from natural barriers such as hedges

4.3.1 Cultural

These include ways in which nature impacts people's health and wellbeing through recreational and education benefits as well as improving mental health and building spiritual connections.



Cultural services
Physical and mental health and wellbeing, through access to green and blue space

4.4 Managing and restoring habitats

One of the most significant pressures on nature is the lack of habitat management. Working with nature to restore natural processes is vital. However, many of these processes now require human intervention to replicate natural functions that no longer occur.

For example, if left, grassland would eventually be taken over by scrub and eventually woodland. As habitats change through succession then the species they support also change. Management to keep a mix of habitat types is important to maximise the benefits for wildlife.

In addition, some habitats have been replaced by other land uses. Woodland for commercial purposes have been planted on heathland and wetland drained for agricultural purposes. Therefore, core to many of the measures that could be carried out as outlined within this strategy is the requirement to implement suitable management to ensure a diverse range of habitats and protect the most threatened. Management can include doing more or less of a particular practice such as grazing, removing trees and scrub or replanting wildflowers. Certain species such as beavers can provide a valuable service by altering habitats, creating wetland and helping to retain water within important areas.

Image 7 - Sheep in a field Credit: Melanie Douglas

Statement of Biodiversity Priorities

5 Statement of Biodiversity Priorities

The Statement of Biodiversity Priorities (Step 4 in the statutory guidance *figure 3)* identifies the priority outcomes (what the strategy is trying to achieve) and the measures (practical actions that would deliver the outcomes).

Many of the most important habitats have become fragmented, degraded or lost entirely. The LNRS is a core part of developing a Nature Recovery Network[12] by adopting the Lawton Principles of more, bigger, better and more joined approach to conservation. by seeking to protect the best sites, improving those that need it and connecting them together so wildlife can move between habitats. This strategy also highlights the main ecosystem services these habitats provide which communities rely on.

The priorities have been developed through engagement with a range of stakeholders via in-person and online events, actions set out in other strategies and plans and a prioritisation working group. Initially, potential priorities were captured to form a longlist of approximately 60 possible outcomes. Further engagement was carried out to review and consolidate this list to produce a shortlist. This list of outcomes has been further revised with expert input using criteria (*see Appendix 2)* and public views and matched with potential measures. Many of these measures are mapped within the Local Habitat Map to highlight the places these could be implemented to maximise their potential. However, other areas outside of those that are mapped can also be suitable for many of the measures.

The aim of the selected priorities is to provide an indicative guide for efforts to create and enhance protect biodiversity, support sustainable land management, and contribute to the overall resilience of nature and people. The aim for the strategy is to ensure that habitats and the population of key species are maintained or improved and new habitat is created, and that nature recovery delivers other environmental benefits.

5.1 Structure of the Statement of Biodiversity Priorities

The broad habitats are:

- Woodland and trees
- Farmland and hedgerows
- Neutral and calcareous grassland
- Heathland and acid grassland
- Rivers, wetlands and ponds
- Built up areas and previously developed land

In addition:

- Local Wildlife Sites – Local wildlife sites cover a range of habitats so are a separate priority group.

Within each broad habitat section are the following subsections:

- **Overview of the habitat in Bedfordshire**
  Background information on the presence of this habitat in Bedfordshire. Including some of the key areas.

- **Priority habitats**
  Bedfordshire has a range of important and iconic habitats. The woodlands, grasslands and wetland areas include a variety of different habitat types classed as 'Priority Habitats'. These are habitat types that were identified as being the most threatened and requiring conservation action under the UK Biodiversity Action Plan (JNCC, UK Biodiversity Action Plan, 1994). A brief description of the

[12] The Nature Recovery Network is a growing national network of wildlife-rich places, stretching from our cities to countryside, mountains to coast. It is supported by green and blue spaces that buffer and connect these wildlife-rich sites. The Nature Recovery Network - GOV.UK

priority habitats found in Bedfordshire to various extents is provided in this section [13]

- **Ecosystem services provided**
  An overview of some of the ecosystem services each broad habitat type provides to people. These have been identified through the Natural England's '*Natural Capital Atlas: Mapping Indicators 2021*' (Natural England, 2021)

- **Opportunities for recovery**
  The potential opportunities for recovery based on existing projects, initiatives and previous work.

- **Priority outcomes and associated measures**
  A core part of the strategy setting out the main outcomes the strategy is trying to achieve and the on the ground actions that would help to deliver those priorities. These are set out in boxes below, with each box showing the priority outcome at the top, with the supporting measures beneath and which of these measures have been mapped in the Local Habitat Map

- **To view the Local Habitat Map** press Ctrl and click on the  symbol.

- **Linked priority species**
  In addition to the priority outcomes and associated measures, the LNRS priority species in section 5.9 would benefit from additional measures. Where priority species measures could be delivered is indicated below.

- **Further information and guidance**
  Highlighting some of the further guidance available from a range of sources to deliver the measures.

5.2 Local Wildlife Sites

Bedfordshire's Local Wildlife Sites (Also known as County and District Wildlife Sites) are areas selected locally for their nature conservation value based on important, distinctive and threatened habitats and species within a national, regional and local context. They are or have the potential to be some of Bedfordshire most important places for nature. They are a non-statutory designation meaning they do not receive legal protection or right of access. However, for any significant change of land use the planning authorities will expect the wildlife interest to be considered alongside other normal planning considerations. that recognises high quality wildlife habitats.

B1 - Identify, conserve and bring into positive management 60% of the network of Local Wildlife Sites in Bedfordshire[14].

Measures
B1a – Local Wildlife Sites
Conserve, enhance and restore Local Wildlife Sites and bring them into positive and sustainable management to safeguard species they support. Survey, provide landowner advice, and facilitate habitat improvements on priority potential wildlife sites
Mapped - no

[13] This section provides a brief description of each priority habitat in Bedfordshire. For a full description visit the JNCC Priority habitats webpage https://jncc.gov.uk/our-work/uk-bap-priority-habitats/

[14] Currently 55% of Bedfordshire's 415 county and district wildlife sites are in positive management.

5.3 Woodlands and Trees

Few habitats change throughout the year as much as woodlands. From bright spring greens and birdsong of spring and summer to the emerging fungi and multi-colours of autumn and the atmospheric beauty in winter. Trees provide a home for wildlife in parks and gardens and traditional orchards can be community hubs providing food for people and nature.

Woodlands, trees and orchards provide a vital home for many threatened species of wildlife such as hazel dormice, nightingales, bats and black hairstreak butterflies and so much more. They also provide a wide range of ecosystem services that support local communities, helping to regulate climate change impacts by reducing flood risk, improving air quality and helping regulate temperatures within the urban built environment.

Woodland cover across Bedfordshire is approximately 8% making it one of the least wooded areas in the country (England 10%) (Forest Research, 2024). Where sizeable woods remain, conifer plantations[15] and lack of traditional management affect the retention of wildlife communities.

New woodland planting is a significant feature, particularly of the Marston Vale area where extensive work is being carried out to develop the Community Forest south of Bedford.

Odell Great Wood (86ha) and West Wood (84ha) in the north of Bedfordshire are the largest ancient woodlands in the area, and both support significant invertebrate and wildflower communities. White admiral butterflies can still be seen in rides (pathways through the wood where sunlight reaches the floor), as can occasional purple emperor butterflies. Although the ride system, particularly in Odell Great Wood, is still well managed, wider rides here and in surrounding smaller woods may be required to maintain fritillary butterfly populations.

A complex of smaller woodlands exists throughout the area, with a concentration of small, linked sites around the Colworth Science Park.

Since the 1980s, nearly 150ha of scrub and young woodland has been created through natural regeneration at Strawberry Hill Farm near Knotting Green in north Bedfordshire, now owned by the Bedfordshire, Cambridgeshire and Northamptonshire Wildlife Trust (BCNWT). This has significantly increased the area of woodland in the Bedfordshire part of the Yardley and Whittlewood Ridge NCA, and it is now one of the largest areas of this habitat in central England. Yelnow New Wood is a 45-year-old plantation of mixed deciduous and conifer woodland covering 39ha, created and managed by Bedford Borough Council, near Odell Great Wood.

The most significant ecological change has been driven by the designation in the early 1990s of around 16,000 ha to the south and southwest of Bedford, from Brogborough in the west to Willington in the east, as the Forest of Marston Vale Community Forest.

Ancient woodlands on the acid soils of the Greensand ridge are sessile oak woodlands, with significant birch components, and an understory that includes naturally occurring holly, rowan and small-leaved lime. These contrast with the heavier clay soil woodlands, with pedunculate oak, ash and field maple as key components. At Flitwick Moor there are large areas of alder woodland.

Timber production is a significant product for Bedfordshire. Across the Greensand Ridge many ancient woodlands have been extensively replanted with timber trees, with sweet chestnut and conifer plantations dominating the acid soils. Remaining ancient semi natural woodland sites are mainly confined to where boulder clay was deposited on top of the greensand by glaciers during the last ice age.

[15] Conifer plantations are normally densely planted, regularly distributed woodlands grown for timber production. They often consist of non-native tree species which form dark, dense regular blocks which are a monoculture with few benefits for wildlife.

There are extensive areas of more recent woodlands particularly between Sundon and Hexton, and including Sharpenhoe, and around Luton Hoo. Some of these areas are associated with cover for game birds.

In Bedfordshire, agricultural census data show a decline in the orchard area of 95% since the peak decade of the 1950s (Brown 2008) and they now cover just 0.1% of the county[16]. Those that remain, including a significant cluster of orchards around Eaton Bray, provide an important habitat for beetles. such as the stag beetle which are associated with traditional orchards where their young depend on the dead and decaying wood in trees.

The woodland cover of the Chilterns has remained relatively stable in recent decades - currently approximately 17%. However, woodland management declined as the local furniture industry disappeared. The long-running Chilterns Woodland Project did provide some additional input for many years and more recently demand for wood fuel has generated some increased management.

Across Bedfordshire, wild deer numbers have increased, as the limiting factors of population growth, winter mortality and lack of spring forage, have been negated by climate change and autumn sowing respectively. Deer grazing and browsing affect the ability of woodlands to regenerate naturally and can have a large impact on the understorey and ground flora.

5.3.1 Priority woodland and tree habitats

Lowland mixed deciduous woodland - Lowland mixed deciduous woodland includes woodland growing on the full range of soil conditions, from very acidic to base-rich, and takes in most semi-natural woodland in southern and eastern England. It usually occurs on sites with well-defined boundaries, at relatively low altitudes, although altitude is not a defining feature. Many are ancient woods. They are found throughout much of Bedfordshire but particularly along the Greensand Ridge and through the north of Bedfordshire and its border with Northamptonshire. The largest of which is the Odell Great Wood.

Wood-pasture and parkland - Wood-pasture and parkland are mosaic habitats valued for their trees, especially veteran and ancient trees, and the plants and animals that they support. Grazing animals are important to managing this type of habitat. Specialised and varied habitats within wood pasture and parkland from ancient trees, dead wood and grassland provide a home for a wide range of species, many of which occur only in these habitats, particularly insects, lichens and fungi which depend on dead and decaying wood. Wood-pasture and parkland is found throughout Bedfordshire but in particular along the Greensand Ridge. Woburn Park, Wrest Park and Luton Hoo are examples.

Traditional Orchards - Traditional orchards consist of groups of fruit and nut trees planted at low densities in permanent grassland and managed in a low intensity way. Small areas of orchards can be found throughout Bedfordshire such as Park Wood LNR in Bedford.

Wet woodland - Wet woodland on a range of poorly drained or seasonally wet soils, usually with alder, birch and willows as the predominant tree species, but in drier riparian areas, can also include oak, ash, pine and beech. It is found on floodplains, as successional habitat on fens, mires and bogs, along streams and hill-side flushes, and in peaty hollows. They can provide particularly valuable ecosystem services by reduction water pollution and providing natural flood management. It is one of the rarest habitats in the county and includes Flitwick Moor SSSI.

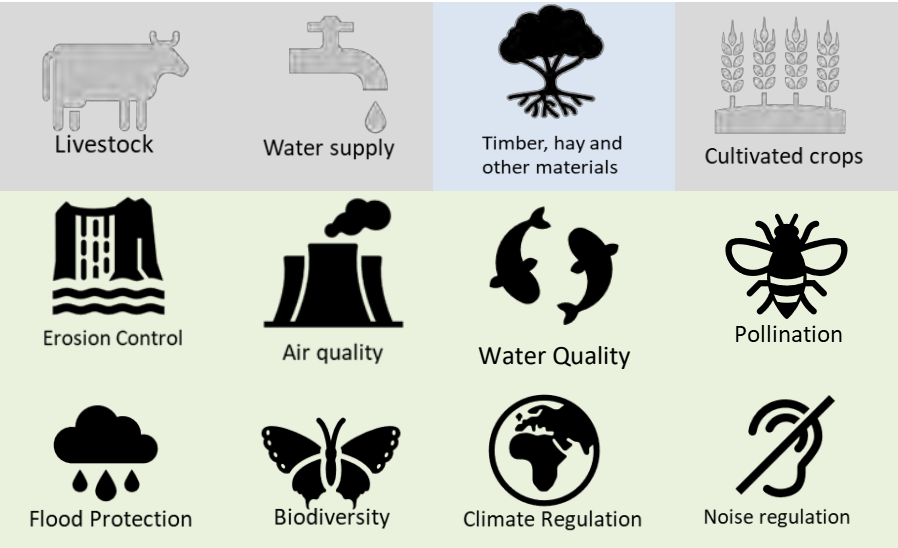
Lowland beech and yew - Lowland beech and yew woodland spans a variety of distinctive vegetation types reflecting differences in soil and topographical conditions. Beech can grow on both acidic and calcareous

[16] Based on Natural England Priority Habitat Inventory data

soils, although its association with yew tends to be most abundant on the calcareous sites. These woods have been managed historically as high forest (a system where trees are grown to maturity and then felled, either individually, in discrete groups or whole sections of the wood) coppice, coppice with standards, wood-pasture and minimum intervention. They are often found as intricate mosaics with other woodland communities.

Urban trees - Urban trees can be found in gardens, parks, schools or lining streets. They provide homes for urban wildlife such as birds, insects and bats and link up habitats through towns and villages into the wider countryside. They can be an effective measure in addressing air pollution and climate change. Green spaces also provide people with a connection to nature, benefitting mental health and wellbeing.

5.3.2 Key ecosystem services provided by woodlands and trees



5.3.3 Opportunities for recovery

- **Restoration of plantations on ancient woodland sites (PAWS**). PAWS are sites that have a long history of woodland cover: they are ancient semi-natural woodlands on which the original, "natural" woodland was cleared, and replaced by a plantation of either native or exotic species for commercial purposes. These sites offer an opportunity to restore back to a more natural woodland.

- **Link and extend the woodlands across north Bedfordshire, the Marston Vale and the Greensand Ridge**
  Woodlands throughout these areas provide a strong sense of place and history. They reduce soil erosion and flood risk, improve water quality, benefit biodiversity, support timber and biomass production and aid in climate regulation. Planting trees to extend and link existing woodland sites through more woodland creation will provide a greater benefit for wildlife and people - ensuring they maintain the landscape character.

- **Manage all wooded features to benefit biodiversity**
  Considering the needs of woodland species including butterflies, birds, and deadwood invertebrates. Veterinisation, where trees are intentionally damaged to accelerate microhabitats of older trees can be beneficial where there is a lack of older trees and standing deadwood. Planting or encouraging fruiting shrubs and larval food plants within open areas and woodland edge habitats creates a diverse range of habitats.

- **Create and enhance field boundaries, connecting hedgerows and small woodlands**.
  Hedgerows, field boundaries and small wooded areas allow wildlife to travel between woodlands. They are part of a diverse habitat mosaic where there is poor connectivity. Managing large, species-rich woodlands, as core areas in the ecological network. Focus particularly on conservation of ancient, hedged boundaries and ancient woodlands to secure their high species richness.

  Plant hedgerows where there is poor connectivity, and where creation of woodland corridors is not feasible particularly where this will also restore historic boundaries.

- **Traditional orchards**
  Orchards provide valuable sites for wildlife and communities to engage with nature and fruit-growing. Maintaining existing areas of orchard and creating new would help to link existing areas providing more sites for communities to enjoy.

Image 8 - Photo of bluebells in woodland. Credit: Brenda Newbury

5.3.1 Woodland and Trees Priorities

Woodlands, trees, orchard and scrub are all home to threatened wildlife in Bedfordshire. This includes hazel dormice, nightingales and black hairstreak butterfly. Good woodland and tree management helps to keep trees healthy and promotes a diverse woodland structure, providing a home for a range of wildlife. Increasing the area of woodland and trees and connecting these with hedgerows, scrub and individual trees helps species spread and be more resilient to a changing climate. Woodlands also provide an important place for people to connect with nature. The Woodland and Tree Priority outcomes and actions set out in below, show how woodland and tree habitats can be created, maintained and improves.

W1 - There is an Increase in the overall tree canopy cover across Bedfordshire

Measures

W1a - Woodland creation

Expand core woodland sites through natural regeneration or by planting new mixed species woodlands. To benefit species such as white admiral or tawny owl. Use a diversity of genetic types to help increase resilience to diseases and impacts from a changing climate. Protect new trees from livestock and wild animals such as deer. Ensure stocking densities and mixes are compliant with UKFS.[17]

Mapped: Yes

W1b - Trees outside woodland

Create new and expand existing spinneys, tree avenues, small woodlands, scrub and hedgerows to create links or stepping stones between existing woodlands. This can be achieved through planting or natural regeneration using locally sourced certified plant healthy, stock. Where appropriate, plant a diverse mix of native species that will support local wildlife and build resilience to climate change impacts, disease and other pressures and threats..

Mapped: No

W1c - Wet woodland opportunity

Create new wet woodland to maximise water retention and seasonal flushes benefiting species such as woodcock. Reduce the impacts of over-grazing within wet woodlands (both livestock and deer) to allow more natural regeneration of the woodland habitat.

Mapped: Yes

Linked priority species

Black hairstreak
Turtle Dove
Hazel Dormouse
Bat assemblage

[17] UK Forestry Standards - The UKFS is the technical standard for forestry across the UK, which provides the foundation for sustainable forest management

W2 - All woodlands to be in sustainable management (UKFS)

Measures

W2a - Existing woodland

Improve existing woodland biodiversity by appropriate management to create a varied structure, with trees of different ages and heights through actions such as thinning, coppicing and creation of rides and glades (particularly where they join other habitats such as areas of grassland or heathland) and retaining deadwood. Remove invasive plant species such as rhododendron to allow light to the woodland floor, providing suitable conditions for native flora.

Mapped: No

W2b – PAWS

Restore all (1,486 ha) Plantations on Ancient Woodland Sites (PAWS) to UKFS standards for biodiversity, climate and other environmental and economic benefits by the gradual and systematic removal of commercially planted conifers, whilst carefully maintaining remnant ancient woodland features

Mapped: Yes

W2c - Woodland buffers

Create buffer areas around woodlands by allowing scrub fringes to develop to provide habitat corridors for invertebrates such as moths, butterflies, and birds such as warblers.

Mapped: No

W2d - Deer management

Manage deer and grey squirrel numbers to a sustainable level to reduce impacts on woodland regeneration, structure and diversity benefitting species such as nightingale.

Mapped: No

Linked priority species

Black hairstreak
Turtle Dove
Hazel Dormouse
Bat assemblage

W3 - Trees outside of woodland including parklands, orchards, lone, ancient, veteran and near-veteran trees are conserved and enhanced

Measures

W3a - Wood pasture and parkland

Manage and protect ancient trees, including their root systems, for their biodiversity and heritage value. Identify existing or plant new trees that are suitable as eventual replacements for mature or ancient and veteran trees on adjacent sites. Aim to maintain genetic continuity where possible by nurturing cuttings or seedlings from existing trees. Plant and protect newly planted trees (or patches of natural regeneration) so they are spaced wide enough to be able to adequately grow an open crown. Within parklands maintain the grassland and tree mosaic habitat by cutting or grazing.

Mapped: Yes

W3b – Orchards

Maintain traditional orchards by planting and protecting new trees from grazing animals. Maintain existing trees by pruning where required. Managing surrounding grassland by grazing or hay cutting. Keep standing deadwood and some deadwood on living trees to provide habitat and feeding opportunities for invertebrates and birds such as woodpeckers.

Mapped: Yes

Linked Priority Species
Dead Wood Beetle Assemblage

W4 - Expand the area of trees outside of woodland including parklands, orchards, lone and ancient and veteran trees

Measures
W4a - Wood Pasture and Parkland opportunity
Plant new trees that are appropriate to the historic parkland design and resilient to local climate change on adjacent sites. Choose varieties that provide the same ecological wood decay conditions as mature or veteran trees already in the area. Keep areas of dead wood for invertebrates.
Mapped: Yes

Linked Priority Species
Dead Wood Beetle Assemblage

5.3.2 Further information and guidance

Forestry Commission
Managing ancient and native woodland in England
Woodland Trust
Managing your new woodland
Woodland creation guide
Ancient and veteran trees. An assessment guide.
Natural England
Climate change adaptation manual
Countryside Stewardship
Plantations on Ancient Woodland Sites (PAWS) – restoration and maintenance
TE13: Creation of dead wood habitat on trees
SP4: Control of invasive plant species supplement
WD1: Woodland creation - maintenance payments - GOV.UK
BE4: Management of traditional orchards - GOV.UK
BE5: Creation of traditional orchards - GOV.UK
WD2: Woodland improvement - GOV.UK
WS1: Deer control and management - GOV.UK
WD4: Management of lowland wood pasture and parkland - GOV.UK
WD5: Restoration of lowland wood pasture and parkland - GOV.UK

5.4 Farmland and Hedgerows

Farming is the predominant land use in Bedfordshire with approximately 65% of the land classified as agriculture (Department of Levelling Up, 2022). Cereal farming is the main type of farm in the county but there are also livestock and horticulture farms too. The farming types across Bedfordshire are shown in *Figure 17* below.

Image 9 - Fieldfare on a branch Credit: Jon Pauling

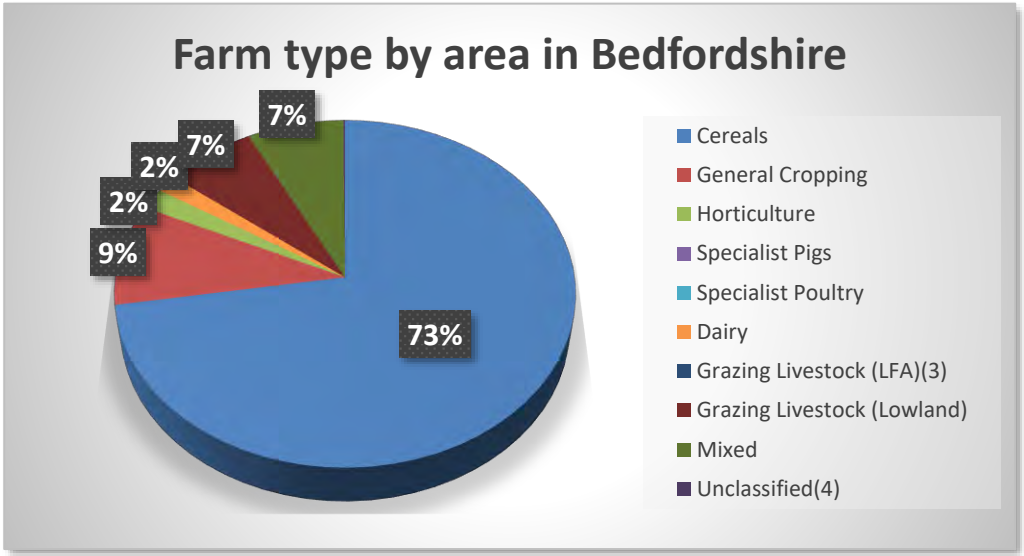


Figure 16 – Percentage of different farm types across agricultural land in Bedfordshire by area. (Department of Levelling Up, 2022)

The policies determining how this land is managed have a significant impact on Bedfordshire's wildlife. Sadly, many species that rely on farmed areas have declined significantly since the 1950s (Defra, 2023). The introduction of policies post-Second World War to encourage intensive farming such as the removal of hedgerows, increased use of pesticides and more efficient harvesting techniques has resulted in decline of a variety of species.
Many farmers and land managers are delivering fantastic action for nature as well as running a successful farming business. Working with nature, protecting the soil and managing water can deliver a range of benefits for farmers, communities and wildlife. Producing food and nature recovery can be delivered together.

The government's Environment Improvement Plan includes targets to support nature friendly farming. They aim to pay farmers and land managers to take care of the natural countryside environment, alongside food and other production, so that collectively:

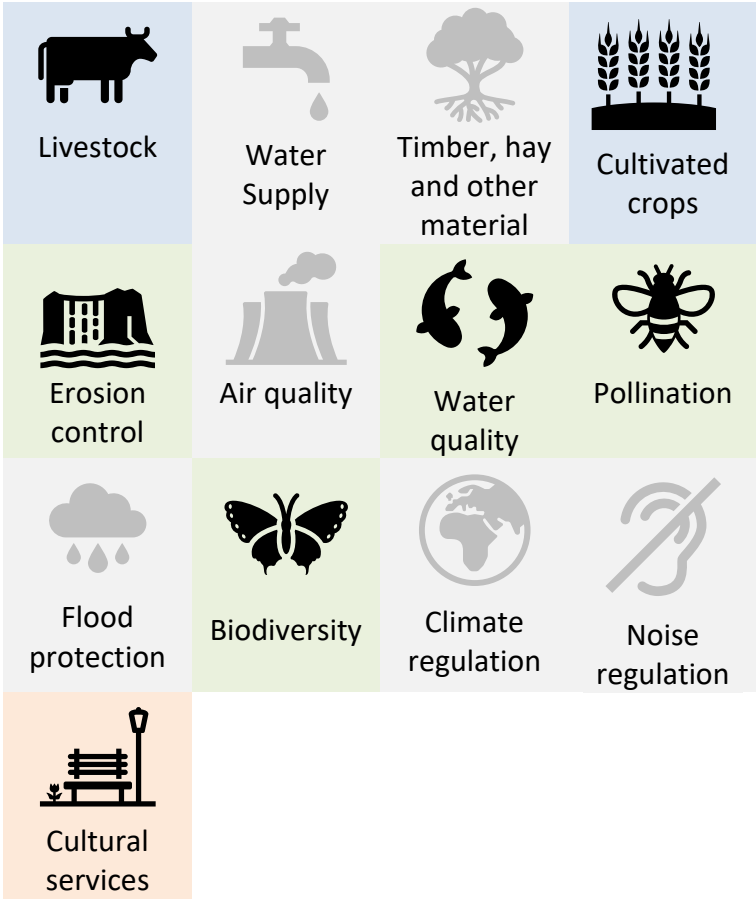
- 65 to 80% of land managers and farmers will adopt nature friendly farming on at least 10-15% of their land by 2030.
- Expand the Sustainable Farming Incentive[18] to pay farmers to adopt more sustainable farming approaches

5.4.1 Priority habitats

Arable field margins - Arable field margins are herbaceous strips or blocks around arable fields that are managed specifically to provide benefits for wildlife. The arable field must be in a crop rotation which includes an arable crop, even if in certain years the field is in temporary grass, set-aside or fallow. Arable field margins are usually sited on the outer 2–12m margin of the arable field, although when planted as blocks they occasionally extend further into the field centre.

Hedgerows - A hedgerow is defined as any boundary line of trees or shrubs over 20m long and less than 5m wide, and where any gaps between the trees or shrub species are less that 20m wide (Bickmore, 2002). Any bank, wall, ditch or tree within 2m of the centre of the hedgerow is considered to be part of the hedgerow habitat, as is the herbaceous vegetation within 2m of the centre of the hedgerow. All hedgerows consisting predominantly (i.e. 80% or more cover) of at least one woody UK native species.

5.4.2 Ecosystem services provided by farmland



[18] The Sustainable Farming Incentive (SFI) pays farmers and land managers to take up or maintain sustainable farming and land management practices that; protect and benefit the environment, support food production and improve productivity. https://www.gov.uk/government/publications/sustainable-farming-incentive-scheme-expanded-offer-for-2024/sfi-scheme-information-expanded-offer-for-2024

5.4.3 Opportunities for recovery

- **Further support for nature friendly farming**
  Further expansion of the Sustainable Farming Incentive. The Sustainable Farming Incentive (SFI) pays farmers and land managers to take up or maintain sustainable farming and land management practices that protect and benefit the environment support food production improve productivity Further support to help farmers create wildlife-friendly farms and productive businesses has recently helped provide opportunities for enhancement such as the

- **Catchment sensitive farming**
  Manage agricultural practices and strengthen semi-natural habitats along watercourses, to protect and improve soil quality, reduce erosion, regulate water flow and improve water quality. Work to reduce surface and groundwater pollution at a catchment scale by managing farmland under the principles established by the Catchment Sensitive Farming Programme.

- **Working together**
  Create farming clusters to deliver landscape scale conservation across landholdings.

- **Unproductive land**
  Identify areas where unproductive land and farm margins could provide important new habitat opportunities, linking in with current and future environmental stewardship funding.

Image 10 - Field margin in Barton le Clay Credit: Melanie Douglas

5.4.1 Farmland and hedgerow outcomes and measures

Arable farming is the main land use in Bedfordshire and has played a vital role in Bedfordshire's landscape and communities for centuries and is key to nature recovery. It provides a range of opportunities to work with nature, protect soils, improve water quality and maintain agricultural productivity. The outcomes and measures for farmland and hedgerows set out in tables F1 to F4 below, highlight these opportunities for species which can thrive where land is sensitively managed. This can include plant species such as wild candytuft and broad-fruited corn salad and birds including yellow wagtail and turtle dove.

F1 - There is an increase in populations of key farmland birds, invertebrates and arable plants through nature friendly farming

Measures

F1a - Nature friendly farming

Implement nature-friendly land management techniques in line with Sustainable Farming Initiative to benefit farmland wildlife such as farmland birds such as corn bunting and yellowhammer, invertebrates and arable plants.

Mapped: No

Linked Priority Species:

Arable Margins assemblage

Turtle Dove

F2 - The network of hedgerows and hedgerow trees is maintained, improved and expanded to provide food, shelter and connectivity

Measures

F2a - Farmland hedgerows

Create well-structured, species-rich hedgerows landscapes to provide ecological links between existing woodlands and other hedgerows. Manage existing hedgerows to maximise their wildlife benefits by leaving strips of uncultivated land adjacent with some specimen trees to provide nest sites and shelter while filling any gaps where possible. (Consider CS Option BN11)

Mapped: No

Linked Priority Species

Turtle Dove

Bat Assemblage

Hedgehog

F3 - There are better linked nature friendly habitats at the farm and landscape scale

Measures

F3a - Farmland wetlands

Restore and create wetland habitats such as ponds and scrapes for aquatic wildlife such as great crested newts and snipe to slow the flow of surface water to support reduced flood risk and water pollution. (Consider CS Option WT1-WT11)

Mapped: Yes

F3b - Arable flowers

Maintain, improve and where possible create areas such as field margins where a mix of arable plants can thrive . Plant suitable species such as on knapweed, scabious, yarrow, bird's foot trefoil and oxeye daisy. This will benefit pollinators and provide seed and insect food and corridors for birds and mammals and buffer surrounding habitats. Utilise cultivation regimes under nature friendly farming practices. (Consider CS Option AB8/AB11)

Mapped: Yes

Linked Priority Species

Arable Margins Assemblage

F4 - There is an increase in the area of farmland under soil-friendly management

Measures

F4a - Soil health

Implement sustainable farming practices to improve soil health and reduce the impact of erosion on nearby watercourses, benefitting invertebrates such as earthworms. Consider directly drilling and minimum tillage to reduce the amount of carbon released and protect soil organisms such as worms. Plant cover crops and hedgerows to boost soil health, reduce erosion, increase biodiversity and improve water quality by restricting runoff. Reduce compaction from heavy machinery by adopting Controlled Traffic Farming practices.

Mapped: No

Linked Priority Species

Arable Margins Assemblage

5.4.2 Further information and guidance

Bedfordshire Local Nature Partnership

Habitat Action Plan: Arable Margins

National Farmers Union

How farmers can improve soil health

Countryside Stewardship

AB8: Flower-rich margins and plots - GOV.UK

BE3: Management of hedgerows - GOV.UK

BN11: Planting new hedges - GOV.UK

GS6: Management of species-rich grassland - GOV.UK

AB1: Nectar flower mix - GOV.UK

AB11: Cultivated areas for arable plants - GOV.UK

SW1: 4m to 6m buffer strip on cultivated land - GOV.UK

Rural grants and payments

Funding for farmers, growers and land managers - GOV.UK

Rural Payments Agency

How to do the SFI actions for soils - GOV.UK

Nature Friendly Farming Network

Slow the Flow: Farming for flood management | Nature Friendly Farming Network, NFFN website

Hedgelink

Hedgerow Management Advice | Hedgelink

People Trust for Endangered Species (PTES)

Hedgerows information sheet

FarmWildlife

Seed-rich habitats guidance

Plantlife

Threatened-arable-plants-identification-guide-Platnlife.pdf

Image 11 – Tottenhoe landscape. Credit: Melanie Douglas

5.5 Neutral and Calcareous Grassland

Bedfordshire has some very important and diverse areas of grassland. The soil type, either acid, alkaline or neutral has a bearing on what species can be found there. Our seasonally wet grasslands such as those around the county's rivers and wetlands also add to the diversity. They provide spectacular views across rolling hills and multi-coloured meadows.

In the south of Bedfordshire, the Chilterns stretch from Berkshire and Oxfordshire to areas such as the Dunstable Downs. A distinctive feature of the Chilterns is their alkaline chalk grassland which provides a home to an array of rare species.

Chalk grasslands form a nationally important complex and, for example, are the only locations in Eastern England for the burnt orchid. Man and Musk Orchids also have significant populations in the area. Great Pignut is largely confined to the Chilterns in the UK, and Bedfordshire sites remain a stronghold for the species. The Chilterns is recognised as an Important Plant Area (IPA) by Plantlife, largely because of its retention of a range of arable weeds.

Species-rich grasslands have continued to decline in both extent and condition, largely through agricultural intensification. The connectivity of sites has varied, but direct habitat losses have combined with management issues, particularly a reduction in grazing pressure, to affect the quality of some species rich grasslands. Lack of active management means scrub can spread across the grassland, which makes the area unsuitable to the specialist grassland species. A balanced grazing regime will benefit floral diversity.

Historic features such as ridge and furrow farming, which date back to medieval times, often benefit from sensitive management for nature, through grazing or scrub clearance. Insufficient grazing means that scrub will eventually encroach onto grassland, affecting suitability for grassland species and damaging historic features (Historic England, 2023)

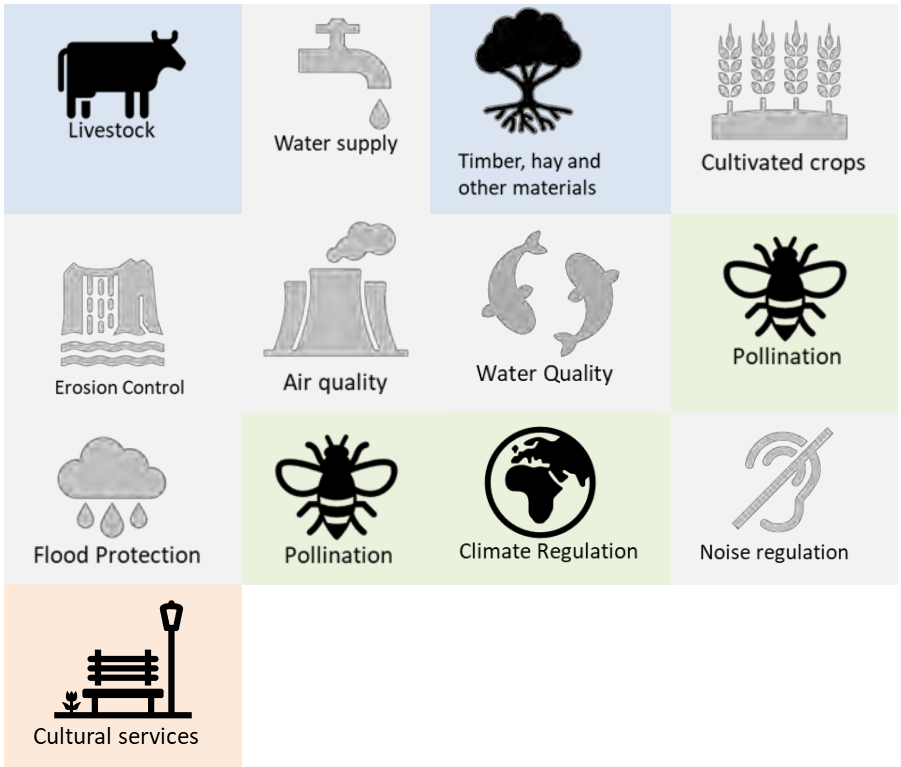
5.5.1 Priority habitats

Lowland calcareous grassland - Lowland calcareous grasslands are developed on shallow lime-rich soils generally overlying limestone rocks, including chalk. These grasslands are now largely found on distinct topographic features such as escarpments or dry valley slopes and sometimes on ancient earthworks in landscapes strongly influenced by the underlying limestone geology. Within Bedfordshire, this is found within the chalk landscape of the Chilterns.

Floodplain grazing marsh - Grazing marsh is defined as periodically inundated pasture, or meadow with ditches which maintain the water levels, containing standing brackish or fresh water. The ditches are especially rich in plants and invertebrates. Almost all areas are grazed, and some are cut for hay or silage. This habitat is mainly found along the Ouse, Flit and Ivel.

Lowland meadows - Lowland neutral meadows and pastures consist of a rich mixture of native grasses and broad-leaved herbs. They occur throughout lowland UK, often on shallow slopes or level ground with relatively deep soils that are neither strongly acidic nor lime-rich. The meadows may be managed for hay cropping, usually with grazing of the aftermath (vegetation that re-grows following cutting), or by grazing as permanent pasture (England, Lowland Meadow, 2015). They are mainly found through central and southern Bedfordshire.

5.5.2 Key ecosystem services provided by calcareous grassland



5.5.3 Opportunities for recovery

- **Hexton Estate**
  The acquisition of the Hexton Estate, crossing the Bedfordshire/Hertfordshire border near Barton le Clay by Natural England, provides a key opportunity for the near future, with habitat linkage, and linked management of sites over a larger area. This may enable a move towards a more natural management, but the need to ensure significant grazing pressure may mean a more intense management regime is still required. The possibility of establishing a large network of sites as a complex National Nature Reserve on the scarp slope has long been advocated by the BCNWT.

- **Field margins**
  Expanding and connecting the assemblage of semi-natural grasslands, for example by sensitive management of buffer strips along field margins to benefit wildlife, soil and water quality.

- **Roadside verges**
  Promoting and enhancing management of road verges for high-quality grassland habitat. These would provide linear connectivity, linking up other habitats such as woodlands, grassland and heathland.

- **Increase wildlife friendly grassland**
  Beyond concentrations of habitat, working with neighbouring land managers to restore and create new areas of habitat and establish ecological and access connections, particularly in relation to fragmented chalk grassland and commons that are important to communities.

5.5.4 Grassland priorities and measures

Bedfordshire has a diverse mix of grassland depending on the soil type. They are home to species such as green-winged orchid, pasqueflower and Duke of Burgundy butterfly. However, many of the measures benefit calcareous, neutral and acidic grassland such as managing scrub encroachment and maintaining low soil fertility which would otherwise promote non-target species and reduce biodiversity.

G1 - Create as much new wildlife rich calcareous and neutral grassland as possible

Measures

G1a - Calcareous grassland opportunity

Create new areas of calcareous grassland including along roadside verges by removing bramble, scrub and invasive weeds and introduce suitable grazing or cutting to manage sward diversity. Where there is little chance of success through natural regeneration, plant suitable calcareous grassland species. Create small areas of bare ground to promote new growth and provide habitat for invertebrates such as ground beetles. Aim to prevent nutrient levels from building by restricting the application of fertiliser or manure. Limit herbicides to targeted usage. Species that may benefit include dark-green fritillary and chalk hill blue butterflies.

Mapped: Yes

Linked Priority Species

Duke of Burgundy
Small Blue
Ground Pine
Musk Orchid

G1b - Neutral grassland opportunity

Create new areas of neutral grassland including along roadside verges by removing bramble, scrub and invasive weeds and introduce suitable grazing or cutting to manage sward diversity. Where there is little chance of success through natural regeneration, plant or sow suitable and local native neutral grassland species. Create small areas of bare ground to promote new growth and provide habitat for invertebrates such as ground beetles. Aim to prevent nutrient levels from building by restricting the application of fertiliser or manure. Species that may benefit include green-winged Orchid, brown hare, skylark and kestrel.

Mapped: Yes

G2 - All existing semi-natural calcareous and neutral grassland will be conserved, expanded and linked

Measures

G2a - Existing calcareous grassland

Maintain appropriate calcareous grassland grazing or cutting regimes that creates swards with varied height and structure. If grazing is not possible, cut in late summer removing the cutting to reduce nutrient input. Further prevent nutrient levels from building by restricting the application of fertiliser or manure. Limit herbicides to targeted usage. Maintain and enhance hedges around fields to provide connectivity between habitats. Manage roadside verges to promote diverse grassland habitats and create connectivity by appropriate management.

Mapped: Yes

Linked Priority Species

Long established chalk grassland assemblage
Duke of Burgundy
Small Blue
Ground Pine
Musk Orchid

G2b - Existing Neutral Grassland

Maintain appropriate neutral grassland grazing or cutting regimes that creates swards with varied height and structure. Further prevent nutrient levels from building by restricting the application of fertiliser or manure. Limit herbicides to targeted usage. Maintain and enhance hedges around fields to provide connectivity between habitats.. Manage roadside verges to promote diverse grassland habitats and create connectivity by appropriate management. Species that may benefit include green-winged orchid, brown hare, skylark and kestrel

Mapped: Yes

5.5.5 Further information and guidance

Defra
Create and restore species-rich grassland – Farming
Countryside Stewardship
WD7: Management of successional areas and scrub - GOV.UK
GS6: Management of species-rich grassland - GOV.UK
GS7: Restoration towards species-rich grassland - GOV.UK
GS8: Creation of species-rich grassland - GOV.UK
Bedfordshire Local Nature Partnership
Bedfordshire and Luton Habitat Action Plan:
Lowland Calcareous Grassland
Lowland Meadows
Natural England
Illustrated guide to lowland chalk and limestone grassland - TIN082
Climate change adaptation manual
Buglife
Lowland calcareous grassland - Buglife
Plantlife
Managing grassland road verges
Managing Meadows
Chilterns National Landscape
The Management Plan for the Chilterns National Landscape
Kent Wildlife Trust
Land Mgt Advice Sheet 2 - Mgt of neutral grassland

5.6 Lowland heathland and acid grassland

The more acidic, sandy soils of the Greensand Ridge are home to Bedfordshire's areas of lowland heathland and closely associated acid grassland. Lowland heathland is one of the most threatened habitats in England and is internationally important. The vivid purple colours of heather flowers provide a late summer spectacle along with a diverse range of plant and invertebrate species.

The Greensand Trust have restored significant areas of heathland within Rushmere Country Park (and have worked with Tarmac to restore heathland at Rammamere Heath, just over the Buckinghamshire border), all of which is now within an extended "Kings Wood and Rushmere National Nature Reserve (NNR)". Other restoration and creation projects include Maulden Heath, Coopers Heath SSSI at Ampthill and a smaller area at Centre Parcs. It is thought that heathland now covers approximately 170ha in the county.

Encroachment of trees onto heathland is a perennial problem, particularly for those heaths that cannot be grazed. Mechanical management can also be problematic, and the BCN Wildlife Trust has been successfully trialling turf stripping at Cooper's Hill to create early successional habitat.

Bedfordshire's heathlands are fragmented making them vulnerable to climate change and development and the lack of connectivity prevents many heathland species from dispersing.

5.6.1 Priority habitats

Lowland heathland - lowland heathland is usually an open landscape on acidic and shallow peat soil. It is characterised by the presence of plants such as heathers and gorses. It is generally found below 300m in altitude in the UK. Lowland heath is found along the Greensand Ridge between Leighton Buzzard and Woburn, Ampthill and Maulden and at Sandy.

Acid grassland - Lowland dry acid grassland typically occurs on nutrient-poor, generally free-draining soils with a pH ranging from 4 to 5.5, overlying acid rocks or superficial deposits such as sands and gravels, at heights below about 300m. It often occurs as an integral part of lowland heath landscapes, in parklands, and locally on coastal cliffs and shingle. It is normally managed as pasture.

Image 12 - Heathland at Coppers Hill Credit: Laura Taylor

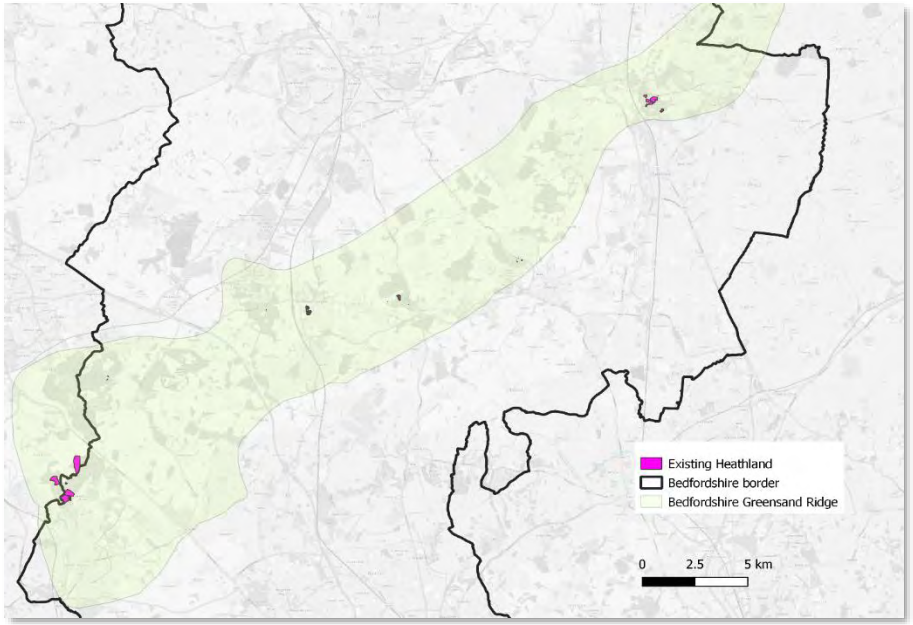
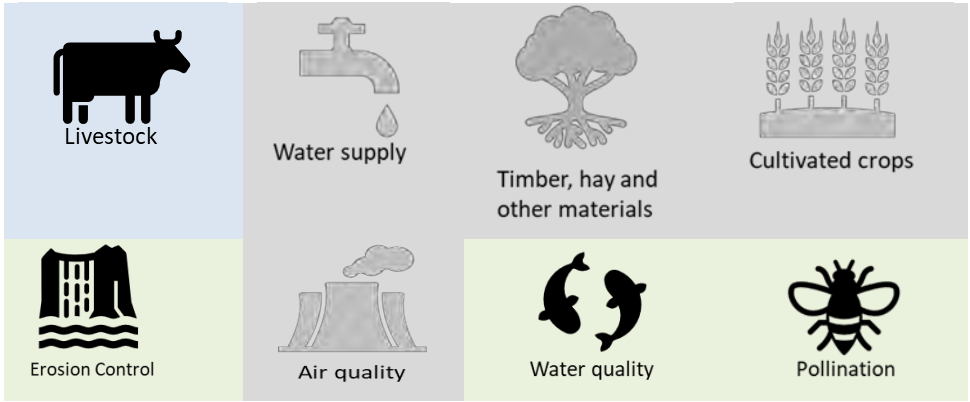


Figure 17 - Map showing Bedfordshire's existing lowland heathland along the Greensand Ridge

5.6.2 Key ecosystem services provided by heathland habitats



5.6.3 Opportunities for recovery

- **Heathland and acid grassland creation**
  There are opportunities to create and reinstate areas of heathland habitat along the Greensand Ridge through appropriate land management methods including clearance or restoration of coniferous woodland and scrub on poorer soils which are developing acidic plant and animal communities.
  In particular, heathland restoration and creation projects at Rushmere Park and at the RSPB Lodge reserve in Sandy provide good opportunities for expansion.
- **Restoring heathland on woodland plantation**
  Restoring historic heathland in areas of woodland plantation, where commercial woodland has been planted.

- **Restoring quarries**
  Quarries in suitable locations for heathland and acid grassland could be restored to a mix of heathland and acid grassland to create stepping stones between currently isolated areas.

5.6.4 Heathland priorities and measures

Bedfordshire, like many counties has lost significant areas of heathland. All Bedfordshire's heathland is found along the Greensand Ridge. Lack of management is considered the main cause of heathland loss and decline (Bedford Local Nature Partnership, 2015). The heathland outcomes and measures seek to restore good heathland management to support species such as adders and small heath butterfly.

H1 - Create new wildlife rich heathland and acid grassland to buffer, link and provide stepping stones between existing sites

Measures

H1a - Heath and Acid Grassland opportunity

Link existing habitat via connecting corridors of heathland. Encourage colonisation by using heather seed (directly or in brush or capsules) or cuttings, preferably from a donor site nearby, where there is little chance of success through natural regeneration through the seed bank. Graze or cut the colonising heathland vegetation at set times to maintain diverse maturity of plants. Species that may benefit include nightjar, tiger beetles and small heath butterflies.

Mapped: Yes

Linked Priority Species

Adder

H2 - Restore existing heathland and acid grassland sites and those with traces of heathland remaining.

Measures

H2a - Heath and Acid Grassland existing

Restore existing or recently lost areas of heathland. If necessary, remove or disturb topsoil or seed to encourage new growth. Carry out appropriate hydrological management to ensure wet heath/acidic mire areas are maintained. Maintain a diverse vegetation structure to provide a range of habitat niches. Create areas of bare ground for invertebrates such as solitary wasps and bees and feeding sites for birds.

Mapped: Yes

Linked Priority Species

Adder

5.6.5 Further information and guidance

Countryside Stewardship

LH1: Management of lowland heathland - GOV.UK

LH2: Restoration of forestry and woodland to lowland heathland - GOV.UK

LH3: Creation of heathland from arable or improved grassland - GOV.UK

Buglife

Lowland Heathland Guidance

Natural England

Climate change adaptation manual

FarmWildlife

Lowland Heathland Guidance

5.7 Rivers, wetlands and ponds

Many of Bedfordshire's Towns and villages have a rivers, wetlands, lakes and ponds at their heart. Bedfordshire's two largest towns, Luton and Bedford have rivers through the centre. These rivers provide vital functions for people and wildlife including a connection to nature and wellbeing benefits.

Lakes such as Lidlington and Stewartby on the former brickworks at Stewartby to the south of Bedford are a noticeable feature on the A421. This area also supports reedbeds and fen, while Felmersham Gravel Pits is a designated SSSI due to its abundance of dragonflies, aquatic plants and birds.

The chalk streams tend to be small stretches within the county, feeding mostly into Hertfordshire, however the escarpment streams with 'chalky' characteristics are important but under-recognised. The River Lea (or Lee) in Luton was historically a key feature but was largely culverted through the town centre. A small section has now been reinstated, demonstrating the potential for further river restoration. The marl lakes at Houghton Regis quarry also creates unique habitats for birds and invertebrates.

Small sections of the Gade and Ver chalk streams rise in Bedfordshire, before running into Hertfordshire, and are in poor and moderate condition respectively, with pollution and water availability being the key concerns. There are also a number of waterbodies with chalk stream characteristics rising from the north facing escarpment and flowing north such as Barton Brook rising at Barton Springs. These have been affected by modification and shading as well as reduced flows and increased nutrients. The Lea, from Luton to Hoo Lakes, is classified as being in 'Poor' condition under the Water Framework Directive criteria (Environment Agency, n.d.). It is largely culverted, although a small section was de-culverted in central Luton in 2020 as part of the Luton Town Centre masterplan.

Ponds, including those in gardens and parks, are important homes for species such as amphibians and reptiles.

5.7.1 Bedfordshire Blue Lens LNRS[19]

The Environment Agency and the Bedfordshire Local Nature Partnership worked together on a project to ensure that considerations around the water environment can be brought into the LNRS process in Bedfordshire. It specifically aimed, using a variety of GIS approaches, to identify a series of opportunities that would enhance the freshwater environment both in terms of its contribution to nature recovery, and through providing wider environmental benefits.

A number of water challenges exist in Bedfordshire. Some of the most significant include the extent of modification of the Upper and Bedford Ouse Catchments (90% are classed as heavily modified), diffuse nutrient pollution from agriculture, issues of flooding but also low flows, wetland loss and peat degradation. In response to this a prioritised list of water related needs: improved geomorphology and in channel habitat connectivity, reducing nutrient pollution (ammonia and phosphate), high and low flow regulation and reversing wetland and peat degradation in Bedfordshire was established by a range of stakeholders via a Bedfordshire LNRS workshop in October 2023. (Alison Holt, 2024)

5.7.2 Priority habitats

Rivers - This habitat type includes a very wide range of types, encompassing all natural and near-natural running waters in the UK (i.e. with features and processes that resemble those in 'natural' systems). Rivers in Bedfordshire that meet the criteria include the Ivel, recognised as a chalk river, other spring-fed waterbodies emanating from the north Chilterns escarpment, and the Ouse above Bedford where the spined loach (*cobitis taenia*), an Annex II Habitats Directive species, occurs.

[19] Bedfordshire LNRS Blue Lens: opportunities for enhancing the water environment Bedfordshire-LNRS-Blue-Lens_Final.pdf (bedfordshirenaturally.com)

The Ivel along with the Rivers Lee and Colne catchments which begin their journey in Luton and are classed as **chalk streams**. There are only around 200 chalk streams globally, with the UK home to 85% of them. There are also other important streams flowing north into Bedfordshire, from the Chilterns escarpment, which have chalk stream characteristics.

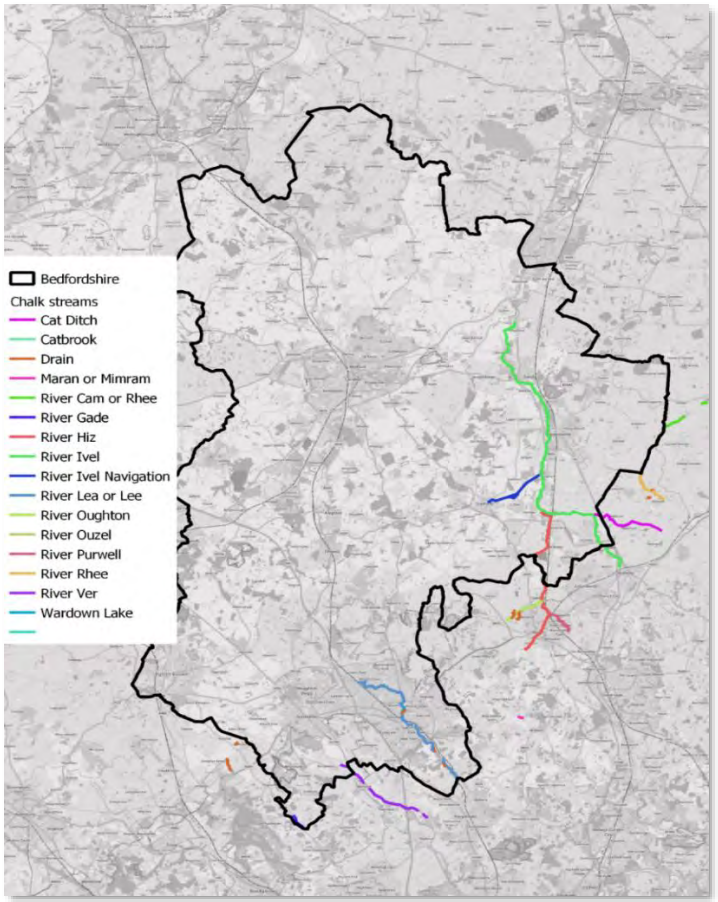


Figure 18 – Chalk streams within Bedfordshire and surrounding counties. Source: Natural England

Ponds – Ponds are permanent (holding water all year round) or seasonal (dry during summer) standing water bodies up to 2ha in extent, which support good numbers of invertebrates, amphibians and plants. There are thought to be around 3,700 ponds in Bedfordshire (Bedfordshire Local Nature Partnership, 2015)

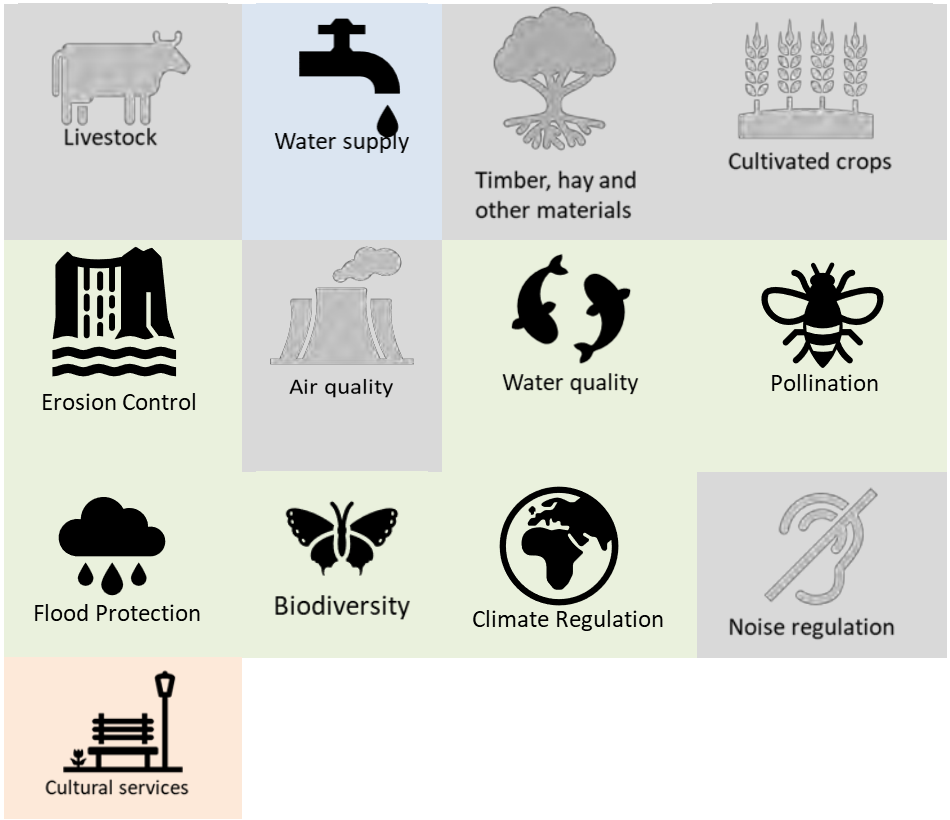
Purple moor-grass and rush pastures - Purple moor grass and rush pastures occur on poorly drained, usually acidic soils in lowland areas of high rainfall. Small pockets of purple moor-grass and rush pastures can be found near Flitwick and Woburn.

Lowland fens - The UK is thought to host a large proportion of lowland fen in Europe (Joint Nature Conservancy Council, 2024). Fen vegetation has declined dramatically in the past century. Fens predominantly receive water laterally via mires, springs and flushes. But water also moves vertically from within peat and soil.

Reedbeds - Reedbeds represent a type of wetland ecosystem primarily composed of the common reed, Phragmites australis. These areas typically maintain a water table that remains at or above the surface throughout most of the year. The most notable reedbed site at Marston Vale Country Park is a potential site to see or hear rare bitterns along with a range of other species.

In addition to Priority habitats – There are lakes and other larger bodies of water with examples including Lidlington and Stewartby Lakes visible from the A421. They are important for birds such as wintering wildfowl, dragonflies and aquatic plants.

5.7.3 Ecosystem services provided by rivers and wetlands



5.7.4 Opportunities for recovery

- **Clophill Lakes Nature Reserve**
  The creation of a nature reserve at Clophill Lakes by the Greensand Ridge near Shefford is creating wetland and grassland habitat which could connect to additional sites.

- **Bedford River Valley Park**
  The Bedford River Valley Park (BRVP)[20] is a major new green space being promoted by a coalition of landowners, businesses, local people and the statutory bodies. The park will cover 868 hectares (2,145 acres) largely in the floodplain of the River Great Ouse to the east of Bedford, linking the existing Priory Country Park in the town to the wider countryside around the village of Willington. This provides the opportunity for nature recovery and public access to green and blue infrastructure.

- **Bedford and Milton Keynes Waterway**
  This proposal seeks to create a new waterbody linking Bedford and Milton Keynes. It provides an opportunity to increase biodiversity through the creation of new wetlands and parkland and public amenity through cycle and walking routes [21].

- **Sustainability reductions**
  Reducing the amount of water taken from rivers, particularly chalk streams for domestic and commercial use can improve water flows benefiting wildlife.

- **Manage river catchments**
  Maintaining and restoring semi-natural habitats such as wetlands and woodlands can slow the flow of water over land. This help reduce high flows in rivers and can improve water quality infiltrate surface water down into the aquifers, providing flow regulation and nutrient reduction benefits.

- **Protecting peat**
  Bedfordshire has a small amount of peatland in the Flit valley. Protecting and restoring this where possible, as part of a joined-up

[20] Further information on Bedford River Valley Park https://www.bedfordrivervalleypark.org.uk/
[21] Further information on Bedford and Milton Keynes https://www.bmkwaterway.org/

approach to water level management with land managers provides and opportunity to raise awareness of this habitat.

- **Restore river channels**
  Where possible, restore natural channels to allow natural river processes to take place and re-connect them with their floodplains, in line with the Upper Bedford Ouse Catchment Partnership Strategic River Restoration Plan and Blue Lens work. Seek to extend and connect fragments of seminatural habitat in the floodplain and nearby.

- **Sewage treatment works**
  to reduce nutrient input from smaller/rural sewage treatment works.

5.7.5 River, wetland and pond priorities and measures

The River Great Ouse catchment dominates Bedfordshire's river network with several chalk streams starting their journeys in Bedfordshire. Spined loach can be found mainly on the Ouse with Eels and brown trout on the fringes of Bedfordshire. Otters can also be found within the wider catchment.

Significant lakes including Priory Country Park and Stewartby are home to fish and wildfowl, particularly in winter. There are also areas of wetlands, pond, reedbeds and floodplain grazing marsh which are home to great crested newts, waders such as lapwings and a small numbers of bitterns. The Rivers, Wetlands and Ponds measures seek to improve the water quality and natural functioning of our riparian and wetland habitats and provide better connectivity.

R1 - The biological health of rivers, streams, ponds, lakes and groundwaters has improved, many more are in good condition, and the levels of chemicals within them has been reduced.

Measures

R1a - Sewage treatment works

Target treatment wetland creation at Descriptive Treatment Works locations where the receiving waterbody is most likely to be significantly impacted by nutrient inputs from treated effluent

Mapped: No

R1b - River water quality

Reduce soil erosion by implementing land management techniques, protecting soils and reducing nutrient input. Create woodland, hedgerow and wetland features, buffers, swales or bunds.

Mapped: Yes

Linked Priority Species

Brown Trout

Eel

Image 13 - Great crested grebe on lake. Credit: Ben Woodfine

R2 - River flows and water dependent habitats and species are more resilient and are able to adapt to climate change

Measures

R2a - River Flows

Where possible, restore rivers to their natural course by realignment to create more natural diverse flows, benefitting aquatic species. Reprofile and lower banks to restore connectivity between the river and flood plain. Where connection to floodplain is not possible, install in-channel features such as using berms to create meanders and roughness. Reduce impact of poaching by livestock by reducing access to the river bank.
Mapped: Yes

R2b - River obstacles

Remove weirs to restore more natural flow and facilitate movement of fish and invertebrates. Where this is not possible, fish bypasses should be considered.
Mapped: Yes

R2c – NFM

Implement natural flood management measures such as leaky dams, bunds, swales or buffers within the catchment that reduce high flows and soil erosion, reducing flood risk.
Mapped: Yes

Linked Priority Species

Brown Trout
Eel
Water Vole

R3 - The condition and health of chalk streams has improved, and they receive greater recognition and protection as valuable habitats.

Measures

R3a - Chalk streams

Restore rivers to a more natural state to improve resilience to changes in flow and help with over-heating of water (e.g. by providing a balance of light and shade). Manage invasive species such as floating pennywort and Himalayan Balsam where possible throughout the catchment.
Mapped: Yes

R3b - Chalk stream abstraction

Prioritising chalk streams for sustainable abstraction and measures to address storm tank overflows will help with resilience to changing flows and water quality.
Mapped: No

Linked Priority Species

Brown Trout
Eel
Water Vole

R4 - New areas of floodplain grazing marsh, fens and reedbeds have been created, and existing sites have been protected, maintained and enhanced.

Measures
R4a – Wetlands
Manage vegetation and restore natural hydrological processes by implementing measures such as blocking drains, creating bunds, or re-wetting areas to raise water levels. Allow marginal vegetation to develop including hedgerows while preventing encroaching from scrub. Implement appropriate extensive grazing regimes or cut and remove techniques to create a diverse sward height and structure. Create in-field wetland scrapes and swales in drier areas to store and slow the flow of water, extending the wet habitat area.

For reedbeds, manage water levels to create shallow areas of water year round and introduce reed (Phragmites) through planting or bringing in material from existing reedbeds. Manage scrub and opportunistic species to assist reedbed establishment and maintain open water features
Mapped: Yes

Linked Priority Species
Water Vole

R5 - New ponds have been created, and existing ones protected, maintained and enhanced

Measures
R5a – Ponds
Create new ponds and manage existing ponds by managing vegetation and creating buffer zones to benefit aquatic wildlife and retain water. Control scrub and invasive non-native plants to maintain open water while retaining small areas of overhanging trees, bushes and deadwood for dragonflies and other invertebrates.

When creating ponds in intensively managed landscapes, such as arable or urban areas, prioritise creation in locations where evidence demonstrates ponds have previously or areas where the ponds can be well buffered by rough grassland or low scrub.
Mapped: Yes

R6 - The condition of peat resources and habitats has improved and now receive better recognition as valuable habitats and carbon stores.

Measures

R6a – Peatlands

Maintain and protect areas of peat and associated habitats through hydrological regulation and protecting water quality. Following restoration of the hydrology, re-vegetate areas of bare peat using best practice restoration techniques and appropriate plant species mixes. Initially, this should help to prevent or reduce further peat loss, but in the longer term will help to restore active peat formation.

Where sites may have recently dried out, or been colonised or planted with trees, remove up to 95% of native trees, and all invasive non-native species in line with Forestry Commission guidance. After extraction, keep water levels raised to reduce re-colonisation, as evapotranspiration from trees and scrub will exacerbate drying effects- Dispose of cut material appropriately to maintain low nutrient levels

Mapped: Yes

5.7.6 Further information and guidance

Defra

Farming rules to protect watercourses policy paper

Rules for farmers and land managers to prevent water pollution GOV.UK

Countryside Stewardship

WT4: Pond management (less than 100 square metres) GOV.UK

WT5: Pond management (more than 100 square metres) GOV.UK

WT6: Management of reedbed GOV.UK

WT7: Creation of reedbed GOV.UK

WT8: Management of fen GOV.UK

WT9: Creation of fen GOV.UK

WT10: Management of lowland raised bog GOV.UK

SW12: Making space for water GOV.UK

Freshwater Habitats Trust

Pond conservation guide

Natural England

Natural England Access to Evidence Wetlands

Climate change adaptation manual

Environment Agency

Anglian River Basin District | Catchment Data Explorer

EA Pollution Prevention Rules for Farmers booklet.pdf

River Restoration Centre

what is river restoration final.pdf

Catchment Based Approach

Chalk Stream Strategy

Norfolk Wildlife Trust

Restoring Norfolks Ponds Guidance booklet

5.8 Built up areas and previously developed land

Bedfordshire's towns and villages are home to approximately 700,000 people. Luton and the county town of Bedford are the two largest urban centres with Dunstable, Leighton Buzzard and Biggleswade. Urban areas can provide vital homes for nature and Bedfordshire is no different. Nature in urban areas provides significant benefits including cleaner air, reduced flood risk and connection with nature which is proved to have benefits for mental and physical health. However, expanding urban areas and related infrastructure can put pressure on natural spaces. Major roads such as the A1 and M1 can provide significant barriers to wildlife, breaking up the connection between habitats.

Rivers form an important part of many of the towns and villages along with parks, woodland, gardens and in some cases roofs. Buildings have become vital nesting sites for swifts – a threatened bird species that visits the UK in the summer to breed. They nest in gaps in roofs which can also be home to other threatened species such as house sparrows and bats.

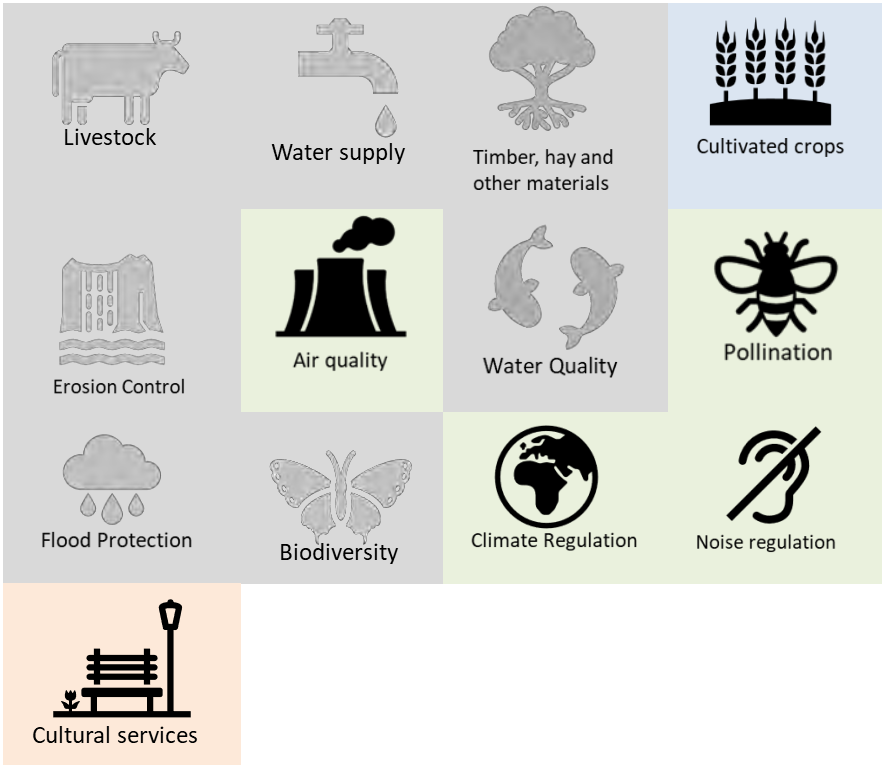
Bedfordshire's parks and gardens can provide habitats for a range of plants, animals and fungi. Garden ponds can be important for local populations of amphibians and insects, by providing them with a place to breed. Hedgerows bordering gardens and parks help provide connectivity to the wider countryside and lawns and wildlife flowers are vital for pollinators.

Previously developed land can be particularly important for some plant and invertebrate species. Between 12% and 15% of all nationally rare and nationally scarce insects are recorded from brownfield sites (JNCC). Quarry sites can also be important sites for wildlife. In Bedfordshire, former quarries such as Felmersham gravel pits are designated as a Site of Special Scientific Interest.

5.8.1 Priority habitats

Open mosaic habitats on previously developed land – this habitat is generally made up of bare ground, short, patchy areas of grassland within areas previously build on or excavated. They can have high value for biodiversity.

5.8.2 Ecosystem services provided by nature in built up areas and previously developed land



5.8.3 Opportunities for recovery

- **Making use of built structures**
  Barns, homes or other structures can benefit species such as barn

owls, swifts and several bat species which may nest in them.

- **Sustainable drainage systems (SUDS)**
  Targeting the development of sustainable drainage systems, road run-off attenuation and greenspace within urban centres to filter pollutants. This will be increasingly important as building continues to expand the commuter villages and towns.

- **Green and blue infrastructure**
  Parks, gardens, cemeteries and the edges of sports fields provide an opportunity for nature friendly grassland management, tree and hedge planting or pond creation. This provides a variety of benefits from access to nature to improved air quality and storing water. It can also provide connections for

- **Restore quarries**
  Restoration of former quarry sites to priority habitats can provide vital places for nature. Applying the 'Nature after Minerals' approach[22].

- **Nature crossings**
  Installing 'green crossing' to allow wildlife to cross major road and rail infrastructure, linking up important habitats.

5.8.4 Built up areas and previously development land priorities and measures

Urban areas have expanded significantly in recent decades putting pressure on wildlife. The measures set out below seek to create and enhance habitats through towns and villages, connect nature across the county and providing benefits to people and communities. Access to green space is important for wellbeing and mitigating the impacts of climate change such as warmer temperatures and flooding.

U1 - There are more healthy urban watercourses that are better connected, providing benefits for aquatic wildlife as well as enhanced accessibility, health benefits and amenity for people.

Measures

U1a - Constructed wetlands
Create constructed wetlands where possible, to provide habitat for aquatic wildlife, improve water quality and provide public amenity.
Mapped: No

U1b - Re-naturalise rivers
Identify opportunities to de-culvert or re-naturalise river channels to allow daylight to reach the channel and provide opportunities for wildlife and benefitting communities.
Mapped: No

U1c - Lea Linear Park
Restore sections of the River Lea in Luton by creating a linear park along the river and rerouting the Lea through Power Court as part of its redevelopment - providing amenity for local communities and suitable riparian habitat for wildlife
Mapped: Yes

Linked Priority Species
Water Vole

[22] Nature after Minerals is a partnership resource for everyone with an interest in quarry restoration and minerals planning for biodiversity gain Home - Nature After Minerals.

U2 - There are more nature rich areas in urban green spaces for communities to enjoy

Measures

U2a - Urban green space

Create nature friendly areas within built-up and previously developed land to provide access to nature for people. This can include parks, recreation areas and open green spaces. Allow areas of grass to grow through the spring and early summer to promote plant and invertebrate diversity. If necessary, seed with suitable native plants.

Mapped: Yes

Linked Priority Species

Bat Assemblage

Hedgehog

Swift

U3 - There is an increase in biodiversity within built up and previously developed land, with better protection for nature rich areas

Measures

U3a - urban connectivity

Sensitively manage areas of green and blue infrastructure to promote biodiversity. Create screening features such as hedgerows, tree or scrub to screen areas from light pollution to protect sensitives species such as nocturnal invertebrates and bats. Create wildlife corridors by planting hedges with a mix of species such as hawthorn, blackthorn, ivy and holly. Reduce the use of chemicals such as pesticides in built up areas, utilising natural pest management.

Mapped: No

U3b - Restore Quarries

Restore mineral extraction sites to benefit biodiversity by implementing suitable management techniques to connect important local habitat such as grassland, heathland or wetlands.

Mapped: Yes

U3c – Crossings

Identify opportunities to create green crossing across major road and rail infrastructure to improve connectivity between habitats.

Mapped: Yes

U3d - Roadside NR

Manage and enhance roadside nature reserves through appropriate site management, to promote target habitats such as grassland or heathland. Link gaps to increase connectivity with neighbouring habitat

Mapped: Yes

Linked Priority Species

Bat Assemblage

Hedgehog

U4 - Communities that are better adapted to the impacts of climate change through nature based solutions

Measures

U4a - Urban drainage

Create Sustainable Drainage (SUDs) in suitable locations to slow urban runoff and reduce flood risk

Mapped: No

U4b - river management

Ensure riparian management plans are in place through local authorities and community engagement to maintain river flows and biodiversity. Increase canopy cover by targeted planting of individual trees, community woods and orchards in urban areas and close to settlements

Mapped: No

U4c - urban trees

In suitable locations, plant diverse tree and shrubs species to provide shading from increasing temperatures and reduction in flooding impacts.

Mapped: No

Linked Priority Species

Bat Assemblage

Hedgehog

5.8.5 Further information and guidance

Natural England

Climate change adaptation manual

Forest Research

Urban Tree Manual Forest Research

Enfield Council

Enfield SuDS Design and Evaluation

RSPB

Our guide to a beautiful, wildlife friendly garden

Local Government Association

Sustainable drainage systems

Buglife

managing urban areas for pollinators_0.pdf

Bat Conservation Trust

Artificial Lighting Guidance Buildings, planning and development

5.9 Priority species

Bedfordshire is home to a wide range of species across a range of habitats. This strategy identifies threatened and other locally significant species relevant to Bedfordshire and which of these species should be prioritised for recovery. The designation of priority species helps focus conservation efforts and resources on those species most in need of protection and recovery and those that the LNRS is the best mechanism to support.

Bedfordshire has important populations of threatened species from rare hazel dormice in woodlands to adders on heathland and a variety of orchids and other rare plants such as pasqueflower on chalk grassland. Many of the threatened species in Bedfordshire require more, bigger, better and more joined up habitats and would benefit from the outcomes and measures set out in Section 5 *Statement of Biodiversity Priorities*

However, some species require additional or bespoke measures to aid their recovery. The Bedfordshire Biodiversity Recording and Monitoring Centre provided a longlist of species which included:

• Any native species which have been assessed as Red List Threatened against IUCN criteria
• Any native species which have not been formally assessed against IUCN Red List criteria but where strong evidence is provided to show that they would meet the criteria for Threatened status (note: such species may fall into the category of 'other species of local significance' inputted by stakeholders.
• Any native species considered to be nationally extinct that re-establish themselves or are rediscovered

Some of these priority species will benefit from the same additional measures. These have been grouped together in species assemblages. The process for identifying priority species is explained in Appendix 2.

5.10 Assemblages

5.10.1 Knocking Hoe Chalk Grassland Assemblage

Knocking Hoe is a Site of Special Scientific Interest (SSSI) and National Nature Reserve (NNR) near Pegsdon in south Bedfordshire. It is an important area of chalk grassland and the only place in the county with certain rare species of plant. Measures to support the spread of these species around Knocking Hoe would increase resilience of this vulnerable population.

Species

- Spotted Cat's-ear *Hypochaeris maculata*
- Burnt Orchid *Neotinea ustulata*
- Moon Carrot *Seseli libanotis*
- Autumn Lady's-tresses *Spiranthes spiralis*

Measures

- Ensure appropriate grazing or cutting management to avoiding flowering and set-setting (May-July)
- Create chalk grassland habitat in the areas surrounding the existing Knocking Hoe SSSI
- Allow light disturbance from grazing to help seeds to spread ground

Further information

A statement of English Nature's views about the management of Knocking Hoe Site of Special Scientific Interest (SSSI)

5.10.2 Arable Margins Assemblage

The margins of arable fields can be important for a range of species. Not only do they provide buffers for woodlands they are also home to rare species including several plant and invertebrate species. The regular maintenance and disturbance from farming practices combined with low nutrient levels and low herbicide use provide a suitable habitat for this

assemblage.

Species

- Wild Candytuft *Iberis amara*
- Broad-fruited *Cornsalad Valerianella rimosa*
- Striped Lychnis *Cucullia lychnitis*

Measures

- Carry out annual cultivation in either spring or autumn followed by minimal disturbance until the following autumn by which time the plants have set seed.
- Plant dark mullein *(Verbascum nigrum*) as foodplant for striped lychnis
- Disturb the soil to bring buried seed to the surface and trigger germination**.**

Further information

Back from the Brink – Species information guide Broad-fruited cornsalad	Valerianella-rimosa-Broad-fruited-cornsalad.pdf
Butterfly conservation	Striped Lychnis | Butterfly Conservation

5.10.3 Long Established Calcareous Grassland

Some species need specific management of long-established calcareous grassland to prosper. These areas, along with suitable grazing and other management techniques help these species to disperse, boosting the population. This assemblage highlights some of the key species in Bedfordshire requiring short, well managed calcareous grassland.

Species

- Field Fleawort *Tephroseris integrifolia subsp. Integrifolia*
- Pasqueflower *Pulsatilla vulgaris*
- Frog Orchid *Coeloglossum viride*

Measures

- Maintain sward height of around 5cm through grazing or cutting to prevent shading of new flowering plants
- Create small bare patches and sow seeds to allow seeds to germinate and allow expansion of colonies
- Light trampling can be beneficial by breaking down leaf litter and providing bare patches for seed germination and some invertebrates

Further information

Back from the Brink – Species information guide	Frog Orchid - *Coeloglossum viride*
Back from the Brink – Species information guide	Pasqueflower - *Pulsatilla vulgaris*
Botanical Society of Britain	Tephroseris integrifolia species account.pdf

5.10.4 Bats Assemblage

There are 18 species of bats in the UK with around 12 of these species found in Bedfordshire (Cornes, 2020). Many species have declined due to a range of factors including habitat loss, development and disease. These species are some of Bedfordshire most threatened and would benefit from a range of measures including those set out below.

Species

- Brown Long-eared Bat *Plecotus auritus*
- Western Barbastelle *Barbastella barbastellus*
- Lesser Noctule/Leisler's Bat *Nyctalus leisleri*
- Soprano Pipistrelle *Pipistrellus pygmaeus*
- Nathusius's Pipistrelle *Pipistrellus nathusii*
- Serotine *Eptesicus serotinus*
- Noctule Bat *Nyctalus noctula*

Measures

- Improving hedgerow linkages
- Improving woodland structure and microclimate by having "non-intervention" areas which are allowed to build up dense structure
- Improving woodland roosting opportunities by leaving standing dead wood and damaged tree features and some veteran trees
- Reduced ivermectin use for cattle and horses
- Provision of roosting features on buildings
- Reducing light pollution over water bodies

Further information

Bat Conservation Trust	Advice - Bat Conservation Trust
Bedfordshire Bat Group	Bats in Bedfordshire | Bedfordshire Bat Group
Back from the Brink	Bat Species Summaries

5.10.5 Dead wood beetle assemblage

These species play a vital role in the decomposition of wood. They are found in a range of arboreal habitats including woodland, orchards and standalone trees such as those with woodland pasture and parkland. Their larvae feed on old and decaying wood and require old and dead trees within parkland and orchards. The species within this assemblage are considered threatened and Bedfordshire can play a role in their recovery.

Species

- *Vanonus brevicornis*
- Rusty click beetle *Elater ferrugineus*
- Noble chafer *Gnorimus nobilis*
- *Laemophloeus monilis*

Measures

- Leave standing or fallen deadwood in place in both sunny and shady locations in wood pasture, woodland and orchards to ensure diverse range of habitat
- Reduce scrub encroachment around deadwood in open areas to avoid shading and cooling of habitat
- Where possible, avoid pesticide use which could impact on beetles and their larvae
- Where safe to do so, keep dead branches on trees to avoid disturbing beetle larvae

Further information

Noble-chafer-fact-file-low-res.pdf

5.11 Individual priority species

Several species were identified as needing specific action that did not fit into one of the assemblages. These individual priority species are set out in the table below. In areas were these species are found or could be found. This strategy sets out measures which could be delivered to aid the recovery of these species and further advice.

5.11.1 Musk Orchid *Herminium monorchis*

These small orchids have tiny yellow flowers and are found on chalk and limestone. In Bedfordshire, they are mainly found in the Chilterns which extends into southern Bedfordshire. Usually between 15-30cm high.

Measures

- Produce a short sward whilst allowing *H. monorchis* and other threatened plants to flower and set seed throughout the spring and summer months.

- Graze with hardy breeds of sheep, cattle from early autumn through to early spring to achieve and average sward height of <10cm

Further Information
Botanical Society of Britain and Ireland - https://bsbi.org/

5.11.2 Ground-pine *Ajuga chamaepitys*

Ground-pine resembles a small pine tree seedling but is a member of the mint and dead-nettle family about 5-20 cm tall. This species grows on chalky, drought-prone soil which is slow to be colonised by plants. In Bedfordshire, it is found predominately in the southeast near Barton Le Clay. It requires occasional disturbance to expose soil and buried seed. Habitats include bare tracks, arable field margins and open chalk downland.

Measures

- Regular soil disturbance and scrub clearance can maintain Ground-pine populations in grassland habitats – avoiding disturbance in flowering and seeding period
- Use grazing with cattle or ponies to provide bare ground for germination.
- Scrub management through light ploughing or harrowing has also been successful.
- In arable habitats cultivated and uncropped margins and plots provide suitable habitat as well as unsprayed headlands.
- Cultivate in spring to protect seeds from frosts

Further Information
Arable Plants Species Action Plan - bedscape.org.uk
Back from the brink factsheet - naturebftb.co.uk

5.11.3 Juniper *Juniperus communis*

Juniper bushes grow on calcareous grassland. It is an evergreen plant with small yellow flowers and fleshy cones called 'berries' due to their resemblance. The only known site in Bedfordshire is at Kensworth quarry near Dunstable.

Measures

- Where juniper bushes are surrounded by scrub or young woodland, selectively clear surrounding area to reduce shading and prolong life span.
- Create seedling habitat by scraping away turf and topsoil, or by long-cycle rotational grazing
- Protect new or vulnerable juniper plants by erecting bespoke seed shelters, which exclude herbivores whilst allowing berries to reach the ground. These should be either sited under female bushes or installed in the open and sown with cleaned seed from the berries of nearby bushes
- take seeds or cuttings from existing populations and grow on and plant out in new suitable areas to expand population.

Further Information
Plantlife - https://www.plantlife.org.uk/

5.11.4 Swift *Apus apus*

Swifts migrate to the UK in late April or May before returning to Africa in August. They nest almost exclusively in building roofs where holes in the eaves provide access. They can be found throughout Bedfordshire where buildings are accessible, and food supplies are available. They feed on the wing on small airborne insects over fields and open water.

Measures

- Maintain existing nest sites with buildings by allowing access and avoiding disturbance where possible

- Create new nest sites in roof spaces using swift boxes or bricks in new constructions to provide suitable nesting opportunities
- Create corridors within urban spaces to allow access to foraging sites, create foraging sites within and around urban spaces and water courses by increasing invert population/promote wildflowers and species rich grasslands.

Further Information
Swift Conservation - https://swift-conservation.org/

5.11.5 Turtle Dove Streptopelia turtur

Turtle doves are one of the UK's fastest declining bird species. This is due to factors such as habitat loss, changes in farming techniques and shooting of migrating doves as they move from Africa to Europe. They are most commonly found on arable and mixed farmland, where it finds its preferred food of wildflower seeds and farmed crop grains. They nests and roosts in open woodland edges, hedgerows and scrub areas near to feeding areas. They are predominantly found throughout the Greensand Ridge, Marston Vale and north Bedfordshire

Measures
- Provide nesting areas of scrub or dense thorny hedgerow species of 3m tall and 4m wide. Allow room for hedges to expand if necessary.
- Encourage and keep native climbing plants such as Dog Rose, Honeysuckle, Clematis (Old Man's Beard) or Ivy.
- Maintain the dense, scrubby structure that Turtle Doves prefer, areas may need to be coppiced in sections on a long-term
- Provide accessible water such as ponds with gently sloping sides within 300m of suitable nesting habitat.
- Allow natural regeneration of wildflowers or provide a suitable seed mix to provide food
- Provide supplementary food to further boost feeding opportunities

Further Information
Operation Turtle Dove - https://www.operationturtledove.org/

5.11.6 Duke of Burgundy *Hamearis Lucina*

Duke of Burgundy are small black and orange butterflies found mainly within chalk and limestone grassland. They are found in the south west of the county within the Chilterns. The eggs are laid on species of primula. The adults prefer scrubby grassland and sunny woodland clearings.

Measures
- Consider planting *primulas spp* as foodplant where this may be absent or declining
- Promote swards of Primulas at various heights to provide continuous supply of flood plants, with scrub edges or patches comprising up to 20% of the grassland area.
- In woodland, create and maintain rides and glades through cutting or strimming to create openings in woodland canopy
- Support and manage scrubby grassland with higher turf which is generally not as species rich.

Further Information
Butterfly Conservation - https://butterfly-conservation.org/

5.11.7 Small Blue *Cupido minimus*

The small blue is the smallest resident butterfly in the UK. It prefers calcareous grassland so in Bedfordshire is mainly found within the Chilterns with occasional records elsewhere. The sole foodplant is kidney vetch *Anthyllis vulneraria* where the larvae live only in the flower heads where they feed on developing anthers and seed.

Measures
- Aim to maintain a mosaic of short and tall vegetation with a high density of flowering Kidney Vetch

- Where appropriate, grassland habitat can be maintained by livestock grazing, creating more open swards, with broken bare ground providing suitable germination sites
- Restoring connections between colonies, for example along disused railway lines, on derelict sites and quarries, on new road verges and along field margins
- Periodic and/or patchy disturbance, especially on slopes, with a bulldozer, tractor, flail or hand tools can help maintain suitable breeding habitat.

Further Information
Butterfly Conservation - https://butterfly-conservation.org/

Image 14 - Female small blue butterfly. Credit: Melanie Douglas

5.11.8 Black Hairstreak *Satyrium pruni*

Black hairstreak butterflies are mainly found around woodlands on heavy clay soils in northern and central parts of Bedfordshire. The caterpillars feed almost exclusively on blackthorn *Prunus spinosa* while the adults feed with tree canopies or dense scrub where they feed on honeydew secreted by aphids.

Measures
- Retain Blackthorn within woodlands and hedgerows
- Plant blackthorn in suitable areas to provide foodplant for caterpillars
- Cut blackthorn on rotation, maintaining suitable structure between old plants and new growth

Further Information
Butterfly Conservation - https://butterfly-conservation.org/

5.11.9 Hazel Dormouse *Muscardinus avellanarius*

Hazel dormice are nocturnal mammals that live in the tree and shrub canopy. They are active between late April and late October, hibernating over winter. They build nests in tree holes, old bird nests, dense scrub and nest boxes. In Bedfordshire, the small population is mainly found in central areas where recent reintroductions have aimed to boost numbers.

Measures
On existing sites (Maulden and Studham)

- Selective felling, coppicing and ride management to increase the extent, diversity and connectivity of understory in woodlands.
- Maintain and improve woodland rides and woodland edges by opening the canopy, to limit over-shading
- Managing deer populations, which can inhibit understory development due to browsing

Increase habitat and connectivity

- Planting diverse well-managed woodlands, encouraging mixed scrub habitat and planting hedgerows.
- Identifying areas where scrub habitat patches can be encouraged to improve landscape connectivity.

- Managing hedgerows on their lifecycle through laying and gapping up

Further Information
People's Trust for Endangered Species - https://ptes.org/

5.11.10 European Water Vole *Arvicola amphibius*

Water voles are the largest vole in Britain with short, furry tails and small ears in comparison to rats. They dig burrows in vegetated banks of rivers, wetlands and ditches where they breed and shelter. American mink, which were released from captivity, have had a significant impact on their population.

Measures

- Implement well-planned, sustained and co-ordinated approaches to achieve total eradication of mink from large landscapes and river catchments, with landowners working co-operatively
- Once mink eradication complete, consider reintroduction to suitable riparian habitat if remaining native populations do not re-colonise
- Control the number of trees and scrub along waterways to ensure they do not dominate the banks or shade out other vegetation which water voles rely on for food and shelter
- Encourage grassy buffer strips along watercourses, ditches and in-field ponds. Buffer strips of 4-6m wide should be planted along intensive grassland or cultivated fields.
- Remove redundant artificial bank revetments to allow water voles to build burrows and for vegetation to grow.

Further Information
People's Trust for Endangered Species - https://ptes.org/
Waterlife Recovery Trust - https://www.waterliferecoverytrust.org.uk/

5.11.11 Hedgehog *Erinaceus europaeus*

Once common and widespread, hedgehog numbers are thought to have declined significantly in recent decades. Habitat loss, being killed on roads and pesticides are thought to be contributing to this. They can still be found throughout Bedfordshire including urban areas. Creating good habitat connectivity through hedgerows will aid their distribution.

Measures

- Increase area and connectedness of hedgerow and scrub habitat. Encourage beneficial hedgerow management and regenerative farming practices
- Encourage hedgehog friendly practices in gardens and parks – hedgehog highways through fences, reduced use of slug pellets and pesticides, piles of leaves under hedgerows
- Raise awareness of hazards including injury from landscaping equipment, drowning in ponds, entanglement in sports netting and litter. Install small mammal road signs at key roadkill hotspots.

Further Information
People's Trust for Endangered Species - https://ptes.org/

5.11.12 Adder *Vipera berus*

Adders are normally associated with open habitats such as heathland and woodland edges. They usually remain hidden in the undergrowth although use open sunny gaps for basking. In Bedfordshire, they are primarily found in isolated locations within heathland and woodland along the Greensand Ridge. It feeds on small mammals and reptiles and occasionally ground nesting birds eggs.

Measures

- Provide herbaceous and shrubby vegetation to provide shelter with unshaded short vegetation or bare ground for basking

- On heathland, create a mosaic of heather, bracken, gorse and scrub to create hunting and sheltering sites
- In wooded areas, tree canopy should not exceed 60%. Permanent glades and interconnecting rides should be maintained to aid local dispersal
- Encourage the creation/restoration of areas of habitat suitable for adders adjacent to and linking known adder populations

Further Information
Species Action Plan - https://www.bedscape.org.uk

5.11.13 Brown trout *Salmo trutta*

Brown trout prefer fast-flowing, stony and gravelly rivers with good water quality. They lay their eggs amongst the gravel on the riverbed. Barriers to fish movement such as weirs are also a problem for eel. Connecting trout populations in the wider Great Ouse catchment, particularly in the east of the county provides the best opportunity for recover in Bedfordshire.

Measures

- Remove barriers on the upper Ivel and Hiz, and on the lower Flit/Ivel navigation and Hit/Campton Brook. Where removal is not possible then appropriate bypass channels and lastly fish passes should be installed to facilitate connectivity along these watercourses.
- Introduce gravels to river channel to provide suitable spawning sites for trout
- Protect and enhance riverbanks to reduce erosion.

Further Information
Wild Trout Trust - https://www.wildtrout.org/

5.11.14 European Eel Anguilla Anguilla

Young eels migrate from the Sargasso Sea, across the Atlantic Ocean and then enter the river system in the UK and elsewhere. Globally, they are critically endangered with issues such as river barriers and pollution thought to be the cause. In Bedfordshire, eel passes have been put onto structures to help their migration. Connecting eel populations in the wider Great Ouse catchment, particularly in the east of the county provides the best opportunity for recover in Bedfordshire.

Measures

- Reconnect migratory pathways along rivers to all eels to complete full lifecycle in marine and riparian habitats
- Where barrier removal is not possible, install eel passes to help eel climb up weirs and other obstacles.

Further Information
Zoological Society of London - https://www.zsl.org/

6. Delivering the strategy's outcomes

6 Delivering the strategy's outcomes

This strategy sets out an approach to nature recovery for Bedfordshire by identifying outcomes and measures that could contribute to nature recovery. The delivery of these outcomes and measures will rely on measures, policies and plans from a range of national and local stakeholders.

A package of measures set out by the government are to be implemented to support people to carry out proposals in each local nature recovery strategy.

- integration of local nature recovery strategies into the planning system, so that areas of greatest potential for nature recovery can be better reflected in planning decisions
- funding for specific activities that local nature recovery strategies will be expected to propose locations for.
- These measures are designed to generate momentum and encourage people to take further action to support its delivery.

The government are committed to reviewing LNRSs in 3-10 years where an additional requirement to identify areas where nature recovery has been delivered.

The measures include:

- a new duty on all public authorities to have regard to relevant local nature recovery strategies
- an incentive in how the new requirement for biodiversity net gain is calculated - to recognise the added impact of taking action where the local nature recovery strategy proposes

7. Areas of Particular Importance to Biodiversity

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8 Figures

9 APPENDICES

Appendix 1 – Mapping Methodology
Appendix 2 – Prioritisation Methodology
Appendix 3 – Approach to Engagement

Appendix 1 - Draft

Bedfordshire LNRS Mapping methodology

Contents

Bedfordshire LNRS Mapping methodology

Introduction

As part of the LNRS regulations, Responsible Authorities (RA) are required to produce a Local Habitat Map.

The local habitat map must identify Areas of Particular Importance for Biodiversity (APIB). These include:

• national conservation sites in the strategy area
• local nature reserves in the strategy area

The habitat map must also identify other areas in the strategy area which in the opinion of the responsible authority:

• are, or could become, of particular importance for biodiversity, or
• are areas where the recovery or enhancement of biodiversity could make a particular contribution to other environmental benefits

Its purpose is to provide a clear visual way for groups and individuals to understand the areas which are or could become of particular importance for biodiversity and the environment to target nature recovery action.

Areas of Particular Importance to Biodiversity (APIB)

The local habitat map must identify existing important sites for biodiversity. These include:

- National conservation sites
- Local nature reserves
- Local Wildlife Sites[1]
- Areas of irreplaceable habitat
- Other areas identified by the Secretary of State as being of particular importance.

The national conservation sites included in the Bedfordshire map are **Sites of Special Scientific Interest** (SSSI) and **National Nature Reserves**. **Local nature reserves** are also included along with **Irreplaceable habitat**[2]. The irreplaceable habitat in Bedfordshire is Ancient Woodland, Ancient and Veteran Trees and Lowland Fen.

The areas identified were checked with local authorities and local experts to provide as accurate and up-to-date information as possible. However, it is important to note that it was not possible to ground truth all the information and therefore the map may contain some errors. It was also not possible to ascertain the current condition of all these sites.

[1] **Local Wildlife Sites (LWS)** are currently not included within the online mapping platform. Defra are unable to satisfy the LWS data holders for Bedfordshire that the requirement to share Local Habitat Maps as open source data will not significantly impact on their commercial operation.

[2] There are 8 Irreplaceable habitats within the UK as listed in the Biodiversity Gain Requirements (Irreplaceable Habitat) Regulations 2024

Mapped measures

The LNRS seeks to identify the best location, where possible, for the different measures identified in the '*Statement of Biodiversity Priorities'* section of the LNRS. These measures are practical, on the ground actions that would contribute towards nature recovery. They can be mapped on new opportunity areas or APIBs if they do not conflict with existing management requirements such as SSSI management plans. They can be on existing priority habitat or areas that could become important.

Not all priority outcomes and measures have been mapped due to either a lack of data, the datasets are too broad or there are concerns that the mapping may misrepresent the on-the-ground management. For example, woodland that is considered in sustainable management as determined by the Forestry Commission, may not represent all woodland that is well managed in Bedfordshire.

Areas that could become of particular importance for biodiversity (ACB)

Responsible authorities must map areas which they believe 'could become of particular importance for biodiversity' or 'where the recovery or enhancement of biodiversity could make a particular contribution to other environmental benefits'. These areas are collectively referred to as 'areas that could become of particular importance'. This consists of all the mapped measures outside of the areas within the APIBs.

What does it mean if land is mapped as an ACB

The aim of mapping ACBs is to focus nature recovery effects where it will have the biggest impact. This is by building on the Lawton Principles of 'More, bigger, better and more joined up'. However, nature recovery can and should be delivered outside of these areas where possible. The ACBs provide a focus through the delivery of Biodiversity Net Gain[3]. Government have also signalled they will potentially help share future environmental management schemes but this is yet to be confirmed.

The ACBs do not give any level of legal protection, nor do they give permission to create habitat or alter land use without consulting the relevant specialists, statutory consultees, or obtaining appropriate permissions.

They also do not prevent alternative uses of the land. But they will provide an opportunity for land managers such as farmers, foresters and local authorities to deliver measures that would support nature recovery.

The proposed ACBs have not been ground-truthed due to the time constraints of delivering the LNRS. Therefore, they may not all provide a definite opportunity for the habitats identified. Further investigation would be required from the land manager or those proposing delivery on site to ascertain whether there is a suitable opportunity. While the maps show the best information available at the time, good habitats may have developed on site already or the areas may not be suitable in practice. There is some uncertainty from government as to how the priority outcomes and measures will be delivered and funded in the future. So, while a site may be suitable for habitat creation, funding mechanisms to deliver this may not be in place.

[3] Defra blog on incorporating LNRS when planning for Biodiversity Net Gain https://www.bing.com/search?q=incorporating+local+nature+recovery+strategies+bng&form=ANNH01&refig=fb22c9727ae449ba9415d4ed3437da26&pc=U531

It has not been possible to assess the condition of all existing priority habitat. Therefore, while this has been mapped based on the best data available, the habitat itself may be in a poor condition.

The LNRS regulations state that the strategies will be reviewed in 3-10 years. During the review, responsible authorities will be required to map where measures have been delivered. Before this review, the maps cannot be updated and are therefore unlikely to reflect the latest situation on the ground following publication.

Constraints and restrictions

Agricultural land
Grade 1 and 2 agricultural land has been excluded from some mapped measures. This is because it was deemed as important for food production and should not be included in the opportunity mapping. Another consideration is that the nutrient content may be high in these areas due to its current use as arable land therefore it is potentially more difficult to return to other habitats such as chalk grassland or heathland/acid grassland as easily as other areas might be.

Sports facilities
Some sports facilities (including golf course fairways) have been removed as preferred by Sports England. This is because there is potentially limited scope for habitat opportunities in those areas and each site could not be assessed individually across the whole county except where expert knowledge allowed.

Solar Farms
Where solar farms have been removed this is because there is limited opportunity at present for certain habitats to be established (eg.Woodland). However some areas may be suitable for grassland management and restoration.

Airports and airfields
Bedfordshire has several airfields and an international airport (London Luton). Consideration was given to habitats that may be suitable and acceptable to the landowners. For example, areas for woodland creation have been removed from around Luton Airport. In contrast, Thurleigh airfield provides a neutral grassland opportunity.

Existing priority habitat
Existing habitat has been removed from the opportunity areas. This is to identify those areas where new habitat could be created. However, measures relating to managing existing habitat have been mapped to provide guidance on ensuring existing sites are well managed.

Process for creating ACBs

To create the ACBs. Existing priority habitat[4] was used as a basis to create habitat opportunity areas - building on the Lawton Principles of 'more, bigger, better and more joined up'. These areas were then used to identify the most suitable locations where the measures identified through the prioritisation (See appendix 2) could be delivered.

[4] UK Biodiversity Action Plan Priority Habitats cover a wide range of semi-natural habitat types and were those that were identified as being the most threatened and requiring conservation action under the UK Biodiversity Action Plan (UK BAP). UK BAP Priority Habitats | JNCC - Adviser to Government on Nature Conservation

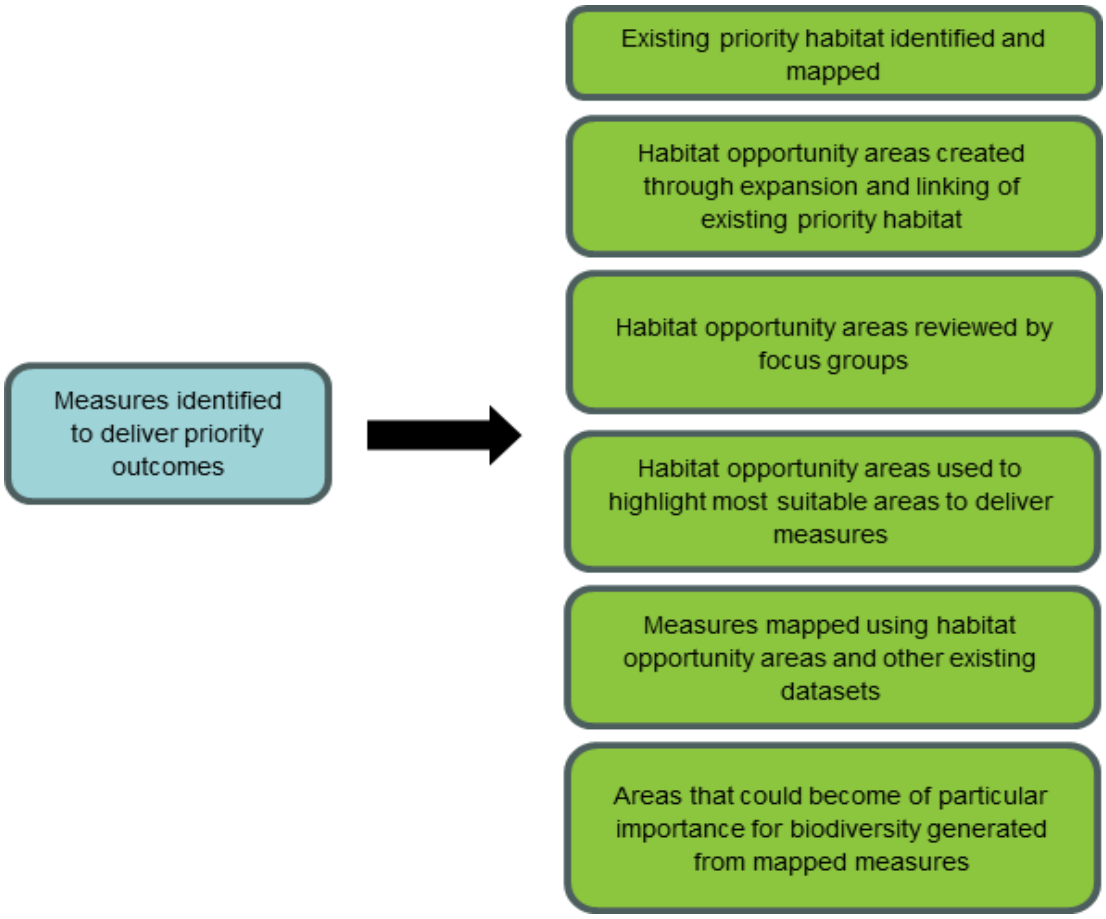


Figure 1- flow chart showing the general process of identifying Areas that could become particularly important for biodiversity

Broad habitat opportunity areas

Existing UK Biodiversity Action Plan (UKBAP) priority habitat[5] within Bedfordshire forms the basis of the habitat opportunity areas. Not all priority habitats within Bedfordshire have data available.

The existing priority habitat that has been mapped is:

- Lowland dry acid grassland
- Floodplain grazing marsh
- Woodland
- Lowland calcareous grassland
- Lowland fens
- Lowland heathland
- Lowland meadows
- Ponds
- Reedbeds
- Rivers
- Traditional orchards
- Wet woodland
- Wood-pasture and parkland

[5] UK BAP Priority Habitats are a defined list of habitats throughout England aiming to provide consistency in their description. UK BAP Priority Habitats | JNCC - Adviser to Government on Nature Conservation

These existing habitats were expanded using buffers to create broad habitat opportunity areas, providing a guide to where measures may be mapped. Opportunities to 'join up' and create 'more' habitats by creating stepping stone areas were identified through stakeholder engagement and analysis of suitable landscape and soil data. This is important because many threatened habitats in Bedfordshire rely on a particular type of soil, either acidic, calcareous and neutral or wet.

In general, a 300m buffer has been used around existing priority habitat sites. This is based on Natural England's Nature Network Evidence Handbook. Which states that '*Although the evidence on the size of buffer strips is limited, the information on the penetration of edge effects into habitats, suggests that buffer areas around biodiversity sites should be at least 50m wide, preferably more than 100m wide, and may need to be up to 500m wide*'[6] Therefore a 'middle' option of 300m was chosen. This is also the expansion buffer used within the previous 2007/8 Rebuilding Biodiversity in Bedfordshire and Luton study[7]. Where the buffer used is different from this it is set out below in the 'Mapping of Measures' section.

Through this process the following habitat opportunity areas were created.

- Woodland
- Wet Woodland
- Wood pasture and parkland
- Heathland and Acid grassland
- Calcareous Grassland
- Neutral Grassland
- Wetlands, Rivers and Ponds

Working groups

In a further step, habitat specialist working groups reviewed the maps through a series of workshops to further refine these maps. These workshops took place in November 2024 and involved a range of organisations with specialist interest and knowledge in particular habitats in Bedfordshire

Habitat focused workshop	**Organisation invited**	
Wetland and rivers	Wildlife Trust	Central Beds Council
Woodland	NatureSpace	Luton Borough Council
Neutral grassland	Greensand Trust	Bedford Borough Council
Calcareous grassland	Beds Natural History Society	National Trust
Heathland and acid grassland	Forest of Marston Vale	Beds Biodiversity Recording and Monitoring Centre
	Beds Rural Communities Charity	Freshwater Habitats Trust

[6] Natural England's Nature Networks Evidence Handbook (NERR081) helps designers of nature networks by identifying the principles of network design and describing the evidence that underpins the desirable features of nature networks. It builds on the Making Space for Nature report of Lawton et al. 2010**)** Nature Networks Evidence Handbook - NERR081

[7]Rebuilding Biodiversity in Bedfordshire and Luton. A study carried out in 2007/8 by Bedslife, Bedfordshire County Council, Natural England and the Beds and Luton Recording and Monitoring Centre.

	Forestry Commission	Environment Agency?

Table 1 Habitat focus workshops and organisations invited to attend

In addition to the creation of these habitat opportunity areas layers, further existing layers were used as deemed suitable to identify locations where the potential measures could be delivered. These include:

- Plantations on Ancient Woodland Sites
- Roadside Nature Reserves
- Strategic Mineral Sites
- Road and Rail crossing locations
- Freshwater Habitats Trust and Nature Space derived priority ponds
- Environment Agency Spatial prioritisation of catchments suitable for using Natural Flood Management overlaps with wetland and wet woodland creation.
-

Additional environmental outcomes

The additional environmental outcomes delivered by biodiversity have been assessed by utilizing work carried out by Natural Capital Solutions and Viridian as part of the Blue Lens LNRS pilot (2024)[8] and Bedfordshire Natural Capital Assessment Report (2021)[9] carried out on behalf of the Bedfordshire Local Nature Partnership. These studies have been used to further refine where the prioritized measures may be best implemented to not only deliver for biodiversity but also people and communities. Where this information has been used has been set out in the method sections below.

Blue Lens LNRS

In addition, layers created by the Blue Lens LNRS pilot have been used to identify and refine sites for river catchment measures.

- Priority river obstacles based on length of river open up
- Leaky Dam Modelling
- Woodland prioritised interventions based on delivering multiple ecosystem services

[8] The Blue Lens LNRS was carried out alongside the main LNRS. Its purpose was to assess the priority locations for ecosystem services to be delivered within the River Ouse and River Lee catchments Bedfordshire-LNRS-Blue-Lens_Final.pdf

[9] Bedfordshire Natural Capital Assessment Report assessed the natural capital available in Bedfordshire. Natural Capital Planning – Bedfordshire Naturally

The additional environmental outcomes delivered by biodiversity have been assessed by utilizing work carried out by Natural Capital Solutions and Viridian as part of the Blue Lens LNRS pilot (2024) and Bedfordshire Natural Capital Assessment Report (2021) carried out on behalf of the Bedfordshire Local Nature Partnership. These studies have been used to further refine where the prioritized measures may be best implemented to not only deliver for biodiversity but also people and communities. Where this information has been used has been set out in the method sections below.

Mapping of measures

This section explains how the measures identified within the Statement of Biodiversity have been mapped. This is through a combination of the existing habitat, habitat opportunity areas, stakeholder engagement and other appropriate layers.

It has not been possible to map all measures because there is a lack of data, the datasets are too broad or there are concerns that the mapping may misrepresent the on-the-ground management.

Existing habitat
Existing areas of priority habitat as recorded by the Bedfordshire & Luton Biodiversity Recording and Monitoring Centre (BRMC). Measures identified for these areas are focused on managing existing habitat.

Broad habitat opportunity areas
As set out in the section above, the habitat opportunity areas have been developed to highlight where existing habitat can be made bigger and more joined up.

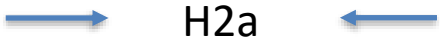
Additional existing layers
As well as existing habitat and the opportunity areas created for the LNRS, other existing datasets have been used to show where the measures can be delivered. For example, the Plantations on Ancient Woodland Sites (PAWs) layer provided by Natural England has been used to map measures W2B *Restore all (1,486 ha) Planted Ancient Woodland Sites (PAWS) to UKFS standards for biodiversity, climate and other environmental and economic benefits by the gradual and systematic removal of conifers, whilst maintaining economic outputs where possible.*
In addition, opportunities put forward during engagement through the LNRS online engagement portal (Commonplace) have been reviewed to identify any additional opportunities not already captured.

Finally, the opportunity maps were reviewed against the 2007 study 'Rebuilding Biodiversity in Bedfordshire and Luton'[10] which also mapped opportunities for the Bedfordshire Biodiversity Action Plan. The steering group felt that although this report was carried out in 2007, it may still highlight opportunities that have not been identified to date. Therefore opportunities from this 2007 report and the current mapped measures were overlapped to identify these potential gaps.

Section layout

A code has been assigned to each measure identified within the Statement of Biodiversity Priorities. The mapped measures along with their codes are shown below.

The first two figures denote the outcome it relates to. In this example H2 is 'All existing heathland and acid grassland will be conserved, expanded and linked'



The following letter (a) shows the allocated measure.

In addition, the **Method** describes how the existing habitat, habitat opportunity areas and other layers have been used to show where the measures identified within the LNRS description of priority could be delivered.

Built up areas and previously developed land

U1c - Lea Linear Park
Restore sections of the River Lea in Luton by creating a linear park along the river and rerouting the Lea through Power Court as part of its redevelopment - providing amenity for local communities and suitable riparian habitat for wildlife.

Method
This measure was proposed by Luton Borough Council at a prioritisation workshop Nov 24. The outline of the proposed area has been provided by Luton Borough Council and encompasses the River Lea corridor through Luton including the proposed Power Court development.

U2a - Urban green space
Create nature friendly areas within built-up and previously developed land to provide access to nature for people. Allow areas of grass to grow through the spring and early summer to promote plant and invertebrate diversity. If necessary, seed with suitable native plants. Plant hedgerows around borders to support species such as house sparrows or log piles and compost for slowworms.

Method

This measure focusses on urban green spaces where actions such as improved grassland and hedgerow management could support biodiversity. It has been mapped to the Ordnance Survey 'Open Green Space' [11]data layer where sites are over 0.5 ha. Areas within existing priority habitat or heritage and registered parks and gardens have been removed. To further focus on the most nature-deprived areas, the Defra '*Accessible Greenspace Inequalities'*[12] data showing the most deprived areas within Bedfordshire was used. The Doorstep Accessible standard was used which consider all accessible green spaces of at least 0.5 ha within 200 metres (under 5 mins walk from home). Areas with the lowest scores of indices of multiple deprivation and the lowest access to greenspace (L1, L2, M1 and M2 scores) were used.

In this system L, M and H refer to low, medium and high for the percentage of the area (1500 people or 650 households) that is covered by the green spaces and their respective buffers. The thresholds used are: • L = Less than 5% coverage	These form the matrix shown below, with L1 being the least desirable scenario and H3 being the most desirable

[11] Ordnance Survey Open Green Space - https://osdatahub.os.uk/downloads/open/OpenGreenspace
[12] Defra Access to Green Space statistics https://www.gov.uk/government/statistics/access-to-green-space-in-england/access-to-green-space-in-england

- M = 5% to under 50%
- H = 50 % and over

Codes 1, 2 and 3 are the relative bands for the other assessment variable. For IMD the thresholds are:

- 1 = IMD decile 1 and 2 (Most deprived)
- 2 = IMD deciles 3 to 8
- 3 = IMD deciles 9 and 10 (least deprived)

U3b - Restore Quarries
Restore mineral extraction sites to benefit biodiversity by implementing suitable management techniques to connect important local habitat such as grassland, heathland or wetlands.

Method
This action is mapped to the Bedfordshire Minerals and Waste Local Plan: Strategic Sites[13]. These are sites identified through the local planning process. was used to identify areas that could be suitable for restoration. Stakeholder suggestions from the aggregate industry were then added in to this.

U3c – Crossings
Identify opportunities to create green crossing across major road and rail infrastructure to improve connectivity between habitats.

Method
These sites were identified during a request by Defra, National Highways and Network Rail for a top 5 potential nature crossing sites that were to be put forward to develop a business case. They considered connecting protected and important sites and those with existing infrastructure such as tunnels and bridges which could be improved for biodiversity. These sites were identified in discussions with Bedford Borough, Luton Borough Council, Central Bedfordshire Council and members of the LNRS steering sub-group. A long list was identified and then voted on with consideration for crossing across the county.

U3 D - Roadside NR
Manage and enhance roadside nature reserves through appropriate site management, to promote target habitats types such as grassland or heathland and by linking gaps where possible to increase connectivity with similar neighbouring habitat

Method
This measure is mapped to the current Roadside Nature Reserves within Bedfordshire provided by local authorities.

[13] the Minerals and Waste Local Plan: Strategic Sites and Policies
https://www.centralbedfordshire.gov.uk/info/48/minerals_and_waste/450/development_framework

Woodland and trees

W1a - Woodland creation
Expand core woodland sites through natural regeneration or by planting new mixed species woodlands. To benefit species such as white admiral or tawny owl. Use a diversity of genetic types to help increase resilience to diseases and impacts from a changing climate. Protect new trees from livestock and wild animals such as deer. Ensure stocking densities and mixes are compliant with UKFS.

Method
The starting point for the woodland opportunity areas is the Forestry Commission sensitivity map, opportunity areas for planting woodland V4 variant 3 low and medium sensitivity opportunities[14]. Woodland opportunities are widespread throughout much of Bedfordshire in comparison to other priority habitats. Therefore, areas of existing or potential opportunity for other priority habitats were removed from the woodland opportunities.

Woodland opportunities within the following have been removed:

Grade 1 & 2 Agricultural Land, Wood Pasture and Parkland sites, Ancient Woodland, Heathland, Acid Grassland, Calcareous , Fens (includes Reedbeds), Lowland Meadow, Woodland, Floodplain Grazing Marsh, Lowland Wet Meadow, Traditional Orchards and Other Orchards, Scheduled Monuments, Registered Parks and Gardens, Historic England's National Mapping Programme[15] data for Bedford Borough Council (this is historic areas/cropmarks etc), Sports facilities (tennis Courts, play spaces, other sports facilities, bowling greens, playing fields) Solar Farms.

Golf course fairways and airfields (Thurleigh, Meppershall, Old Warden/Shuttleworth, Near Sandy A1 roundabout, Henlow and Cranfield) were removed. Tempsford airfield was left in as it appears not to be used any more so may be suitable for habitat creation.

To refine the maps further, a Woodland mapping focus group met on 21/11/24 to identify suitable and unsuitable areas. Following this meeting areas at Wootton Wood, Beadlow, Dunstable Cemetery and allotments and other areas of urban/gardens were removed and areas overlapping County Wildlife Sites that are also mapped as Neutral Grassland (as assume these should remain neutral grassland).

Areas less than 0.02 hectares (200 sq m) were removed across the whole county – these were very small polygons as result of 'clipping' out the areas listed above. Also removed were many areas less than 0.5 ha where these were outside Luton or the Forest of Martson Vale 3-mile buffer – apart from where they were within larger areas of opportunity as these were deemed too small apart from within those areas where even tiny areas could be useful. Most were remnants of the clipping process and not useful.

Areas within Millbrook Proving Ground were removed as there is no scope for more planting there as it has already been planted where appropriate. Also removed areas at Green End, Wood End Marston and the Forest Centre at Marston Vale as these are not opportunities for various reasons (high pressure water mains, meadows etc) and Queens Wood which has now been planted. Removed areas at Priory Country Park.

Areas that are currently mapped as Acid grassland/Heathland opportunity and Calcareous grassland opportunity have been removed.

[14] England Woodland Creation Full Sensitivity Map v4.0 variant 3 – Forestry Commission
[15] National Mapping Programme https://historicengland.org.uk/research/methods/airborne-remote-sensing/aerial-investigation/ - Historic England

From this layer, locations were removed where there was no opportunity to provide ecosystem services based on Bedfordshire Natural Capital Assessment Report carried out by Natural Capital Solutions on behalf of the Bedfordshire LNP.

Following a review by the steering group of the resulting opportunity areas, it was decided that important connections between important existing woodlands and opportunities for stepping stones sites should be included, where they were absent.

To address this the following were added:

Areas south of Southill Estate that the Wildlife Trust had identified as opportunities for woodland planting (areas had initially been taken out as Grade 2 agricultural land).

A combined ecosystem services layer from The Bedfordshire Natural Capital Assessment Report where 4 or more ecosystem services could be delivered through woodland creation was used to identify additional opportunities not yet captured, including potential stepping stone sites.

Woodland opportunities were also added between Maulden Wood SSSI and King's Wood, Houghton Conquest SSSI, and Maulden Wood SSSI and Chicksands Wood to provide a link between existing hazel dormouse habitat and suitable nearby woodland. Also within the Marston Vale and North Bedford where it was noted existing ancient woodland was not connected as initial sites were removed as they were within grade 2 land.

W1c - Wet woodland opportunity
Create new wet woodland to maximise water retention and seasonal flushes benefiting species such as woodcock. Reduce the impacts of over-grazing within wet woodlands (both livestock and deer) to allow more natural regeneration of the woodland habitat.

Method
This uses the woodland opportunity area (as described above) clipped to the Environment Agency's Floodzone 2 maps[16]. These were deemed the most appropriate areas for wet woodland creation as they are within the floodplain. This also includes some areas identified from the Bedford River Valley Park proposal. Some features of this map are based on digital spatial data from the Centre for Ecology & Hydrology, © NERC (CEH)

W2b – PAWS
Restore all (1,486 ha) Plantations on Ancient Woodland Sites (PAWS) to UKFS standards for biodiversity, climate and other environmental and economic benefits by the gradual and systematic removal of commercially planted conifers, whilst carefully maintaining remnant ancient woodland features.

Method for W2b
This measure uses the Plantation on Ancient Woodland Sites (PAWS) information within the layer

[16] Areas within Flood Zone 2 have between a 1 in 1000 (0.1%) and 1 in 100 (1%) annual probability of flooding in any given year. Flood Zone 2 is considered a medium risk – Environment Agency

Ancient Woodland data provided by Natural England[17]. These are potential opportunity areas to replace plantation woodland not covered by Local Sites/SSSI which should have management plans in place to do this.

W3a - Wood pasture and parkland

Manage and protect ancient trees, including their root systems, for their biodiversity and heritage value. Identify existing or plant new trees that are suitable as eventual replacements for mature or ancient and veteran trees on adjacent sites. Aim to maintain genetic continuity where possible by nurturing cuttings or seedlings from existing trees. Plant and protect newly planted trees (or patches of natural regeneration) so they are spaced wide enough to be able to adequately grow an open crown. Within parklands maintain the grassland and tree mosaic habitat by cutting or grazing.

Method

This measure is mapped to existing wood pasture and parkland sites as provided by the Bedfordshire BRMC.

W3b – Orchards

Maintain traditional orchards by planting and protecting new trees from grazing animals. Maintain existing trees by pruning where required. Managing surrounding grassland by grazing or hay cutting. Keep standing deadwood and some deadwood on living trees to provide habitat and feeding opportunities for invertebrates and birds such as woodpeckers.

Method

This measure is mapped to Natural England's Priority Habitats Inventory for traditional orchards within Bedfordshire.

W4a - Wood Pasture and Parkland opportunity

Plant new trees that are appropriate to the historic parkland design and resilient to local climate change on adjacent sites. Choose varieties that provide the same ecological wood decay conditions as mature or veteran trees already in the area. Keep areas of dead wood for invertebrates.

Method

This layer was created by buffering existing wood pasture and parkland sites by 300m. Only Grade 1 agricultural land was removed. (removing Grade 2 would remove large areas for wood pasture and parkland). In addition, urban areas, sports/greenspace areas, sewage works, and tiny polygons left because of the clipping process were removed.

Houghton Hall was removed as there was no opportunity for expansion. Priestley Plantation was removed from Flitwick Manor as it is an arboretum. In addition, existing priority habitat (Acid Grassland, Calcareous Grassland, Heathland, Lowland Fen (and Reedbed), Lowland Meadow, Lowland Wet Meadow, Wet Woodland and Woodland) were removed as opportunities for Wood Pasture and Parkland.

[17] Ancient Woodlands Revised (England) - Completed Counties – Natural England

Areas were added within Cainhoe Manor and Ickwell Bury based on feedback from the Greensand Trust's co-ordinator of the Greensand Country Landscape Partnership from recent extensive parkland assessments.

The remaining opportunities were checked against sites that were removed from the Bedfordshire site register for Wood Pasture and Parkland in a 2011 Survey of Parkland Sites in Bedfordshire and Luton[18]. The sites removed did not meet the official Wood Pasture and Parkland classification based on Natural England criteria. However, they provide an opportunity for similar suitable habitats and potential sites of the future. The majority of these 'excluded' sites have been included if they are still in existence.

Those removed are Kempston Manor Grounds as this is now a school, and Pavenham Bury which is now a golf course.

Calcareous and neutral grassland

Calcareous grassland

G1a - Calcareous grassland opportunity
Create new areas of calcareous grassland including along roadside verges by removing bramble, scrub and invasive weeds and introduce suitable grazing or cutting to manage sward diversity. Where there is little chance of success through natural regeneration, plant suitable calcareous grassland species. Create small areas of bare ground to promote new growth and provide habitat for invertebrates such as ground beetles. Aim to prevent nutrient levels from building by restricting the application of fertiliser or manure. Limit herbicides to targeted usage. Species that may benefit include dark-green fritillary and chalk hill blue butterflies.

Method
Existing areas of calcareous grassland have been buffered by 300m. Areas were then added based on Cranfield Soils data for soil types 342 and U342. Additional areas added include Galley and Warden Hills plus South Beds Golf Course, Whipsnade Golf Course and fields south to join areas at Hundnall Corner.

Areas that have been removed based on stakeholder feedback include near Leighton Buzzard, areas in Bedford Borough and areas near the local authority border between Central Bedfordshire and Bedford Borough through advice from the Wildlife Trust as the adjoining soil types don't offer opportunities to extend the habitat.

In addition, existing woodland, urban areas (except the urban area of Luton) and Grade 1 & 2 Agricultural Land were removed.

As a result of a focus meeting on 29/11/2024, areas were removed at Bison Hill and Stopsley Common and moved to the Neutral grassland opportunity as per expert knowledge. Roadside Nature Reserves (RNR) were added where these were in the calcareous grassland opportunity area and a few fields that were identified by experts as chalky were added. Existing chalk grassland and lowland fen habitat were removed. Very small polygons less than 20 sq m (these were tiny areas a result of the clipping process) were removed.

Sports facilities, solar farms, some smaller 'urban' areas haven't been removed to provide connectivity across developed sites.

[18] Survey of Parkland Sites in Bedfordshire and Luton 2011 on behalf of Bedslife and Central Bedfordshire. This showed registered and unregistered parkland sites Microsoft Word - parkland sites 2010.doc.

G1b - Neutral grassland opportunity

sward diversity. Where there is little chance of success through natural regeneration, plant or sow suitable and local native neutral grassland species. Create small areas of bare ground to promote new growth and provide habitat for invertebrates such as ground beetles. Aim to prevent nutrient levels from building by restricting the application of fertiliser or manure. Limit herbicides to targeted usage. Species that may benefit include green-winged Orchid, brown hare, skylark and kestrel.

Method

Create new areas of neutral grassland including along roadside verges by removing bramble, scrub and invasive weeds and introduce suitable grazing or cutting to manage sward diversity. Where there is little chance of success through natural regeneration, plant or sow suitable and local native neutral grassland species. Create small areas of bare ground to promote new growth and provide habitat for invertebrates such as ground beetles. Aim to prevent nutrient levels from building by restricting the application of fertiliser or manure. Limit herbicides to targeted usage.

Expert knowledge at a focus group meeting on 28/11/2024 recommended additional areas that could be added along with areas initially identified as calcareous grassland opportunity.

Roadside Nature Reserves have also been added in (apart from where these are within the calcareous grassland opportunity areas). Urban areas and gardens have been removed and tiny polygons deleted which were a result of the clipping process.

Added areas at Bedford River Valley Park (Willington Fields East and West) and trimmed back areas at Elms Farm which are within the Wetland opportunities. Very small polygons less than 20 sq m (these were tiny areas a result of the clipping process) were also removed as were the allotment areas at Duck End.

Bedfordshire Recording and Monitoring Centre's (BRMC) neutral grassland layer was not used for this other than to capture some additional polygons considered possible opportunities. These areas are generalised, and most are probably not of good quality, also the methodology used to capture these areas is from aerial/Phase 1 surveys done several years ago so is likely out of date.

Calcareous grassland

G2a - Existing Chalk Grassland

Create new areas of neutral grassland including along roadside verges by removing bramble, scrub and invasive weeds and introduce suitable grazing or cutting to manage sward diversity. Where there is little chance of success through natural regeneration, plant or sow suitable and local native neutral grassland species. Create small areas of bare ground to promote new growth and provide habitat for invertebrates such as ground beetles. Aim to prevent nutrient levels from building by restricting the application of fertiliser or manure. Limit herbicides to targeted usage. Species that may benefit include green-winged orchid, brown hare, skylark and kestrel.

Method

These measures can all be delivered within the existing calcareous grassland habitat. These measures focus on managing areas of existing neutral grassland. Therefore, they are mapped in areas where calcareous grassland is known to exist currently

Neutral grassland

G2b - Existing Neutral Grassland
Maintain appropriate neutral grassland grazing or cutting regimes that creates swards with varied height and structure. Further prevent nutrient levels from building by restricting the application of fertiliser or manure. Limit herbicides to targeted usage. Maintain and enhance hedges around fields to provide connectivity between habitats. Manage roadside verges to promote diverse grassland habitats and create connectivity by appropriate management. Species that may benefit include green-winged orchid, brown hare, skylark and kestrel.

Method for G2b
These complementary measures can all be delivered within the existing neutral grassland habitat. These measures focus on managing areas of existing neutral grassland. Therefore, they are mapped in areas where neutral grassland is known to exist currently

Heathland and Acid Grassland

H1a - Heath and Acid Grassland opportunity
Link existing habitat via connecting corridors of heathland. Encourage colonisation by using heather seed (directly or in brush or capsules) or cuttings, preferably from a donor site nearby, where there is little chance of success through natural regeneration through the seed bank. Graze or cut the colonising heathland vegetation at set times to maintain diverse maturity of plants. Species that may benefit include nightjar, tiger beetles and small heath butterflies.

Method
The heathland and acid grassland opportunity areas build on existing areas of habitat, buffered by 300m. Then soils data from Cranfield University for soil types 541a and 554a were used to expand these further to identify potential stepping stones. Areas mapped as existing woodland, urban and Grade 1 or 2 agricultural land were then removed.

An area near Luton has been removed as it's a unique site and opportunities to extend this site aren't likely to be possible due to the surrounding soil types. An area at Tiddenfoot was moved to the Wetland opportunity area as it floods and is not an acid grassland opportunity. This was identified during a Heathland Forum meeting on 22/11/2024.

Areas at Maulden Wood were removed (house and garden and neutral grassland area), but additional areas were added on the southern woodland as Natural England would like to see areas on the sand develop into more open heathy mosaic habitats in future.

An area at King's Wood Houghton Conquest was removed as it is Neutral grassland opportunity, there is very little acid grassland opportunity in that area due to the surrounding clay.

Areas were removed around Maulden Church Meadows as these had been identified as Neutral grassland opportunity due to the clay, the same at Duck End. There are likely to be opportunity areas added around Kings Wood at Rammamere Heath which haven't been confirmed yet – although some out of county areas have been added.

In addition, existing habitat (acid grassland, heathland, Floodplain grazing marsh, lowland fen, lowland meadow and Lowland wet meadow) and very small polygons less than 20 sq m (these were tiny areas a result of the clipping process) were removed.

Areas within sports facilities, solar farms, smaller 'urban' areas and farms haven't been removed.

H2a - Heath and Acid Grassland existing
Restore existing or recently lost areas of heathland. If necessary, remove or disturb topsoil or seed to encourage new growth. Carry out appropriate hydrological management to ensure wet heath/acidic mire areas are maintained. Maintain a diverse vegetation structure to provide a range of habitat niches. Create areas of bare ground for invertebrates such as solitary wasps and bees and feeding sites for birds.

Method
This measure is most suitable for existing heathland habitat and have therefore been mapped to this existing habitat based on layers provided by the BRMC and local knowledge.

Rivers, wetlands and ponds

R1b - River water quality
Reduce soil erosion by implementing land management techniques, protecting soils and reducing nutrient input into rivers. Create woodland and hedgerow on slopes along with wetland features, buffers, swales or bunds.

Method

This measure was mapped to areas identified in the Bedfordshire Blue Lens LNRS Report[19]. The top 2% of opportunity areas to deliver pollution retention – soil absorbed, pollution retention – water soluble and erosion control were identified. Areas of less than 1ha were then removed based on England Woodland Creation Offer Grant from Forestry Commission[20]

The top 2% of areas were relatively small so adjacent fields that were within the top 20% were added. This would identify measures where the data suggests it delivers the best outcome along with areas immediately around it. See figure 2 below.

[19] The Blue Lens LNRS was carried out alongside the main LNRS. Its purpose was to assess the priority locations for ecosystem services to be delivered within the River Ouse and River Lee catchments Bedfordshire-LNRS-Blue-Lens_Final.pdf
[20] England Woodland Creation Offer Grant conditions https://www.gov.uk/guidance/england-woodland-creation-offer

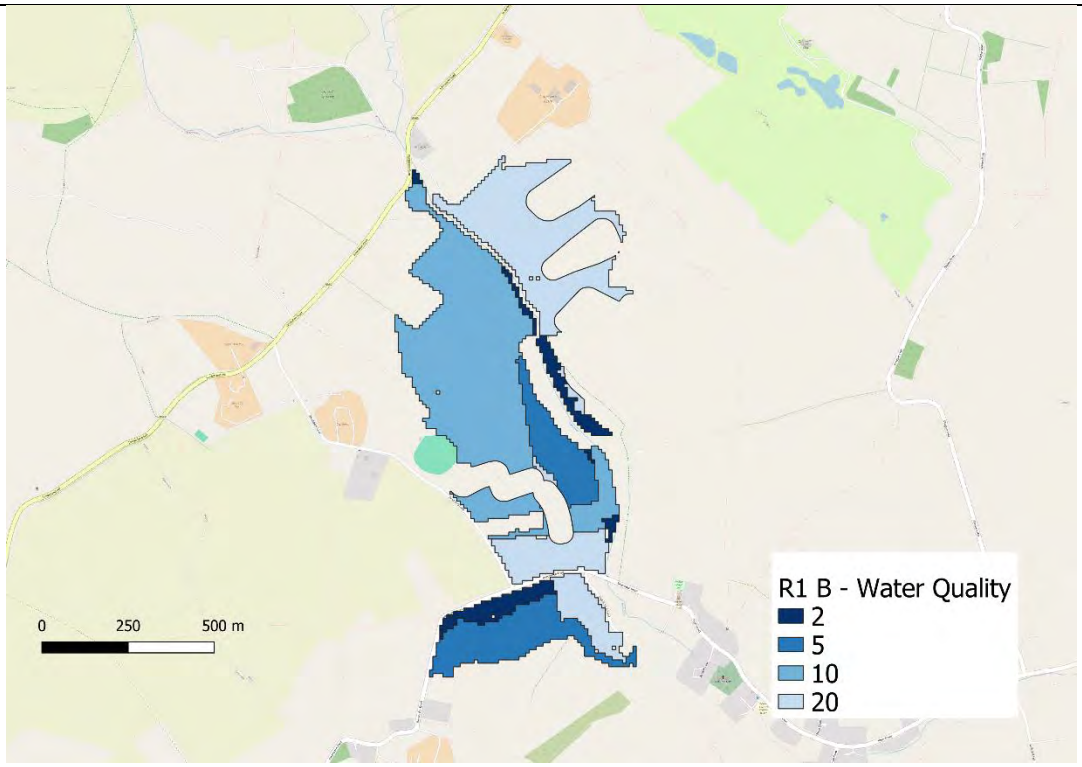


Figure 2 - Map showing the different percentages brought together as one opportunity areas to deliver improved water quality. OpenStreetMap® is open data, licensed under the Open Data Commons Open Database License (ODbL) by the OpenStreetMap Foundation (OSMF).

Areas within of existing habitat, other habitat opportunities and heritage sites were removed from the layer.

The measures have been further refined by removing those within catchments with a good or high Water Framework Directive classification for physico-chemical quality elements[21]. Physico-chemical elements include phosphate and ammonia and reflect water quality. The remaining sites are within catchments with a moderate classification.

R2a - River Flows

Where possible, restore rivers to their natural course by realignment to create more natural diverse flows, benefitting aquatic species. Reprofile and lower banks to restore connectivity between the river and flood plain. Where connection to floodplain is not possible, install in-channel features such as using berms to create meanders and roughness. Reduce impact of poaching by livestock by reducing access to the river bank.

Method

Priority Rivers for restoration in terms of re-naturalisation were identified from the Natural Capital Solutions/Veridian Blue Lens work. These are Bromham Brook, Clipstone Brook Tributary, Sharn Brook, Colmworth Brook, Pix Brook, Stondon Brook, River Hiz, Campton Brook (Hit), Flit (upper), Kim and River Ver – tiny bit of headwater). A 50m buffer was created from each bank around these rivers with existing

[21] The Water Framework Directive classifications are shown within the Environment Agency's Catchment Data Explorer England | Catchment Data Explorer

priority habitat removed (Lowland fen, reedbeds, wet woodland, floodplain grazing marsh and lowland wet meadow) along with urban areas and tiny areas removed a result of the clipping process.

R2b - River obstacles
Remove weirs to restore more natural flow and facilitate movement of fish and invertebrates. Where this is not possible, fish bypasses should be considered.

Method
The priorities for weir removal or passage have been identified within the Blue Lens LNRS project. These are the top 21 obstacles to remove based on the longest length of river reaches suitable for connecting areas brown trout are known.

R2c – NFM
Implement natural flood management measures such as leaky dams, bunds, swales or buffers within the catchment that reduce high flows and soil erosion, reducing flood risk.

Method
This utilises the LNRS Blue Lens mapping layer[22] providing ranked locations for flood mitigation. Fields are given a percentage based on the opportunity they provide to mitigate flood risk through wetland, woodland, bunds, swales and buffers. Fields providing the top 2% of opportunities of over 1ha were initially selected initially. These are relatively small areas so immediately connected fields that provided an NFM opportunity of any percentage were added. This would identify NFM measures where the data suggests it delivers the best outcome along with areas immediately around it. Existing priority habitat and grassland and heathland opportunities were removed from this layer as locations for these habitats are more limited. Areas of less than 1ha were then removed based on England Woodland Creation Offer Grant from Forestry Commission removed along with areas crossing heritage sites. Leaky dams – these were identified through the Blue lens report based.

R3a - Chalk streams
Restore spring-fed waterbodies to a more natural state to improve resilience to changes in flow (e.g. through providing flow refuges) and help with over-heating of water (e.g. by providing a balance of light and shade). Manage invasive species such as floating pennywort and Himalayan Balsam where possible throughout the catchment.

Method
Several chalk streams and other spring-fed waterbodies are present in Bedfordshire. Existing chalk streams were identified based on Natural England's Chalk Rivers (England) dataset. A 50m buffer around these rivers was created.

Areas of existing areas of lowland fen (including reedbeds), wet woodland, floodplain grazing marsh and lowland wet meadow were removed along with tiny areas resulting from the clipping process.

[22] The Blue Lens LNRS was carried out alongside the main LNRS. Its purpose was to assess the priority locations for ecosystem services to be delivered within the River Ouse and River Lee catchments Bedfordshire-LNRS-Blue-Lens_Final.pdf

Other spring-fed water bodies were added to the resulting layer. These are not currently defined as Chalk Streams by Natural England but share similar characteristics and considered worthy of inclusion. This includes Barton Brook and Hexton Brook. These additional waterbodies have been provided by expert local knowledge (Jon Balaam).

R4a – Wetlands

Create new wetland areas by managing vegetation and restoring natural hydrological processes. Implement measures such as blocking drains, creating bunds, or re-wetting areas to raise water levels. Allow marginal vegetation to develop including hedgerows while preventing encroaching from scrub. Implement appropriate extensive grazing regimes or cut and remove techniques to create a diverse sward height and structure. Create in-field wetland scrapes and swales in drier areas to store and slow the flow of water, extending the wet habitat area.

For reedbeds, manage water levels to create shallow areas of water year round and introduce reed (Phragmites) through planting or bringing in material from existing reedbeds. Manage scrub and opportunistic species to assist reedbed establishment and maintain open water feature. Species that may benefit include snipe, reed buntings and redshank.

Method

These measures are mapped to a combined existing wetland and wetland habitat opportunity areas. Within this strategy, the wetland habitats considered in this section are floodplain grazing marsh, lowland wet meadow, reedbeds and lowland fen.

A 50m buffer was applied around existing areas of these habitats. This was then clipped to the Environment Agency's Floodzone 2 to refine the layer further.

An additional area was added for the Bedford River Valley Park and Duck End (which is in the Neutral Grassland opportunities too).

An area at Tiddenfoot near Leighton Buzzard was moved from acid grassland to wetland opportunity area as it floods (Heathland Forum 22/11/2024). Tiny areas less than 1sqm were removed.

R5a - Ponds

Create new ponds by managing vegetation and creating buffer zones to benefit aquatic wildlife such as great crested newts. Control scrub and invasive non-native plants to maintain open water while retaining small areas of overhanging trees, bushes and deadwood for dragonflies and other invertebrates.

When creating ponds in intensively managed landscapes, such as arable or urban areas, prioritise creation in locations where evidence demonstrates ponds have previously been or areas where the ponds can be well buffered by rough grassland or low scrub.

Method

Measures are mapped to the pond habitat opportunity areas. Priority ponds were identified using the Freshwater Habitat's Trust priority ponds data. These sites were then combined with Nature Space Strategic Opportunity Areas to identify where the datasets intersect. These intersecting sites were buffered with a 250m buffer as recommended by the Freshwater Habitats Trust. They believe a 250m

buffer would give more of an opportunity to create ponds and more in keeping with aquatic survey techniques.

Ponds are widespread in Bedfordshire. Therefore, a combination of existing priority ponds as determined by where the Freshwater Habitats Trust and Nature Space's Strategic Opportunity Areas intersect.

R6a - Peatlands
Maintain and protect areas of peat and associated habitats through hydrological regulation and protecting water quality. Following restoration of the hydrology, re-vegetate areas of bare peat using best practice restoration techniques and appropriate plant species mixes. Initially, this should help to prevent or reduce further peat loss, but in the longer term will help to restore active peat formation.

Where sites may have recently dried out, or been colonised or planted with trees, remove up to 95% of native trees, and all invasive non-native species in line with Forestry Commission guidance. Keep water levels raised to reduce re-colonisation.

Method
Peatland data in Bedfordshire is limited. Therefore, Natural England's 'Peaty Soils location'[23] layer is deemed the most suitable data of mapped peatland in England. While this doesn't go into detail on condition or current land use, local input was able to address this. Existing areas of lowland fen (including Reedbeds), floodplain grazing marsh, lowland wet meadow and urban were removed as they are already priority habitats. A 300m buffer was then added to protect and enhance marginal areas.

Unmapped measures

The LNRS contains several measures which have not been mapped. This is because there is a lack of data or the data are insufficient, or could potentially be misleading. In addition, some measures could be delivered throughout Bedfordshire and therefore it is not possible to ascertain priority locations. The LNRS regulations allow for such measures. The measures would not receive the Biodiversity Net Gain 'uplift' as this is only applicable to measures that are mapped. However, they are a vital part of the strategy and their delivery is important to nature's recovery

Areas of Bedfordshire without measures – 'white space'

Nature recovery measures can be delivered anywhere in Bedfordshire. However, limited resources amongst key organisations such as conservation charities, local authorities and farmers and land managers means that an element of focus is required to drive measures in the areas they will have the biggest impact. The purpose of the Local Habitat Map Measures is to prioritise the best places to deliver the measures within the Statement of Biodiversity Priorities.

[23] Peaty Soils Location (England) - The Peat Layer was produced by Natural England (ARM team) during June - October 2008, with the aim of identifying the extent of three classes of peaty soils for the purposes of the Partnership Project to Protect and Enhance Peat Soils. Uses data from British Geological Survey, National Soil Resources Institute (Cranfield University) and Ordnance Survey

While the Local Habitat Map provides focused areas, many of the mapped measures could be delivered more widely and would still deliver good opportunities to provide bigger, better and more joined up habitat.

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Heathland and Acid Grassland

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Calcareous and neutral grassland

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Rivers, wetlands and ponds

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Freshwater Habitats Trust Priority Ponds

This document incorporates Strategic Opportunity Areas supplied to BRMC by the NatureSpace Partnership UK on 14/11/2024, and is © NatureSpace Partnership and/or its partners.

BGS, NSRI and OS must be acknowledged in any reports or documents produced as a result of using the Peat layer.

All mapped and unmapped measures

Measure code	Measures	Mapped	Layer name
U1a	Create constructed wetlands where possible, to provide habitat for aquatic wildlife, improve water quality and provide public amenity	No	N/A
U1b	Identify opportunities to deculvert or re-naturalise river channels to allow daylight into the river channel and provide opportunities for community engagement.	No	N/A
U1c	Restore sections of the River Lea in Luton by creating a linear park along the river and rerouting the Lea through Power Court as part of its redevelopment - providing amenity for local communities.	Yes	U1 C - Lea Linear Park
U2a	Create nature friendly areas within built-up and previously developed land to provide access to nature for people. Allow areas of grass to grow through the spring and early summer to promote plant and invertebrate diversity. If necessary, seed with suitable native plants.	Yes	U2a – Urban Green Space
U3a	Sensitively manage areas of green and blue infrastructure to promote biodiversity. Create screening features such as hedgerows, tree or scrub to screen areas from light pollution to protect sensitives species such as noctural invertebrates and bats. Create wildlife corridors by planting hedges with a mix of species such as hawthorn, blackthorn, ivy and holly. Reduce the use of chemicals such as pesticides in built up areas, utilising natural pest management	No	N/A
U3b	Restore mineral extraction sites to benefit biodiversity by implementing suitable management techniques to connect important local habitat such as grassland, heathland or wetlands.	Yes	U3 B - Restore Quarries

U3c	Identify opportunities to create green crossing across major road and rail infrastructure to improve connectivity between habitats.	Yes	U3 C - Crossings
U3d	Manage and enhance roadside nature reserves through appropriate site management, to promote target habitats types such as grassland or heathland and by linking gaps where possible to increase connectivity with similar neighbouring habitat	Yes	U3 D - Roadside NR
U4a	Create Sustainable Drainage (SUDs) in suitable locations to slow urban runoff and reduce flood risk.	No	N/A
U4b	Ensure riparian management plans are in place through local authorities and community engagement to maintain river flows and biodiversity. Increase canopy cover by targeted planting of individual trees, community woods and orchards in urban areas and close to settlements.	No	N/A
U4 C	In suitable locations, plant diverse tree and shrubs species to provide shading from increasing temperatures and reduction in flooding impacts	No	N/A
F1 A	Implement nature-friendly land management techniques to benefit farmland wildlife such as farmland birds, invertebrates and arable plants. Create field margins with a mix of arable weeds to provide seed and insect food for birds, corridors for wildlife and buffering of surrounding habitat.	No	N/A
F2 A	Create and enhance the presence of well-structured, species-rich hedgerows landscapes to create ecological links between existing woodlands and other hedgerows. Manage existing hedgerows to maximise their wildlife benefits by leaving strips of uncultivated land adjacent with some specimen trees to provide nest sites and shelter while filling any gaps where possible. (refer to BN11)	No	N/A
F3 A	Restore and create wetland habitats such as ponds and scrapes for aquatic wildlife and to	No	N/A

	slow the flow of surface water to support reduced flood risk		
F3 B	Maintain, improve and where possible create areas of where arable plants/wildflowers can thrive, supporting pollinators, by encourage cultivation regimes under nature friendly farming practices.	No	N/A
F4 A	Implement sustainable farming practices to improve soil health and reduce the impact of erosion on nearby watercourses. Consider directly drilling and minimum tillage reduce the amount of carbon released and protect soil organisms such as worms. Plant cover crops and hedgerows to boost soil health, reduce erosion, increase biodiversity and improve water quality by restricting runoff. Reduce compaction from heavy machinery by adopting Controlled Traffic Farming practices	No	N/A
W1a	Expand core woodland sites to deliver ecosystem services through natural regeneration or by planting new native conifer and/or broadleaf species, suitable to the area. Use a diversity of genetic types to increase resilience to disease and changing climate. Protect new trees from livestock or wild animals such as deer. Ensure stocking densities and mixes are compliant with UKFS	Yes	W1 A Woodland creation
W1 B	- Enhance, create and expand existing spinneys, tree avenues, small woodlands, scrub and hedgerows to create links or stepping stones between existing woodlands. Achieved through planting or natural regeneration with enrichment planting if required using locally sourced certified 'plant healthy, stock. Aiming for a broad mix of species to ensure resilience to climate change, disease and other impacts	No	N/A
W1c	Create new wet woodland to maximise water retention and seasonal flushes. Reduce the impacts of over-grazing (both livestock and deer) to allow more natural regeneration. Reduce nutrient enrichment by increasing the area of extensively managed (I.e., minimal/low input) land around the wet woodland. Consider wet woodland creation as part of	Yes	W1 C - Wet woodland opportunity

	flood management schemes within river floodplains where possible.		
W2 A	Improve woodland biodiversity by creating a varied structure, with trees of different age and height through thinning, coppicing and creation of rides and glades (particularly where they join other grassland habitats) and retaining deadwood. Remove invasive plant species such as rhododendron to allow light to the woodland floor, providing suitable conditions for native flora	No	N/A
W2b	Restore all (1,486 ha) Planted Ancient Woodland Sites (PAWS) to UKFS standards for biodiversity, climate and other environmental and economic benefits by the gradual and systematic removal of conifers, whilst maintaining economic outputs where possible.	Yes	W2 B - PAWS
W2 C	Create buffer areas around woodlands by allowing scrub fringes to develop to provide habitat corridors for invertebrates such as moths, butterflies, and birds such as warblers.	No	N/A
W2 D	Manage deer and grey squirrel numbers to a sustainable level to reduce impacts on woodland regeneration, structure and diversity	No	N/A
W3a	Manage and protect ancient trees and parklands and their root systems for their biodiversity and heritage value. Identify existing or plant new trees that are suitable as eventual replacements for mature or veteran trees on adjacent sites. Space out and protect newly planted trees (or patches of natural regeneration) so they are wide enough to grow an open crown. Maintain grass and tree mosaic by mowing or grazing.	Yes	W3 A - Wood pasture and parkland
W3b	Maintain traditional orchards by planting and protecting new trees from grazing animals. Maintain existing trees by pruning. Managing surrounding grassland by grazing or hay cutting. Keep standing deadwood and some deadwood on living trees to provide habitat	Yes	W3 B - Orchards

	and feeding opportunities for invertebrates and birds such as woodpeckers.		
W4a	Plant new trees that are appropriate to the historic parkland design and resilient to local climate change on adjacent sites. Choose varieties that provide the same ecological wood decay conditions as mature or veteran trees already in the area. Keep areas of dead wood for invertebrates.	Yes	W4 A - Wood Pasture and Parkland opportunity
G1 A	Create new areas of calcareous grassland including along roadside verges by removing bracken, scrub and invasive weeds and introduce suitable grazing or cutting to manage sward diversity. Plant suitable calcareous grassland species. Create small areas of bare ground to promote new growth and provide habitat for invertebrates such as ground beetles. Aim to prevent nutrient levels from building by restricting the application of fertiliser or manure. Limit herbicides to targeted usage.	Yes	G1 A - Calc grassland opportunity
G1 B	Create new areas of neutral grassland including along roadside verges by removing bracken, scrub and invasive weeds and introduce suitable grazing or cutting to manage sward diversity. Plant suitable neutral grassland species. Create small areas of bare ground to promote new growth and provide habitat for invertebrates such as ground beetles. Aim to prevent nutrient levels from building by restricting the application of fertiliser or manure. Limit herbicides to targeted usage.	Yes	G1 B - Neutral grassland opportunity
G2 A	Maintain appropriate calcareous grassland grazing or cutting regimes that creates swards with varied height and structure. If grazing is not possible, cut in late summer removing the cutting to reduce nutrient input. Further prevent nutrient levels from building by restricting the application of fertiliser or manure. Limit herbicides to targeted usage. Maintain and enhance hedges around fields to provide connectivity between habitats. Where	Yes	G2 A - Existing Chalk Grassland

	appropriate, manage roadside verges to promote diverse grassland habitats and create connectivity by reducing maintenance		
G2 B	Maintain appropriate neutral grassland grazing or cutting regimes that creates swards with varied height and structure. If grazing is not possible, cut in late summer removing the cutting to reduce nutrient input. Further prevent nutrient levels from building by restricting the application of fertiliser or manure. Limit herbicides to targeted usage. Maintain and enhance hedges around fields to provide connectivity between habitats	Yes	G2 B - Existing Neutral Grassland
H1a	Connect existing habitats via connecting corridors of habitat. Encourage colonisation by using heather seed (directly or in brush or capsules) or cuttings, preferably from a donor site nearby, where there is little chance of success through natural regeneration through the seed bank. Graze or cut the colonising heathland vegetation at set times to maintain diverse maturity of plants.	Yes	H1 A - Heath and Acid Grassland opportunity
H2a	Restore existing or recently lost areas of heathland. If necessary, remove or disturb topsoil or seed to encourage new growth. Carry out appropriate hydrological management to ensure wet heath/acidic mire areas are maintained. Maintain a diverse vegetation structure to provide a range of habitat niches. Create areas of bare ground for invertebrates such as solitary wasps and bees and feeding sites for birds.	Yes	H2 A - Heath and Acid Grassland existing
R1 A	Target treatment wetland creation at Descriptive Treatment Works locations where the receiving waterbody is considered to be most likely to be significantly impacted by nutrient inputs from treated effluent	No	N/A
R1b	Reduce soil erosion and pollution of watercourses through land management techniques, protecting soils and reducing nutrient input. Reduce impact of poaching by livestock by reducing access to the riverbank	Yes	R1 B - River health

R2 A	Where possible, restore rivers to their natural course by realignment to create more natural diverse flows, benefitting aquatic species. Reprofile and lower banks to restore connectivity between the river and flood plain. Where connection to floodplain is not possible, install in-channel features such as using berms to create meanders and roughness.	Yes	R2 A - River Flows
R2 B	Remove weirs to restore more natural flow and facilitate movement of fish and invertebrates. Where this is not possible, fish bypasses should be considered	Yes	R2 B - River obstacles
R2 C	Implement natural flood management measures such as leaky dams, bunds, swales or buffers within the catchment that promote water retention and prevent soil erosion, benefitting water quality	Yes	R2 C - NFM
R3 A	Restore spring fed waterbodies to a more natural state to improve resilience to changes in flow (e.g. through providing flow refuges) and help with over-heating of water (e.g. by providing a balance of light and shade). Manage invasive species such as floating pennywort and Himalayan Balsam where possible throughout the catchment.	Yes	R3 A - Chalk streams
R3 B	Prioritising chalk streams for sustainable abstraction and measures to address storm tank overflows will help with resilience to changing flows and water quality	No	N/A
R4 A	Manage vegetation and restore natural hydrological processes by implementing measures such as blocking drains, creating bunds, or re-wetting areas to raise water levels. Allow marginal vegetation to develop including hedgerows while preventing encroaching from scrub. Implement appropriate extensive grazing regimes or cut and remove techniques to create a diverse sward height and structure. Create in-field wetland scrapes and swales in drier areas to store and slow the flow of water, extending the wet habitat area. For reedbeds, manage water levels to create shallow areas of water year round and introduce reed (Phragmites) through planting	Yes	R4 A - Wetlands

	or bringing in material from existing reedbeds. Manage scrub and opportunistic species to assist reedbed establishment and maintain open water features		
R5 A	Create new ponds and manage existing ponds by managing vegetation and creating buffer zones to benefit aquatic wildlife and retain water. Control scrub and invasive non-native plants to maintain open water while retaining small areas of overhanging trees, bushes and deadwood for dragonflies and other invertebrates. When creating ponds in intensively managed landscapes, such as arable or urban areas, find field corners or other areas where the ponds can be well buffered by rough grassland or low scrub.	Yes	R5 A - Ponds
R6 A	Maintain and protect areas of peat and associated habitats through hydrological regulation and protecting water quality. Following restoration of the hydrology, re-vegetate areas of bare peat using best practice restoration techniques and appropriate plant species mixes. Initially, this should help to prevent or reduce further peat loss, but in the longer term will help to restore active peat formation. Where sites may have recently dried out, or been colonised or planted with trees, remove up to 95% of native trees, and all invasive non-native species in line with Forestry Commission guidance. After extraction, keep water levels raised to reduce re-colonisation.	Yes	R6 A - Peatlands

Central Bedfordshire in contact

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Appendix 2 - Draft

Bedfordshire LNRS Prioritisation methodology

Priority outcomes and measures

Each LNRS must create a 'Statement of biodiversity priorities.' This must set out 'the priorities, in terms of habitats and species, for recovering or enhancing biodiversity (taking into account the contribution that recovering or enhancing biodiversity can also make to other environmental benefits)'. This is an important step in the process of preparing a local nature recovery strategy as it establishes what the strategy is seeking to achieve. It is, therefore, a stage in strategy preparation where engagement with local partners will be particularly needed.

The reference to 'other environmental benefits' is an important feature of local nature recovery strategies. This is how the strategies can include 'nature-based solutions' to address wider environmental issues as well as priorities for recovering or enhancing biodiversity.

Each statement of biodiversity priorities must also include 'proposals as to the potential measures relating to those priorities'. These are the practical actions that, if taken, would make positive contributions to delivering the priorities agreed with local partners. For example, rotational coppicing of native woodland to provide dormouse habitat or ditch-blocking to re-wet degraded peat to mitigate climate change.

For clarity;
Outcomes priorities: the end results that the strategy is seeking to achieve.

Measures: specific practical actions to achieve priorities

Bedfordshire LNRS approach to prioritisation

A combination of engagement with stakeholders though workshops, meetings and online surveys was used alongside a review of existing documents was used to identify potential priorities. The process is shown in *figure 1* below. This closely follows the government's non-statutory guidance on 'Identifying and agreeing priorities and potential measures within LNRS'. This document should be read in conjunction with the draft Bedfordshire LNRS and the relating appendices.

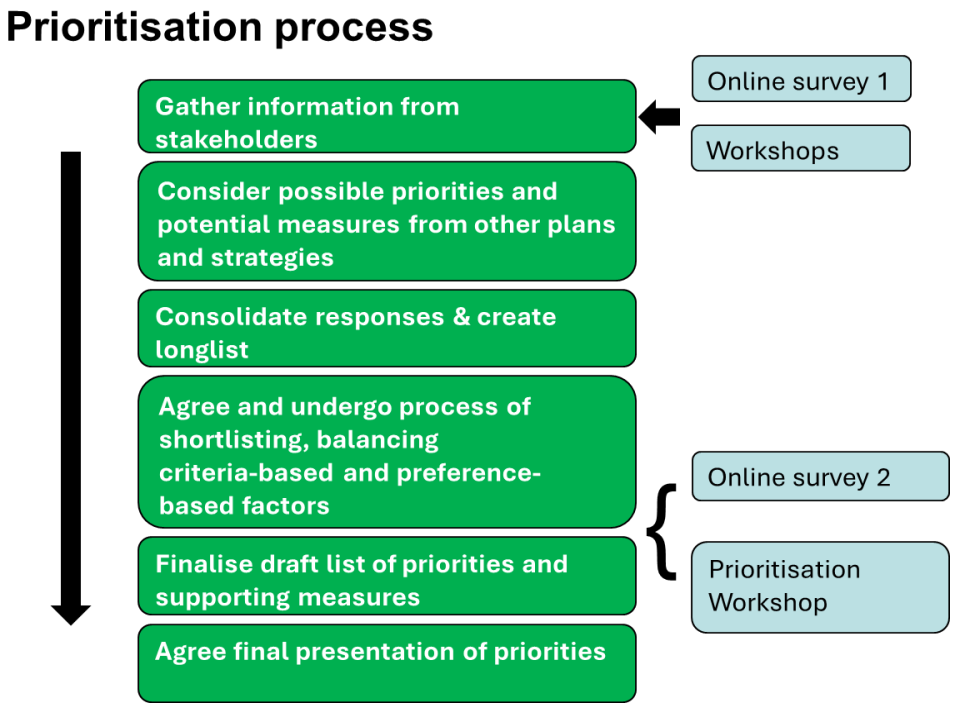

Figure 1- flowchart showing the process followed to develop the Bedfordshire LNRS priorities outcomes and measures.

Principles

One of the main purposes of the LNRS is to contribute towards the Nature Recovery Network (NRN)[1] and the Lawton Principles for making space for nature.

Natural England's 'principles for planning a Nature Network

[1] The Nature Recovery Network is a growing national network of wildlife-rich places https://www.gov.uk/government/publications/nature-recovery-network/nature-recovery-network

- enhance sites designated for nature conservation and other wildlife-rich places.
- create and restore wildlife-rich habitats, corridors and stepping-stones that help wildlife populations to recover, grow, move, thrive and adapt to a changing climate.
- improve the natural and urban environment's resilience to climate change, providing natural solutions to reduce carbon emissions and manage flood risk.
- sustain vital ecosystems that provide healthy soil, clean water and clean air.
- protect the natural, geological, historical and cultural diversity of the natural environment.
- provide more, better green spaces for us to enjoy and connect with nature where we live, work and play, improving our health and wellbeing.

Gather information from stakeholders

An initial engagement phase consisting of workshops and stakeholder survey, captured stakeholder suggestions for potential LNRS outcomes. For further information on this process please read *Appendix 3 – Approach to engagement.*

Participants to the survey were asked to what changes they would like to see in different habitats in Bedfordshire. These were:

- Woodlands and Orchards
- Farmland and Hedgerows
- Grassland and Heathland
- Rivers and Wetlands
- Urban Areas and green space and recreation areas
- General Bedfordshire-wide

This resulted in 724 suggested outcomes across the 6 broad habitats.

In addition, participants were asked what actions had been delivered and any additional actions required.

Possible priority outcomes and potential measures from other plans and strategies

As recommended within the Defra statutory guidance[2] 'Responsible authorities may find a mix of what could be priorities or potential measures by sifting published documents and contributions from local partners. They may choose to gather both as part of a single exercise, before separating them and matching potential measures with each priority. These existing documents contain valuable evidence-based information which the LNRS built on.

Other documents and strategies used in developing the potential outcomes and measures include:

- The Bedfordshire and Luton Biodiversity Action Plans[3]
- National Character Assessments (NCA)[4]
- Climate Adaptation Manual[5]
- Rebuilding Biodiversity in Bedfordshire and Luton[6]
- Bedfordshire LNRS Blue Lens[7]
- River Basin Management Plans[8]
- Individual environmental organisations and charity guidance[9]

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[2] Local nature recovery strategy: what to include: Information responsible authorities should include in a local nature recovery strategy. https://www.gov.uk/government/publications/local-nature-recovery-strategy-what-to-include

[3] The Bedfordshire and Luton Biodiversity Partnership has developed individual plans for certain habitats as part of the county's Biodiversity Action Plan (BAP).

[4] NCA profiles aims to help guide land management and other activities to strengthen character and resilience, responding to pressures such as climate change.

[5] Natural England's Climate Adaptation Manual https://publications.naturalengland.org.uk/publication/5679197848862720

[6] Rebuilding Biodiversity in Bedfordshire and Luton https://www.bedscape.org.uk/BRMC/newsite/index.php?c=bedslife_rebuild

[7] Bedfordshire LNRS Blue Lens https://bedfordshirenaturally.com/wp-content/uploads/2024/07/Bedfordshire-LNRS-Blue-Lens_Final.pdf

[8] Environment Agency River Basin Management Plans https://www.gov.uk/guidance/river-basin-management-plans-updated-2022

[9] Numerous organisations provide advice on habitat and species conservation. This includes RSPB, Wildlife Trust, Greensand Trust, Freshwater Habitat Trust, Plantlife, Butterfly Conservation, People's trust for Endangered Species, Bat Conservation Trust.

Consolidate responses and create longlist

The combination of stakeholder suggestions and outcomes and actions from existing documents were then consolidated to form a longlist. Many of the outcomes suggested were similar and could be consolidated into a term representing them all. This was achieved through spreadsheet analysis and grouping similar responses together under initial 'unifying' draft outcome.

For example, the following responses:

'Less mowing on roadside verges except at junctions / where required for safe visibility'
'I'd like to have more areas of roadside verges left to taller/grow wildflowers.'
'A reduction in the excessive management of roadside verges.'

Were grouped together as '*Roadside verges are managed in a sensitive way to improve biodiversity'.*

Through this process, a longlist of 59 potential outcomes and a range of possible measures were identified.

Prioritise longlist

A criteria and preference-based assessment was used to prioritise the longlist through in-person events and an online survey.

Initially, an online survey asked participants to vote for their top 3 priorities within each of the 6 habitat groups. 315 contributors responded to the survey providing an initial broad preference-based approach. Following this survey, an expert prioritisation working group workshop took place to review the outcomes and further refine the prioritisation. This group consisted of a range of stakeholder including local authorities, land managers and farmers, environmental organisations, volunteers and environmental government arms-length-bodies.

This group were split into tables focussing on the longlisted priorities for each of the 6 broad habitats. They were asked to select their preferred priorities considering the results of the survey and using a set criterion to guide decision making. The criteria used are shown in table 1 below.

High	Focused on Priority Habitats
High	Large-scale impact outcomes (greater area)
High	Benefiting habitats or species **important** at county level (*based on decline, distinctiveness etc)*
High	Benefiting a range of habitats **and/or species**
High	Benefiting habitats or species rare at national level
Medium	High likelihood of success / good evidence base
Medium	Value for Money
Medium	Quick wins
Medium	Embedded in existing plans/strategies (national or local)
Medium	Delivers additional Ecosystem Service benefits
Medium	Facilitates future work
Low	Cross-boundary benefits
Low	High level of innovation

Table 1 - Prioritisation criteria used to support process of shortlisting the potential priority outcomes.

Following this process, the attendees were asked to review the wording of each outcome to ensure it is reflective of what an outcome should be as opposed to measure.

Through this process 26 possible outcomes were identified and some measures relevant to these outcomes. The urban habitat category was renamed 'build up areas and previously developed land' because it was felt urban refer more to towns and cities where the intention was more toward developments or brownfield sites. The general Bedfordshire-wide outcomes were too broad to be an outcome within the LNRS or were merged with specific habitat outcomes. This resulted in a list of 22 possible outcomes.

Identifying possible measures

Possible measures were allocated to these remaining 22 outcomes by the responsible authority with support from local experts. Measures were identified from the stakeholder workshop, through the online survey and from the other documents and strategies highlighted above. These were deemed appropriate to Bedfordshire. Some specific areas are referenced within the measures such as the creation of the River Lee Linear Park. While the non-statutory guidance recommends most priorities should not reference specific locations, it may be appropriate for a small number.

Finalise list of priority outcomes and measures

These have been reviewed against the relevant statutory and non-statutory guidance. They have been refined with working adjusted to clarify the outcome and measure to someone reading these for the first time without a technical knowledge of conservation. For example, details on why a particular action is proposed have been added. Links to further information and guidance have also been shared within the main document. The full list of priority outcomes and measures is shown in *table 2* below.

Priority outcome code	Priority outcome	Measure code	Measures	Mapped?	Measure name
U1	There are more healthy urban watercourses that are better connected, providing benefits for aquatic wildlife as well as enhanced accessibility, health benefits and amenity for people.	U1a	Create constructed wetlands where possible, to provide habitat for aquatic wildlife, improve water quality and provide public amenity.	No	U1a - Constructed wetlands
		U1b	Identify opportunities to de-culvert or re-naturalise river channels to allow daylight to reach the channel and provide opportunities for wildlife and benefitting communities.	No	U1b - Re-naturalise rivers
		U1c	Restore sections of the River Lea in Luton by creating a linear park along the river and rerouting the Lea through Power Court as part of it's redevelopment - providing amenity for local communities and suitable riparian habitat for wildlife.	Yes	U1c - Lea Linear Park
U2	There are more nature rich areas in urban green spaces for communities to enjoy	U2a	Create nature friendly areas within built-up and previously developed land to provide access to nature for people. Allow areas of grass to grow through the spring and early summer to promote plant and invertebrate diversity. If necessary seed with suitable native plants. Plant hedgerows around borders to support species such as house sparrows or log piles and compost for slowworms.	Yes	U2a - Urban green space
U3	There is an increase in biodiversity within built up and previously developed land, with better protection for nature rich areas	U3a	Sensitively manage areas of green and blue infrastructure to promote biodiversity. Create wildlife corridors and screening features such as hedgerows, tree or scrub to screen areas from light pollution to protect sensitives species such as nocturnal invertebrates and bats. Planting hedges with species such as hawthorn, blackthorn, ivy and holly. Reduce the use of chemicals such as pesticides in built up areas, utilising natural pest management	No	U3a - urban connectivity
		U3b	Restore mineral extraction sites to benefit biodiversity by implementing suitable management techniques to connect important local habitat such as grassland, heathland or wetlands.	Yes	U3b - Restore Quarries
		U3c	Identify opportunities to create green nature crossing across major road and rail infrastructure to improve connectivity between habitats.	Yes	U3c - Crossings

		U3d	Manage and enhance roadside nature reserves through appropriate site management, to promote target habitats types such as grassland or heathland and by linking gaps where possible to increase connectivity with similar neighbouring habitat	Yes	U3 D - Roadside NR
U4	Communities that are better adapted to the impacts of climate change through nature based solutions	U4a	Create Sustainable Drainage (SUDs) in suitable locations to slow urban runoff and reduce flood risk.	No	U4a - Urban drainage
		U4b	Ensure riparian management plans are in place through local authorities and community engagement to maintain river flows and biodiversity.	No	U4b - river management
		U4c	In suitable locations, increase canopy cover by planting diverse tree and shrub species to provide shading from increasing temperatures and reduction in flooding impacts.	No	U4c - urban trees
F1	There is an increase in populations of key farmland birds, invertebrates and arable plants through nature friendly farming	F1 A	Implement nature-friendly land management techniques in line with Sustainable Farming Initiave to benefit farmland wildlife such as farmland birds such as corn bunting and yellowhammer, invertebrates and arable plants.	No	F1a - Nature friendly farming
F2	The network of hedgerows and hedgerow trees is maintained, improved and expanded to provide food, shelter and connectivity	F2 A	Create well-structured, species-rich hedgerows landscapes to provide ecological links between existing woodlands and other hedgerows. Manage existing hedgerows to maximise their wildlife benefits by leaving strips of uncultivated land adjacent with some specimen trees to provide nest sites and shelter while filling any gaps where possible. (Consider CS Option BN11)	No	F2a - Farmland hedgerows
F3	There are better linked nature friendly habitats at the farm and landscape scale	F3 A	Restore and create wetland habitats such as ponds and scrapes for aquatic wildlife such as great crested newts and snipe to slow the flow of surface water to support reduced flood risk and water pollution. (Consider CS Option WT1-WT11)	No	F3a - Farmland wetlands
		F3 B	Maintain, improve and where possible create areas such as field margins where a mix of arable plants can thrive . Plant suitable species such as on knapweed, scabious, yarrow, bird'sfoot trefoil and oxeye daisy. This will benefit pollinators and provide seed and insect food and corridors for birds and mammals and buffer surrounding habitats. Utilise cultivation regimes under nature friendly farming practices. (Consider CS Option AB8/AB11)	No	F3b - arable flowers
F4	There is an increase in the area of farmland under soil-friendly management	F4 A	Implement sustainable farming practices to improve soil health and reduce the impact of erosion on nearby watercourses, benefitting invertebrates such as earthworms. Consider directly drilling and minimum tillage to reduce the amount of carbon released and protect soil organisms such as worms. Plant cover crops and hedgerows to boost soil health, reduce erosion, increase biodiversity and improve water quality by restricting runoff. Reduce compaction from heavy machinery by adopting Controlled Traffic Farming practices.	No	F4a - Soil health

W1	There is an Increase in the overall tree canopy cover across Bedfordshire	W1a	Expand core woodland sites through natural regeneration or by planting new mixed species woodlands. To benefit species such as white admiral or tawny owl. Use a diversity of genetic types to help increase resilience to diseases and impacts from a changing climate. Protect new trees from livestock and wild animals such as deer. Ensure stocking densities and mixes are compliant with UKFS.	Yes	W1a - Woodland creation
		W1b	Create new and expand existing spinneys, tree avenues, small woodlands, scrub and hedgerows to create links or stepping stones between existing woodlands. This can be achieved through planting or natural regeneration using locally sourced certified plant healthy, stock. Where appropriate, plant a diverse mix of native species that will support local wildlife and build resilience to climate change impacts, disease and other pressures and threats.	No	W1b - Trees outside woodland
		W1c	Create new wet woodland to maximise water retention and seasonal flushes benefiting species such as woodcock. Reduce the impacts of over-grazing within wet woodlands (both livestock and deer) to allow more natural regeneration of the woodland habitat.	Yes	W1c - Wet woodland opportunity
W2	Bring all unmanaged woods (4,747 ha) into management to UKFS as a minimum.	W2a	Improve existing woodland biodiversity by appropriate management to create a varied structure, with trees of different ages and heights through actions such as thinning, coppicing and creation of rides and glades (particularly where they join other habitats such as areas of grassland or heathland) and retaining deadwood. Remove invasive plant species such as rhododendron to allow light to the woodland floor, providing suitable conditions for native flora	No	W2a - Existing woodland
		W2b	Restore all (1,486 ha) Plantations on Ancient Woodland Sites (PAWS) to UKFS standards for biodiversity, climate and other environmental and economic benefits by the gradual and systematic removal of commercially planted conifers, whilst carefully maintaining remnant ancient woodland features	Yes	W2b - PAWS
		W2 C	Create buffer areas around woodlands by allowing scrub and wildflower fringes to develop to provide habitat corridors for invertebrates such as moths and butterflies and birds such as warblers.	No	W2c - Woodland buffers
		W2 D	Manage deer and grey squirrel numbers to a sustainable level to reduce impacts on woodland regeneration, structure and diversity benefitting species such as nightingale.	No	W2d - Deer management
W3	Trees outside of woodland including parklands, orchards, lone, ancient, veteran and near-veteran trees are conserved and enhanced	W3a	Manage and protect ancient trees, including their root systems, for their biodiversity and heritage value. Identify existing or plant new trees that are suitable as eventual replacements for mature or ancient and veteran trees on adjacent sites. Aim to maintain genetic continuity where possible by nurturing cuttings or seedlings from existing trees. Plant and protect newly planted	Yes	W3a - Wood pasture and parkland

			trees (or patches of natural regeneration) so they are spaced wide enough to be able to adequately grow an open crown. Within parklands maintain the grassland and tree mosaic habitat by cutting or grazing.		
		W3b	Maintain traditional orchards by planting and protecting new trees from grazing animals. Maintain existing trees by pruning where required. Managing surrounding grassland by grazing or hay cutting. Keep standing deadwood and some deadwood on living trees to provide habitat and feeding opportunities for invertebrates and birds such as woodpeckers.	Yes	W3b - Orchards
W4	Expand the area of trees outside of woodland including parklands, orchards, lone and ancient and veteran trees	W4a	Plant new trees that are appropriate to the historic parkland design and resilient to local climate change on adjacent sites. Choose varieties that provide the same ecological wood decay conditions as mature or veteran trees already in the area. Keep areas of dead wood for invertebrates.	Yes	W4a - Wood Pasture and Parkland opportunity
G1	Create as much new wildlife rich calcareous and neutral grassland as possible	G1a	Create new areas of calcareous grassland including along roadside verges by removing bramble, scrub and invasive weeds and introduce suitable grazing or cutting to manage sward diversity. Where there is little chance of success through natural regeneration, plant suitable calcareous grassland species. Create small areas of bare ground to promote new growth and provide habitat for invertebrates such as ground beetles. Aim to prevent nutrient levels from building by restricting the application of fertiliser or manure. Limit herbicides to targeted usage. Species that may benefit include dark-green fritillary and chalk hill blue butterflies.	Yes	G1a - Calcareous grassland opportunity
		G1b	Create new areas of neutral grassland including along roadside verges by removing bramble, scrub and invasive weeds and introduce suitable grazing or cutting to manage sward diversity. Where there is little chance of success through natural regeneration, plant or sow suitable and local native neutral grassland species. Create small areas of bare ground to promote new growth and provide habitat for invertebrates such as ground beetles. Aim to prevent nutrient levels from building by restricting the application of fertiliser or manure. Limit herbicides to targeted usage. Species that may benefit include green-winged Orchid, brown hare, skylark and kestrel.	Yes	G1b - Neutral grassland opportunity
G2	All existing semi-natural calcareous and neutral grassland will be conserved, expanded and linked	G2 A	Maintain appropriate calcareous grassland grazing or cutting regimes that creates swards with varied height and structure. If grazing is not possible, cut in late summer removing the cutting to reduce nutrient input. Further prevent nutrient levels from building by restricting the application of fertiliser or manure. Limit herbicides to targeted usage. Maintain and enhance hedges around fields to provide connectivity between habitats. Manage	Yes	G2a - Existing Chalk Grassland

			roadside verges to promote diverse grassland habitats and create connectivity by appropriate management.		
		G2 B	Maintain appropriate neutral grassland grazing or cutting regimes that creates swards with varied height and structure. Further prevent nutrient levels from building by restricting the application of fertiliser or manure. Limit herbicides to targeted usage. Maintain and enhance hedges around fields to provide connectivity between habitats.. Manage roadside verges to promote diverse grassland habitats and create connectivity by appropriate management. Species that may benefit include green-winged orchid, brown hare, skylark and kestrel	Yes	G2b - Existing Neutral Grassland
H1	Create new wildlife rich heathland and acid grassland to buffer, link and provide stepping stones between existing sites	H1a	Link existing habitat via connecting corridors of heathland. Encourage colonisation by using heather seed (directly or in brush or capsules) or cuttings, preferably from a donor site nearby, where there is little chance of success through natural regeneration through the seed bank. Graze or cut the colonising heathland vegetation at set times to maintain diverse maturity of plants. Species that may benefit include nightjar, tiger beetles and small heath butterflies	Yes	H1a - Heath and Acid Grassland opportunity
H2	Manage beneficially/restore existing heathland and acid grassland sites and those with traces of heathland remaining	H2a	Restore existing or recently lost areas of heathland. If necessary, remove or disturb topsoil or seed to encourage new growth. Carry out appropriate hydrological management to ensure wet heath/acidic mire areas are maintained. Maintain a diverse vegetation structure to provide a range of habitat niches. Create areas of bare ground for invertebrates such as solitary wasps and bees and feeding sites for birds.	Yes	H2a - Heath and Acid Grassland existing
R1	The biological health of rivers, streams, ponds, lakes and groundwaters has improved, many more are in good condition, and the levels of chemicals within them has been reduced.	R1 A	Target treatment wetland creation at Descriptive Treatment Works locations where the receiving waterbody is considered to be most likely to be significantly impacted by nutrient inputs from treated effluent.	No	R1a - Sewage treatment works
		R1b	Reduce soil erosion by implementing land management techniques, protecting soils and reducing nutrient input into rivers. Create woodland and hedgerow on slopes along with wetland features, buffers, swales or bunds.	Yes	R1b - River water quality
R2	River flows and water dependent habitats and species are more resilient and are able to adapt to climate change	R2a	Where possible, restore rivers to their natural course by realignment to create more natural diverse flows, benefitting aquatic species. Reprofile and lower banks to restore connectivity between the river and flood plain. Where connection to floodplain is not possible, install in-channel features such as using berms to create meanders and roughness. Reduce impact of poaching by livestock by reducing access to the river bank.	Yes	R2a - River Flows

		R2 B	Remove weirs to restore more natural flow and facilitate movement of fish and invertebrates. Where this is not possible, fish bypasses should be considered	Yes	R2b - River obstacles
		R2 C	Implement natural flood management measures such as leaky dams, bunds, swales or buffers within the catchment that reduce high flows and soil erosion, reducing flood risk.	Yes	R2c - NFM
R3	The condition and health of chalk streams and other spring-fed waterbodies has improved, and they receive greater recognition and protection as valuable habitats.	R3 A	Restore spring fed waterbodies to a more natural state to improve resilience to changes in flow (e.g. through providing flow refuges) and help with over-heating of water (e.g. by providing a balance of light and shade). Manage invasive species such as floating pennywort and Himalayan Balsam where possible throughout the catchment.	Yes	R3a - Chalk streams
		R3 B	Prioritising chalk streams for sustainable abstraction and measures to address storm tank overflows will help with resilience to changing flows and water quality	No	R3b - Chalk stream abstraction
R4	New areas of floodplain grazing marsh, fens and reedbeds have been created, and existing sites have been protected, maintained and enhanced.	R4 A	Create new wetland areas by managing vegetation and restoring natural hydrological processes. Implement measures such as blocking drains, creating bunds, or re-wetting areas to raise water levels. Allow marginal vegetation to develop including hedgerows while preventing encroaching from scrub. Implement appropriate extensive grazing regimes or cut and remove techniques to create a diverse sward height and structure. Create in-field wetland scrapes and swales in drier areas to store and slow the flow of water, extending the wet habitat area. For reedbeds, manage water levels to create shallow areas of water year round and introduce reed (Phragmites) through planting or bringing in material from existing reedbeds. Manage scrub and opportunistic species to assist reedbed establishment and maintain open water feature. Species that may benefit include snipe, reed buntings and redshank.	Yes	R4a - Wetlands
R5	New ponds have been created, and existing ones protected, maintained and enhanced	R5 A	Create new ponds by managing vegetation and creating buffer zones to benefit aquatic wildlife such as great crested newts. Control scrub and invasive non-native plants to maintain open water while retaining small areas of overhanging trees, bushes and deadwood for dragonflies and other invertebrates. When creating ponds in intensively managed landscapes, such as arable or urban areas, prioritise creation in locations where evidence demonstrates ponds have previously been or areas where the ponds can be well buffered by rough grassland or low scrub.	Yes	R5a - Ponds

R6	The condition of peat resources and habitats has improved, and now receive better recognition as valuable habitats and carbon stores.	R6 A	Maintain and protect areas of peat and associated habitats through hydrological regulation and protecting water quality. Following restoration of the hydrology, re-vegetate areas of bare peat using best practice restoration techniques and appropriate plant species mixes. Initially, this should help to prevent or reduce further peat loss, but in the longer term will help to restore active peat formation. Where sites may have recently dried out, or been colonised or planted with trees, remove up to 95% of native trees, and all invasive non-native species in line with Forestry Commission guidance. Keep water levels raised to reduce re-colonisation.	Yes	R6a - Peatlands
B1	Identify, conserve and bring into positive management 60% of the network of Local Wildlife Sites in Bedfordshire	B1a	Conserve, enhance and restore Local Wildlife Sites and bring them into positive and sustainable management to safeguard species they support. Survey, provide landowner advice, and facilitate habitat improvements on priority potential wildlife sites	No	B1a - Local Wildlife Sites

Table 2 - list of priority outcomes and measures

Species

In addition to the wider priorities and measures which focus largely on habitat, Responsible Authorities must describe opportunities, set priorities, and propose potential measures for the recovery and enhancement of species. In particular, species which would benefit from additional bespoke measures as well as general bigger, better and more joined up habitats.

Species prioritisation process

The process shown in *figure 2* broadly follows the government's non statutory guidance *'Species Recovery within Local Nature Recovery Strategies'.* These aims to identify a longlist which is then reduced to a shortlist by use of a criteria and stakeholder input.

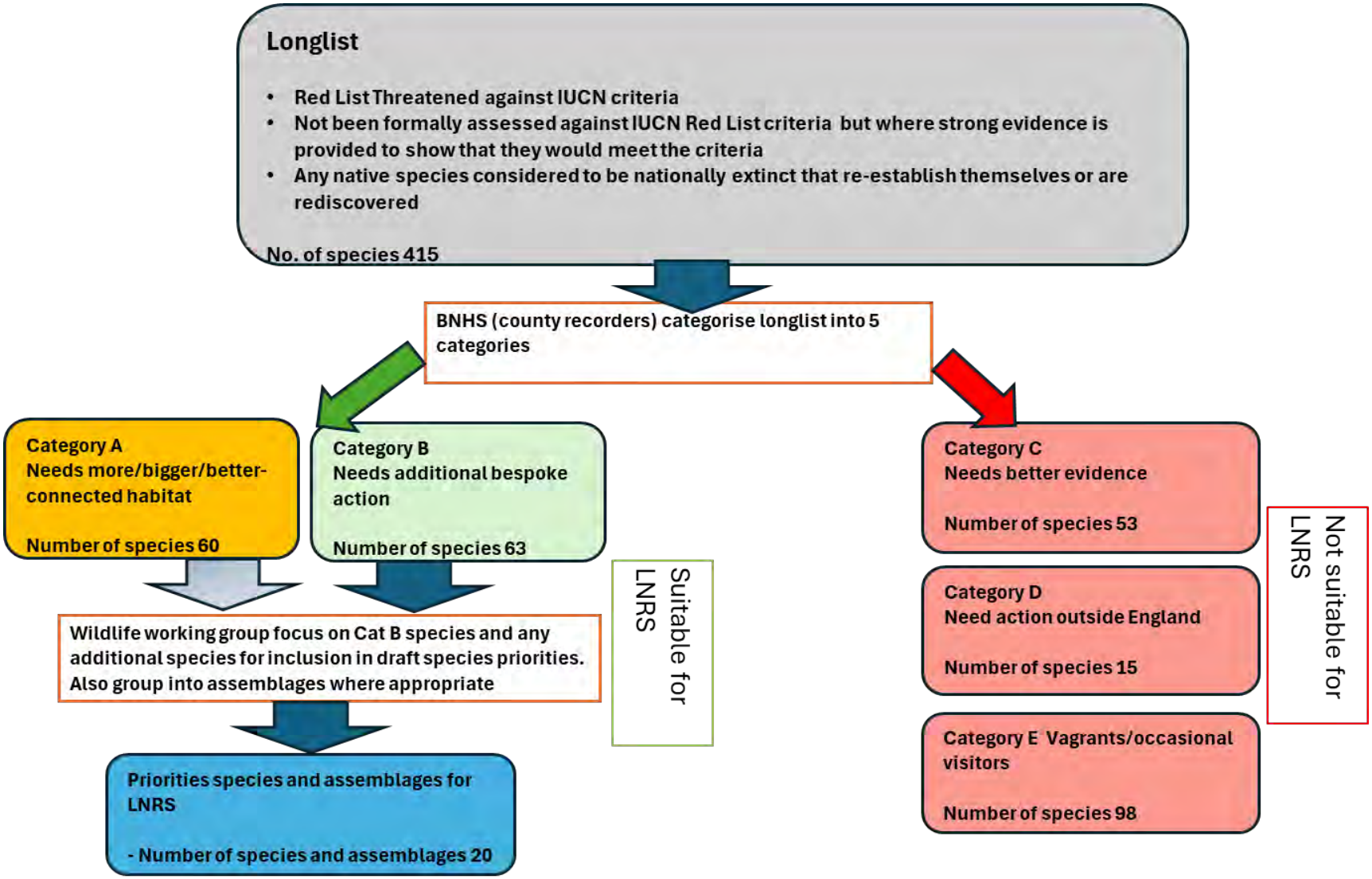


Figure 2 - Flowchart showing the process followed to identify priority species for the Beds LNRS

Generating a species longlist

The following criteria were used to identify species that could form the longlist for Bedfordshire. This list was generated by the Bedfordshire and Luton Biodiversity Recording and Monitoring Centre (BRMC) using species records.

- Any native species which have been assessed as Red List Threatened against IUCN criteria.
- Any native species which have not been formally assessed against IUCN Red List criteria but where strong evidence is provided to show that they would meet the criteria for Threatened status.
- Any native species considered to be nationally extinct that re-establish themselves or are rediscovered.

This provided a list of 415 species for consideration.

Grouping species into categories

All the species captured in the longlist are of conservation concern. However, the LNRS is not the best mechanism for recovery for all these species. To address this Bedfordshire Natural History Society County Recorders (local experts in their species group) were asked to split the longlist into 5 categories as shown in *table 2* below and put forward any potential measures. Species listed on category B were deemed most suitable as species priorities requiring bespoke actions. Species A would largely benefit from increased habitat.

Due to the unequal distribution of species within each taxon (127 birds, three amphibians) it was not possible for each Recorder to allocate every species to a category. To address this, those that were considered most appropriate for categories A and B were put forward.

Categories C, D and E are those that were considered not suitable for the LNRS but would require conservation action outside of the LNRS. Maintaining these categories is important, particularly category C as this could shape future research in Bedfordshire.

A: Needs more / bigger / better-connected habitat	- Species likely to markedly benefit from general creation, expansion, and improved connectivity of good quality habitats in the strategy area - Species with high recovery potential that do not require specific or targeted recovery measures
B: Needs targeted habitat management/complexes of connected or nearby habitat/bespoke conservation	- Species with specific requirements for habitat quality, structure, conditions, or processes above and beyond category A - Species may require specific configurations or complexes of connected or nearby habitat/s, either at site level or across large areas / multiple sites. This may include habitat. connectivity measures for species needing support to move as the climate changes.
C: Needs better evidence	- Species for which there is insufficient evidence or understanding regarding drivers of decline, required recovery actions, and range / population levels
D: Needs action outside England	- Species with low (or very low) recovery potential due to factors constraining recovery beyond English borders - Evidence shows that action in England is highly unlikely to improve species' prospects
E: Vagrants/occasional visitors	Species currently outside their normal breeding or wintering range or normal migration route, without an extant population in the strategy area, and which are not suitable for conservation translocation

Table 3 - species prioritisation criteria

Through this process 63 species were put forward on category B as possible priorities

Identifying priorities species and assemblages

This was a difficult process as it is subjective. To address this, a species focus group consisting of local ecologists and species experts including from the Wildlife Trust, National Trust, Greensand Trust and Bedfordshire Natural History Society County Recorders were asked to refine Category B to a 'manageable' list of species. This was achieved through a workshop session where attendees reviewed the 63 species on Category B. Additional species could be proposed to add to the list, but the focus was on reducing this down to approximately 20-30 species.

Once the list was shortened, the group were asked to identify species that could be grouped together into assemblages if they would benefit from similar actions and those that should be individuals.

Through this process, 5 assemblages and 15 individual species were identified.

Identifying measures

Measures were identified for the potential priority species from existing strategies and guidance which is highlighted within the LNRS document along with suggestions from County Recorders. With the support of Natural England, Greensand Trust and Wildlife Trust, this list of potential priorities and measures was reviewed again to refine and ensure the species and their actions were appropriate.

Full longlist

Group	**Scientific Name**	**Common Name**	**LNRS Category**
Amphibian	*Bufo bufo*	Common Toad	A
Amphibian	*Epidalea calamita*	Natterjack Toad	A
Amphibian	*Triturus cristatus*	Great Crested Newt	A

Bird	*Accipiter gentilis*	Goshawk	E
Bird	*Accipiter nisus*	Sparrowhawk	C
Bird	*Acrocephalus palustris*	Marsh Warbler	D
Bird	*Acrocephalus schoenobaenus*	Sedge Warbler	D
Bird	*Actitis hypoleucos*	Common Sandpiper	E
Bird	*Alauda arvensis*	Skylark	A
Bird	*Alcedo atthis*	Kingfisher	Not threatened
Bird	*Anas acuta*	Pintail	C
Bird	*Anas platyrhynchos*	Mallard	Not threatened
Bird	*Anser albifrons*	White-fronted Goose	D
Bird	*Anser fabalis*	Taiga Bean Goose	E
Bird	*Anthus spinoletta*	Water Pipit	D
Bird	*Apus apus*	Swift	B
Bird	*Aquila chrysaetos*	Golden Eagle	E

Bird	*Ardea alba*	Great White Egret	E
Bird	*Ardea cinerea*	Grey Heron	Not threatened
Bird	*Arenaria interpres*	Turnstone	E
Bird	*Asio flammeus*	Short-eared Owl	E
Bird	*Aythya ferina*	Pochard	Not threatened
Bird	*Aythya fuligula*	Tufted Duck	E
Bird	*Aythya marila*	Scaup	E
Bird	*Botaurus stellaris*	Bittern	A
Bird	*Bubulcus ibis*	Cattle Egret	E
Bird	*Bucephala clangula*	Goldeneye	E
Bird	*Burhinus oedicnemus*	Stone-curlew	E
Bird	*Calcarius lapponicus*	Lapland Bunting	D
Bird	*Calidris alpina*	Dunlin	E
Bird	*Calidris pugnax*	Ruff	D

Bird	*Caprimulgus europaeus*	Nightjar	A
Bird	*Charadrius hiaticula*	Ringed Plover	A
Bird	*Charadrius morinellus*	Dotterel	D
Bird	*Chlidonias niger*	Black Tern	E
Bird	*Chloris chloris*	Greenfinch	C
Bird	*Chroicocephalus ridibundus*	Black-headed Gull	C
Bird	*Circus cyaneus*	Hen Harrier	E
Bird	*Circus pygargus*	Montagu's Harrier	E
Bird	*Clangula hyemalis*	Long-tailed Duck	E
Bird	*Coccothraustes coccothraustes*	Hawfinch	E
Bird	*Corvus frugilegus*	Rook	C
Bird	*Coturnix coturnix*	Quail	D
Bird	*Cuculus canorus*	Cuckoo	A
Bird	*Cygnus columbianus*	Tundra Swan	E

Bird	*Delichon urbicum*	House Martin	C
Bird	*Dryobates minor*	Lesser Spotted Woodpecker	C
Bird	*Emberiza calandra*	Corn Bunting	A
Bird	*Emberiza citrinella*	Yellowhammer	A
Bird	*Emberiza schoeniclus*	Reed Bunting	A
Bird	*Eremophila alpestris*	Shore Lark	D
Bird	*Falco columbarius*	Merlin	E
Bird	*Falco subbuteo*	Hobby	Not threatened
Bird	*Falco tinnunculus*	Kestrel	A
Bird	*Ficedula hypoleuca*	Pied Flycatcher	E
Bird	*Fringilla coelebs*	Chaffinch	C
Bird	*Fulica atra*	Coot	Not threatened
Bird	*Gallinago gallinago*	Snipe	A
Bird	*Gallinula chloropus*	Moorhen	Not threatened

Bird	*Grus grus*	Crane	E
Bird	*Gulosus aristotelis*	Shag	E
Bird	*Haematopus ostralegus*	Oystercatcher	C
Bird	*Haliaeetus albicilla*	White-tailed Eagle	E
Bird	*Hirundo rustica*	Swallow	A
Bird	*Jynx torquilla*	Wryneck	E
Bird	*Lanius collurio*	Red-backed Shrike	E
Bird	*Larus argentatus*	Herring Gull	C
Bird	*Larus cachinnans*	Caspian Gull	E
Bird	*Larus glaucoides*	Iceland Gull	E
Bird	*Larus hyperboreus*	Glaucous Gull	E
Bird	*Larus marinus*	Great Black-backed Gull	E
Bird	*Larus michahellis*	Yellow-legged Gull	E
Bird	*Limosa lapponica*	Bar-tailed Godwit	E

Bird	*Limosa limosa*	Black-tailed Godwit	E
Bird	*Linaria flavirostris*	Twite	E
Bird	*Locustella luscinioides*	Savi's Warbler	D
Bird	*Locustella naevia*	Grasshopper Warbler	C
Bird	*Lullula arborea*	Woodlark	Green- list not threatened
Bird	*Luscinia megarhynchos*	Nightingale	A
Bird	*Mareca penelope*	Wigeon	C
Bird	*Melanitta nigra*	Common Scoter	E
Bird	*Mergellus albellus*	Smew	E
Bird	*Mergus serrator*	Red-breasted Merganser	E
Bird	*Motacilla cinerea*	Grey Wagtail	Not threatened
Bird	*Motacilla flava*	Yellow Wagtail	A
Bird	*Muscicapa striata*	Spotted Flycatcher	C
Bird	*Numenius arquata*	Curlew	A

Bird	*Oenanthe oenanthe*	Wheatear	E
Bird	*Oriolus oriolus*	Golden Oriole	E
Bird	*Pandion haliaetus*	Osprey	E
Bird	*Passer domesticus*	House Sparrow	A
Bird	*Passer montanus*	Tree Sparrow	A
Bird	*Perdix perdix*	Grey Partridge	A
Bird	*Pernis apivorus*	Honey-buzzard	E
Bird	*Phalacrocorax carbo*	Cormorant	Not threatened
Bird	*Phoenicurus ochruros*	Black Redstart	E
Bird	*Phylloscopus inornatus*	Yellow-browed Warbler	E
Bird	*Phylloscopus sibilatrix*	Wood Warbler	E
Bird	*Picus viridis*	Green Woodpecker	Not threatened
Bird	*Platalea leucorodia*	Spoonbill	E
Bird	*Pluvialis squatarola*	Grey Plover	E

Bird	*Podiceps auritus*	Slavonian Grebe	E
Bird	*Podiceps grisegena*	Red-necked Grebe	E
Bird	*Podiceps nigricollis*	Black-necked Grebe	E
Bird	*Poecile montanus*	Willow Tit	E
Bird	*Poecile palustris*	Marsh Tit	A
Bird	*Porzana porzana*	Spotted Crake	E
Bird	*Rissa tridactyla*	Kittiwake	E
Bird	*Saxicola rubetra*	Whinchat	E
Bird	*Scolopax rusticola*	Woodcock	A
Bird	*Serinus serinus*	Serin	E
Bird	*Somateria mollissima*	Eider	E
Bird	*Spatula querquedula*	Garganey	E
Bird	*Sterna dougallii*	Roseate Tern	E
Bird	*Sterna hirundo*	Common Tern	A

Bird	*Sterna paradisaea*	Arctic Tern	E
Bird	*Sternula albifrons*	Little Tern	E
Bird	*Streptopelia decaocto*	Collared Dove	Not threatened
Bird	*Streptopelia turtur*	Turtle Dove	B
Bird	*Strix aluco*	Tawny Owl	A
Bird	*Sturnus vulgaris*	Starling	C
Bird	*Tadorna tadorna*	Shelduck	C
Bird	*Tringa erythropus*	Spotted Redshank	E
Bird	*Tringa ochropus*	Green Sandpiper	D
Bird	*Tringa totanus*	Redshank	A
Bird	*Turdus pilaris*	Fieldfare	D
Bird	*Turdus torquatus*	Ring Ouzel	D
Bird	*Turdus viscivorus*	Mistle Thrush	C
Bird	*Vanellus vanellus*	Lapwing	A

Bird	*Anthus trivialis*	Tree Pipit	A
Bony fish (Actinopterygii)	*Acipenser sturio*	Common Sturgeon	C
Bony fish (Actinopterygii)	*Anguilla anguilla*	European Eel	B
Bony fish (Actinopterygii)	*Cobitis taenia*	Spined Loach	A
Bony fish (Actinopterygii)	*Lota lota*	Burbot	C
Bony fish (Actinopterygii)	*Salmo salar*	Atlantic Salmon	E
Bony fish (Actinopterygii)	*Salmo trutta*	Brown/Sea Trout	B
Bryophyte	*Fossombronia incurva*	Weedy Frillwort	A
Butterfly (Lepidoptera)	*Aporia crataegi*	Black-veined White	E
Butterfly (Lepidoptera)	*Coenonympha pamphilus*	Small Heath	A

Butterfly (Lepidoptera)	*Cupido minimus*	Small Blue	B
Butterfly (Lepidoptera)	*Erynnis tages*	Dingy Skipper	A
Butterfly (Lepidoptera)	*Euphydryas aurinia*	Marsh Fritillary	E
Butterfly (Lepidoptera)	*Hamearis lucina*	Duke of Burgundy	B
Butterfly (Lepidoptera)	*Hipparchia semele*	Grayling	E
Butterfly (Lepidoptera)	*Lasiommata megera*	Wall	D
Butterfly (Lepidoptera)	*Leptidea sinapis*	Wood White	A
Butterfly (Lepidoptera)	*Limenitis camilla*	White Admiral	A
Butterfly (Lepidoptera)	*Lycaena dispar*	Large Copper	F
Butterfly (Lepidoptera)	*Nymphalis polychloros*	Large Tortoiseshell	E

Butterfly (Lepidoptera)	*Papilio machaon*	Swallowtail	E
Butterfly (Lepidoptera)	*Papilio machaon gorganus*	Continental Swallowtail	E
Butterfly (Lepidoptera)	*Phengaris arion*	Large Blue Butterfly	E
Butterfly (Lepidoptera)	*Polyommatus bellargus*	Adonis Blue	E
Butterfly (Lepidoptera)	*Polyommatus coridon*	Chalk Hill Blue	A
Butterfly (Lepidoptera)	*Pyrgus malvae*	Grizzled Skipper	A
Butterfly (Lepidoptera)	*Satyrium pruni*	Black Hairstreak	B
Butterfly (Lepidoptera)	*Satyrium w-album*	White-letter Hairstreak	A
Butterfly (Lepidoptera)	*Speyeria aglaja*	Dark Green Fritillary	A
Butterfly (Lepidoptera)	*Thecla betulae*	Brown Hairstreak	E

Dragonfly (Odonata)	*Aeshna caerulea*	Azure Hawker	E
Dragonfly (Odonata)	*Anaciaeschna isoceles*	Norfolk Hawker/Green-eyed hawker	C
Dragonfly (Odonata)	*Calopteryx virgo*	Beautiful demoiselle	A
Dragonfly (Odonata)	*Coenagrion pulchellum*	Variable Damselfly	C
Dragonfly (Odonata)	*Ischnura pumilio*	Scarce Blue-tailed Damselfly	D
Dragonfly (Odonata)	*Lestes dryas*	Scarce Emerald Damselfly	C
Dragonfly (Odonata)	*Libellula fulva*	Scarce Chaser	A
Flowering plant (Angiosperm)	*Ajuga chamaepitys*	Ground-pine	B
Flowering plant (Angiosperm)	*Alchemilla mollis*	Garden Lady's-mantle	
Flowering plant (Angiosperm)	*Alchemilla vulgris*	A lady's-mantle	
Flowering plant (Angiosperm)	*Allium oleraceum*	Field Garlic	C

Flowering plant (Angiosperm)	*Anacamptis morio*	Green-winged Orchid	A
Flowering plant (Angiosperm)	*Armeria maritima*	Thrift	
Flowering plant (Angiosperm)	*Arum italicum*	Italian Lords-and-Ladies	
Flowering plant (Angiosperm)	*Astragalus danicus*	Purple Milk-vetch	A
Flowering plant (Angiosperm)	*Blysmus compressus*	Flat-sedge	
Flowering plant (Angiosperm)	*Bupleurum rotundifolium*	Thorow-wax	
Flowering plant (Angiosperm)	*Carex otrubae*	False Fox-sedge	Not threatened
Flowering plant (Angiosperm)	*Carum carvi*	Caraway	
Flowering plant (Angiosperm)	*Centaurea cyanus*	Cornflower	Not threatened
Flowering plant (Angiosperm)	*Cephalanthera damasonium*	White Helleborine	A

Flowering plant (Angiosperm)	*Clinopodium acinos*	Basil Thyme	
Flowering plant (Angiosperm)	*Coeloglossum viride*	Frog Orchid	B
Flowering plant (Angiosperm)	*Colchicum autumnale*	Meadow Saffron	
Flowering plant (Angiosperm)	*Conopodium majus*	Pignut	A
Flowering plant (Angiosperm)	*Cuscuta epithymum*	Dodder	
Flowering plant (Angiosperm)	*Cynoglossum officinale*	Hound's-tongue	
Flowering plant (Angiosperm)	*Cyperus longus*	Galingale	
Flowering plant (Angiosperm)	*Dactylorhiza incarnata*	Early Marsh-orchid	
Flowering plant (Angiosperm)	*Dianthus deltoides*	Maiden Pink	
Flowering plant (Angiosperm)	*Elodea nuttallii*	Nuttall's Waterweed	Not threatened

Flowering plant (Angiosperm)	*Euphrasia*	Eyebright	
Flowering plant (Angiosperm)	*Euphrasia nemorosa*	Common Eyebright	
Flowering plant (Angiosperm)	*Euphrasia pseudokerneri*	Chalk Eyebright	
Flowering plant (Angiosperm)	*Filago vulgaris*	Common Cudweed	
Flowering plant (Angiosperm)	*Galeopsis angustifolia*	Red Hemp-nettle	E
Flowering plant (Angiosperm)	*Galium tricornutum*	Corn Cleavers	
Flowering plant (Angiosperm)	*Genista anglica*	Petty Whin	
Flowering plant (Angiosperm)	*Gentianella anglica*	Early Gentian	
Flowering plant (Angiosperm)	*Gentianella germanica*	Chiltern Gentian	A
Flowering plant (Angiosperm)	*Gnaphalium sylvaticum*	Heath Cudweed	E

Flowering plant (Angiosperm)	*Groenlandia densa*	Opposite-leaved Pondweed	
Flowering plant (Angiosperm)	*Herminium monorchis*	Musk Orchid	B
Flowering plant (Angiosperm)	*Hieracium*	Hawkweed	C
Flowering plant (Angiosperm)	*Hieracium sabaudum*	Autumn Hawkweed	
Flowering plant (Angiosperm)	*Himantoglossum hircinum*	Lizard Orchid	
Flowering plant (Angiosperm)	*Hordeum marinum*	Sea Barley	Not threatened
Flowering plant (Angiosperm)	*Hydrocharis morsus-ranae*	Frogbit	
Flowering plant (Angiosperm)	*Hypochaeris glabra*	Smooth Cat's-ear	
Flowering plant (Angiosperm)	*Hypochaeris maculata*	Spotted Cat's-ear	B
Flowering plant (Angiosperm)	*Hypopitys monotropa*	Yellow Bird's-nest	

Flowering plant (Angiosperm)	*Hypopitys monotropa subsp. hypophegea*	Hypopitys monotropa subsp. hypophegea	
Flowering plant (Angiosperm)	*Iberis amara*	Wild Candytuft	B
Flowering plant (Angiosperm)	*Juncus compressus*	Round-fruited Rush	
Flowering plant (Angiosperm)	*Juniperus communis*	Juniper	B
Flowering plant (Angiosperm)	*Lathyrus aphaca*	Yellow Vetchling	E
Flowering plant (Angiosperm)	*Lemna minuta*	Least Duckweed	
Flowering plant (Angiosperm)	*Medicago minima*	Bur Medick	
Flowering plant (Angiosperm)	*Melampyrum cristatum*	Crested Cow-wheat	
Flowering plant (Angiosperm)	*Melittis melissophyllum*	Bastard Balm	
Flowering plant (Angiosperm)	*Mentha pulegium*	Pennyroyal	

Flowering plant (Angiosperm)	*Minuartia hybrida*	Fine-leaved Sandwort	
Flowering plant (Angiosperm)	*Muscari neglectum*	Grape-hyacinth	
Flowering plant (Angiosperm)	*Myosurus minimus*	Mousetail	
Flowering plant (Angiosperm)	*Myriophyllum verticillatum*	Whorled Water-milfoil	
Flowering plant (Angiosperm)	*Neotinea ustulata*	Burnt Orchid	B
Flowering plant (Angiosperm)	*Neottia nidus-avis*	Bird's-nest Orchid	
Flowering plant (Angiosperm)	*Oenanthe fistulosa*	Tubular Water-dropwort	C
Flowering plant (Angiosperm)	*Onobrychis viciifolia*	Sainfoin	
Flowering plant (Angiosperm)	*Ophrys insectifera*	Fly Orchid	
Flowering plant (Angiosperm)	*Orchis anthropophora*	Man Orchid	

Flowering plant (Angiosperm)	*Orobanche rapum-genistae*	Greater Broomrape	C
Flowering plant (Angiosperm)	*Persicaria mitis*	Tasteless Water-pepper	
Flowering plant (Angiosperm)	*Petrorhagia prolifera*	Proliferous Pink	E
Flowering plant (Angiosperm)	*Platanthera bifolia*	Lesser Butterfly-orchid	
Flowering plant (Angiosperm)	*Platanthera chlorantha*	Greater Butterfly-orchid	
Flowering plant (Angiosperm)	*Potentilla argentea*	Hoary Cinquefoil	
Flowering plant (Angiosperm)	*Primula elatior*	Oxlip	
Flowering plant (Angiosperm)	*Pulsatilla vulgaris*	Pasqueflower	B
Flowering plant (Angiosperm)	*Ranunculus arvensis*	Corn Buttercup	
Flowering plant (Angiosperm)	*Salvia pratensis*	Meadow Clary	

Flowering plant (Angiosperm)	*Scandix pecten-veneris*	Shepherd's-needle	
Flowering plant (Angiosperm)	*Scleranthus annuus*	Annual Knawel	
Flowering plant (Angiosperm)	*Sedum cepaea*	Pink Stonecrop	
Flowering plant (Angiosperm)	*Seseli libanotis*	Moon Carrot	B
Flowering plant (Angiosperm)	*Silene gallica*	Small-flowered Catchfly	
Flowering plant (Angiosperm)	*Spergula arvensis*	Corn Spurrey	
Flowering plant (Angiosperm)	*Spiranthes spiralis*	Autumn Lady's-tresses	B
Flowering plant (Angiosperm)	*Stellaria palustris*	Marsh Stitchwort	
Flowering plant (Angiosperm)	*Stratiotes aloides*	Water-soldier	E
Flowering plant (Angiosperm)	*Taraxacum officinale agg.*	Dandelion	Not threatened

Flowering plant (Angiosperm)	*Teesdalia nudicaulis*	Shepherd's Cress	
Flowering plant (Angiosperm)	*Tephroseris integrifolia subsp. integrifolia*	Field Fleawort	B
Flowering plant (Angiosperm)	*Torilis arvensis*	Spreading Hedge-parsley	
Flowering plant (Angiosperm)	*Trifolium ochroleucon*	Sulphur Clover	
Flowering plant (Angiosperm)	*Valerianella rimosa*	Broad-fruited Cornsalad	B
Flowering plant (Angiosperm)	*Vicia parviflora*	Slender Tare	
Flowering plant (Angiosperm)	*Viola canina*	Heath Dog-violet	
Flowering plant (Angiosperm)	*Viola tricolor*	Wild Pansy	C
Flowering plant (Angiosperm)	*Wolffia arrhiza*	Rootless Duckweed	
Fungus	*CHEGD grassland fungal assemblage*	n/a	A

Fungus	*Poronia punctatus*	n/a	A
Insect - Beetle (Coleoptera)	*Berosus luridus*	n/a	A
Insect - Beetle (Coleoptera)	*Carabus monilis*	Necklace Ground Beetle	A
Insect - Beetle (Coleoptera)	*Elater ferrugineus*	n/a	B
Insect - Beetle (Coleoptera)	*Gnorimus nobilis*	Noble Chafer	B
Insect - Beetle (Coleoptera)	*Heterocerus fusculus*	n/a	A
Insect - Beetle (Coleoptera)	*Laemophloeus monilis*	n/a	B
Insect - Beetle (Coleoptera)	*Lucanus cervus*	Stag Beetle	A
Insect - Beetle (Coleoptera)	*Malachius aeneus*	Scarlet Malachite Beetle	A
Insect - Beetle (Coleoptera)	*Meloe proscarabaeus*	Black Oil-Beetle	A

Insect - Beetle (Coleoptera)	*Meloe violaceus*	Violet Oil-beetle	A
Insect - Beetle (Coleoptera)	*Orchestes testaceus*	Jumping Weevil	A
Insect - Beetle (Coleoptera)	*Sigorus porcus*	n/a	A
Insect - Beetle (Coleoptera)	*Smicronyx reichii*	n/a	A
Insect - Beetle (Coleoptera)	*Stenelmis canaliculata*	n/a	A
Insect - Beetle (Coleoptera)	*Vanonus brevicornis*	n/a	A
Insect - Moth (Lepidoptera)	*Acronicta psi*	Grey Dagger	
Insect - Moth (Lepidoptera)	*Acronicta rumicis*	Knot Grass	
Insect - Moth (Lepidoptera)	*Adscita statices*	Forester	E
Insect - Moth (Lepidoptera)	*Agrochola lychnidis*	Beaded Chestnut	

Insect - Moth (Lepidoptera)	*Allophyes oxyacanthae*	Green-brindled Crescent	
Insect - Moth (Lepidoptera)	*Amphipoea oculea*	Ear Moth	A
Insect - Moth (Lepidoptera)	*Amphipyra tragopoginis*	Mouse Moth	
Insect - Moth (Lepidoptera)	*Anchoscelis helvola*	Flounced Chestnut	C
Insect - Moth (Lepidoptera)	*Anchoscelis litura*	Brown-spot Pinion	
Insect - Moth (Lepidoptera)	*Apamea anceps*	Large Nutmeg	
Insect - Moth (Lepidoptera)	*Apamea remissa*	Dusky Brocade	
Insect - Moth (Lepidoptera)	*Aporophyla lutulenta*	Deep-brown Dart	
Insect - Moth (Lepidoptera)	*Arctia caja*	Garden Tiger	A
Insect - Moth (Lepidoptera)	*Asteroscopus sphinx*	Sprawler	

Insect - Moth (Lepidoptera)	*Atethmia centrago*	Centre-barred Sallow	
Insect - Moth (Lepidoptera)	*Brachylomia viminalis*	Minor Shoulder-knot	
Insect - Moth (Lepidoptera)	*Caradrina morpheus*	Mottled Rustic	
Insect - Moth (Lepidoptera)	*Catocala sponsa*	Dark Crimson Underwing	A
Insect - Moth (Lepidoptera)	*Ceramica pisi*	Broom Moth	
Insect - Moth (Lepidoptera)	*Chesias legatella*	Streak	A
Insect - Moth (Lepidoptera)	*Chesias rufata*	Broom-tip	A
Insect - Moth (Lepidoptera)	*Chiasmia clathrata*	Latticed Heath	
Insect - Moth (Lepidoptera)	*Cirrhia gilvago*	Dusky-lemon Sallow	A
Insect - Moth (Lepidoptera)	*Cirrhia icteritia*	Sallow	

Insect - Moth (Lepidoptera)	*Cosmia diffinis*	White-spotted Pinion	A
Insect - Moth (Lepidoptera)	*Cossus cossus*	Goat Moth	A
Insect - Moth (Lepidoptera)	*Cucullia lychnitis*	Striped Lychnis	B
Insect - Moth (Lepidoptera)	*Cyclophora porata*	False Mocha	E
Insect - Moth (Lepidoptera)	*Cymatophorina diluta*	Oak Lutestring	E
Insect - Moth (Lepidoptera)	*Dasypolia templi*	Brindled Ochre	E
Insect - Moth (Lepidoptera)	*Diarsia rubi*	Small Square-spot	
Insect - Moth (Lepidoptera)	*Dicycla oo*	Heart Moth	E
Insect - Moth (Lepidoptera)	*Diloba caeruleocephala*	Figure of Eight	A
Insect - Moth (Lepidoptera)	*Ecliptopera silaceata*	Small Phoenix	

Insect - Moth (Lepidoptera)	*Ennomos alniaria*	Canary-shouldered Thorn	
Insect - Moth (Lepidoptera)	*Ennomos erosaria*	September Thorn	
Insect - Moth (Lepidoptera)	*Ennomos fuscantaria*	Dusky Thorn	
Insect - Moth (Lepidoptera)	*Ennomos quercinaria*	August Thorn	
Insect - Moth (Lepidoptera)	*Enteucha acetosae*	Pygmy Sorrel	C
Insect - Moth (Lepidoptera)	*Eugnorisma glareosa*	Autumnal Rustic	
Insect - Moth (Lepidoptera)	*Eulithis mellinata*	Spinach	A
Insect - Moth (Lepidoptera)	*Euxoa nigricans*	Garden Dart	
Insect - Moth (Lepidoptera)	*Euxoa tritici*	White-line Dart	A
Insect - Moth (Lepidoptera)	*Graphiphora augur*	Double Dart	E

Insect - Moth (Lepidoptera)	*Grapholita pallifrontana*	Liquorice Piercer	A
Insect - Moth (Lepidoptera)	*Helotropha leucostigma*	Crescent	A
Insect - Moth (Lepidoptera)	*Hemaris tityus*	Narrow-bordered Bee Hawk-moth	E
Insect - Moth (Lepidoptera)	*Hemistola chrysoprasaria*	Small Emerald	
Insect - Moth (Lepidoptera)	*Hepialus humuli*	Ghost Moth	
Insect - Moth (Lepidoptera)	*Hoplodrina blanda*	Rustic	
Insect - Moth (Lepidoptera)	*Hydraecia micacea*	Rosy Rustic	
Insect - Moth (Lepidoptera)	*Leucania comma*	Shoulder-striped Wainscot	
Insect - Moth (Lepidoptera)	*Litoligia literosa*	Rosy Minor	
Insect - Moth (Lepidoptera)	*Lycia hirtaria*	Brindled Beauty	

Insect - Moth (Lepidoptera)	*Macaria wauaria*	V-moth	E
Insect - Moth (Lepidoptera)	*Malacosoma neustria*	Lackey	
Insect - Moth (Lepidoptera)	*Melanchra persicariae*	Dot Moth	C
Insect - Moth (Lepidoptera)	*Melanthia procellata*	Pretty Chalk Carpet	
Insect - Moth (Lepidoptera)	*Minoa murinata*	Drab Looper	E
Insect - Moth (Lepidoptera)	*Mniotype adusta*	Dark Brocade	
Insect - Moth (Lepidoptera)	*Nemophora fasciella*	Horehound Long-horn	A
Insect - Moth (Lepidoptera)	*Noctua orbona*	Lunar Yellow Underwing	A
Insect - Moth (Lepidoptera)	*Orgyia antiqua*	Vapourer	
Insect - Moth (Lepidoptera)	*Orthonama vittata*	Oblique Carpet	

Insect - Moth (Lepidoptera)	*Orthosia gracilis*	Powdered Quaker	
Insect - Moth (Lepidoptera)	*Paratalanta hyalinalis*	Knapweed Pear	A
Insect - Moth (Lepidoptera)	*Pechipogo strigilata*	Common Fan-foot	E
Insect - Moth (Lepidoptera)	*Pelurga comitata*	Dark Spinach	
Insect - Moth (Lepidoptera)	*Photedes extrema*	Concolorous	E
Insect - Moth (Lepidoptera)	*Phyllonorycter sagitella*	Scarce Aspen Midget	E
Insect - Moth (Lepidoptera)	*Polia bombycina*	Pale Shining Brown	E
Insect - Moth (Lepidoptera)	*Rheumaptera hastata*	Argent & Sable	E
Insect - Moth (Lepidoptera)	*Rhizedra lutosa*	Large Wainscot	
Insect - Moth (Lepidoptera)	*Scopula marginepunctata*	Mullein Wave	

Insect - Moth (Lepidoptera)	*Scotopteryx bipunctaria*	Chalk Carpet	A
Insect - Moth (Lepidoptera)	*Scotopteryx chenopodiata*	Shaded Broad-bar	
Insect - Moth (Lepidoptera)	*Sideridis reticulata*	Bordered Gothic	
Insect - Moth (Lepidoptera)	*Spilosoma lubricipeda*	White Ermine	
Insect - Moth (Lepidoptera)	*Spilosoma lutea*	Buff Ermine	
Insect - Moth (Lepidoptera)	*Stilbia anomala*	Anomalous	E
Insect - Moth (Lepidoptera)	*Tholera cespitis*	Hedge Rustic	
Insect - Moth (Lepidoptera)	*Tholera decimalis*	Feathered Gothic	
Insect - Moth (Lepidoptera)	*Timandra comae*	Blood-vein	
Insect - Moth (Lepidoptera)	*Trichiura crataegi*	Pale Eggar	E

Insect - Moth (Lepidoptera)	*Tyria jacobaeae*	Cinnabar	
Insect - Moth (Lepidoptera)	*Tyta luctuosa*	Four-spotted	E
Insect - Moth (Lepidoptera)	*Uncinus obductella*	Marjoram Knot-horn	A
Insect - Moth (Lepidoptera)	*Watsonalla binaria*	Oak Hook-tip	
Insect - Moth (Lepidoptera)	*Xanthorhoe ferrugata*	Dark-barred Twin-spot Carpet	E
Insect - Moth (Lepidoptera)	*Xestia agathina*	Heath Rustic	A
Insect-Bee (Hymenopteran)	*Bombus ruderarius*	Red-shanked Carder Bee	C
Insect-Bee (Hymenopteran)	*Bombus ruderatus*	Large Garden Bumblebee	A
Insect-Bee (Hymenopteran)	*Chrysis fulgida*	Shimmering Ruby-tail wasp	E
Jawless fish (Agnatha)	*Lampetra fluviatilis*	River Lamprey	C

Lichen	*Absconditella trivialis*	n/a	C
Lichen	*Acarospora moenium*	n/a	C
Lichen	*Anaptychia ciliaris subsp. ciliaris*	n/a	C
Lichen	*Biatora veteranorum*	n/a	C
Lichen	*Calaplaca luteoalba*	Orange-Fruited Elm-Lichen	C
Lichen	*Caloplaca luteoalba*	n/a	C
Lichen	*Catillaria fungoides*	n/a	C
Lichen	*Cladonia rei*	n/a	C
Lichen	*Cladonia uncialis subsp. uncialis*	n/a	C
Lichen	*Diplotomma murorum*	n/a	C
Lichen	*Fellhanera ochracea*	n/a	C
Lichen	*Fellhanera viridisorediata*	n/a	C
Lichen	*Micarea curvata*	n/a	C

Lichen	*Micarea globulosella*	n/a	C
Lichen	*Physcia tribacioides*	n/a	C
Lichen	*Porina byssophila*	n/a	C
Lichen	*Protoparmelia hypotremella*	n/a	C
Lichen	*Strangospora deplanata*	n/a	C
Mammal	*Arvicola amphibius*	European Water Vole	B
Mammal	*Barbastella barbastellus*	Western Barbastelle	B
Mammal	*Eptesicus serotinus*	Serotine	B
Mammal	*Erinaceus europaeus*	West European Hedgehog	B
Mammal	*Lepus europaeus*	Brown Hare	A
Mammal	*Lutra lutra*	Eurasian Otter	A
Mammal	*Micromys minutus*	Harvest Mouse	A
Mammal	*Muscardinus avellanarius*	Hazel Dormouse	B
Mammal	*Nyctalus leisleri*	Lesser Noctule	B

Mammal	*Nyctalus noctula*	Noctule Bat	B
Mammal	*Pipistrellus nathusii*	Nathusius's Pipistrelle	B
Mammal	*Pipistrellus pygmaeus*	Soprano Pipistrelle	B
Mammal	*Plecotus auritus*	Brown Long-eared Bat	B
Mollusc	*Monacha (Monacha) cartusiana*	Carthusian Snail	C
Mollusc	*Odhneripisidium tenuilineatum*	Fine-lined Pea Mussel	A
Mollusc	*Oxyloma (Oxyloma) sarsii*	Slender Amber Snail	E
Mollusc	*Pseudanodonta complanata*	Depressed River Mussel	A
Mollusc	*Truncatellina cylindrica*	Cylindrical Whorl Snail	C
Mollusc	*Vertigo (Vertilla) angustior*	Narrow-mouthed Whorl Snail	E
Reptile	*Anguis fragilis*	Slow-worm	A
Reptile	*Vipera berus*	Adder	B
Reptile	*Zootoca vivipara*	Common Lizard	C

Reptile	*Natrix helvetica*	Grass snake	C
Spider	*Araniella displicata*	n/a	C
Spider	*Centromerus cavernarum*	n/a	E
Spider	*Gibbaranea bituberculata*	n/a	C
Spider	*Saaristoa firma*	Triangle Hammock-spider	A
Spider	*Trichoncus saxicola*	n/a	C
Spider	*Trochosa robusta*	n/a	C

Central Bedfordshire

Central Bedfordshire in contact

Appendix 3 – Draft Bedfordshire Local Nature Recovery Strategy

Approach to engagement

Glossary

Local Nature Recovery Strategy (LNRS) – new nature recovery strategies required in each county in England.

Bedfordshire Local Nature Partnership (BLNP) – partnership of organisations including Local Authorities, Environmental Charities, Landowners, Developers and government agencies.

Responsible authority (RA) – Central Bedfordshire Council. Responsible for producing the local nature recovery strategy.

Supporting Authority (SA) – Luton Borough Council, Bedford Borough Council and Natural England. All supporting the responsible authority.

Priority outcomes and measures – an outcome is the end result of the strategy. For example, it could include 'Increase abundance of breeding bird species in woodland'. Actions are the specific practical actions on the ground to achieve the outcomes. These could be tree planting or deer control.

Contents

Introduction

The Bedfordshire Local Nature Recovery Strategy (LNRS) is a new document introduced by the UK Government to help address the biodiversity crisis in the UK. They will identify priorities for nature recovery and locations of important and potentially important sites for Biodiversity.

Each LNRS has a responsible authority (RA) who has led the development of the strategy. They have been supported by supporting authorities (SA). Central Bedfordshire Council (CBC) are the RA for the Bedfordshire LNRS with Luton Borough Council (LBC), Bedford Borough Council (BBC) and Natural England (NE) as supporting authorities.

Statutory and non-statutory guidance has been provided to responsible authorities to support the development of the strategies. Each strategy must also adhere to The Environment (Local Nature Recovery Strategies) (Procedure) Regulations 2023.

This document sets out the approach taken to engaging stakeholders and encourage community involvement in the development of the Draft LNRS.

About this document

Stakeholder engagement has been a key part of developing the LNRS to ensure that the strategy captures the views of a range of audiences and reflects the needs and ambitions of the area. This document outlines the considerations and actions taken as part of the engagement and communication.

This document includes:

- A summary of engagement phases involved in the development of the draft strategy
- A summary of the different stakeholder groups engaged and why they were engaged
- An overview of the stakeholder engagement activities, including who was involved
- The key outputs of the engagement activities
- A summary of key considerations and challenges
- The next steps in finalising the strategy including public consultation.

This document should be read in conjunction with the main LNRS documents (the written statement of biodiversity priorities and the Local Habitat Map) and appendices 1 and 2 to understand how this process informed their creation.

Goals of engagement

For the LNRS to be deliverable, stakeholders needed to have an awareness of what the strategy seeks to achieve, the information and opportunities it can provide and what the strategy does not do. The LNRS's are new, and awareness amongst key stakeholders was expected to be low. Therefore, raising awareness was a core goal for all engagement activities.

Raising awareness was the first part in seeking stakeholder input into the development of the strategy and support for the final priority outcomes and measures and the mapped measures. In addition, it was important to develop new contacts and relationships to aid in the delivery of the priority outcomes and measures.

In summary, the main goals for engagement were:

- Raise awareness of the need for nature recovery and LNRS, what it means for different stakeholders, what's included and the opportunities it can provide
- Gain stakeholder input into the development of the Statement of Biodiversity Priorities
- Identify existing important sites for nature, and opportunities where nature recovery could be delivered
- Build networks between stakeholders to aid the delivery of nature recovery.

Approach to engagement

The RA adopted a flexible approach to engagement by adapting messages and practices following feedback from stakeholders and additional guidance provided by Defra, Natural England and other LNRS's being developed. Guidance from Defra and Natural England continued to evolve throughout the process as different LNRs from around England were reviewed. Therefore, an adaptable approach was essential to identify what engagement methods and opportunities were appropriate for different sectors.

Engagement phases

Engagement during the development of the draft LNRS has been broadly split into 5 phases as shown in *table 1.* Initial engagement was led by the Bedfordshire Local Nature Partnership (LNP) to raise awareness of the LNRS. This was delivered through 'seed funding' provided by Defra while Responsible Authorities were recruiting officers to lead on the development of their strategies. The LNP continued to have a key role in supporting the RA with engagement throughout the draft LNRS development. This document refers to the Inception and Development phases of engagement. Further engagement will be required for the Consultation, Publication and Delivery phases.

Inception (April 2023 – October 2023)	Development (October 2023 – Feb 2025)	Consultation (Feb 2025 – August 2025)	Publication	Delivery
Establish project governance	Continue to raise awareness	Seek approval from responsible and supporting authorities' members	Engage with responsible and supporting authorities for adoption	Maintain awareness of LNRS
Identify stakeholders	Capture and agree priority outcomes and measures from specific stakeholders	Consult all stakeholders on draft strategy document (8 weeks)	Finalise and publish the final strategy document	Work with stakeholders to deliver priority outcomes and measures
Raise awareness	Identify potential species of importance			

	Identify existing projects and opportunity areas for nature recovery			

Table 1 - Description of the engagement phases in the development of the draft LNRS

Key messages

There were several key messages that the engagement and communications activities were seeking to deliver.

1. **Why nature recovery is needed in Bedfordshire and throughout England**

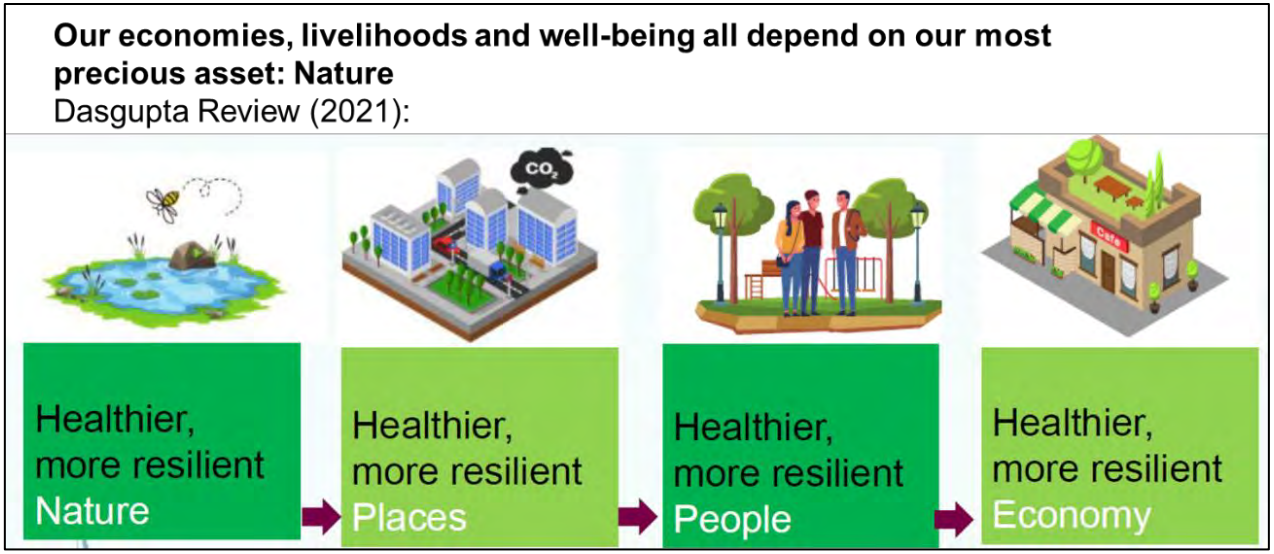
Delivered by: Setting out the challenges nature faces in Bedfordshire and more widely throughout England. This included challenges such as pollution, climate change, habitat loss and invasive species.

Diagram 1: Example of message given during briefing to Central Bedfordshire Councillors:

2. What benefits nature provides to people through ecosystem services

Delivered by: Highlighting the benefits nature provides to communities through ecosystem services and why a healthy natural environment is important for people. The ecoservices include pollination, water quality, air quality, recreation and health and wellbeing benefit that nature provides.

Diagram 2: Example of message given at Farmer and Landowner webinar 8 May 2024



3. What the LNRS is and what is included such as the priorities and habitat maps

Delivered by: Explaining the legislative and national drivers for the introduction of LNRS within each county in England and what the features of the strategy are. This includes the description of the strategy area, the statement of biodiversity and the local habitat map.

Example of message:

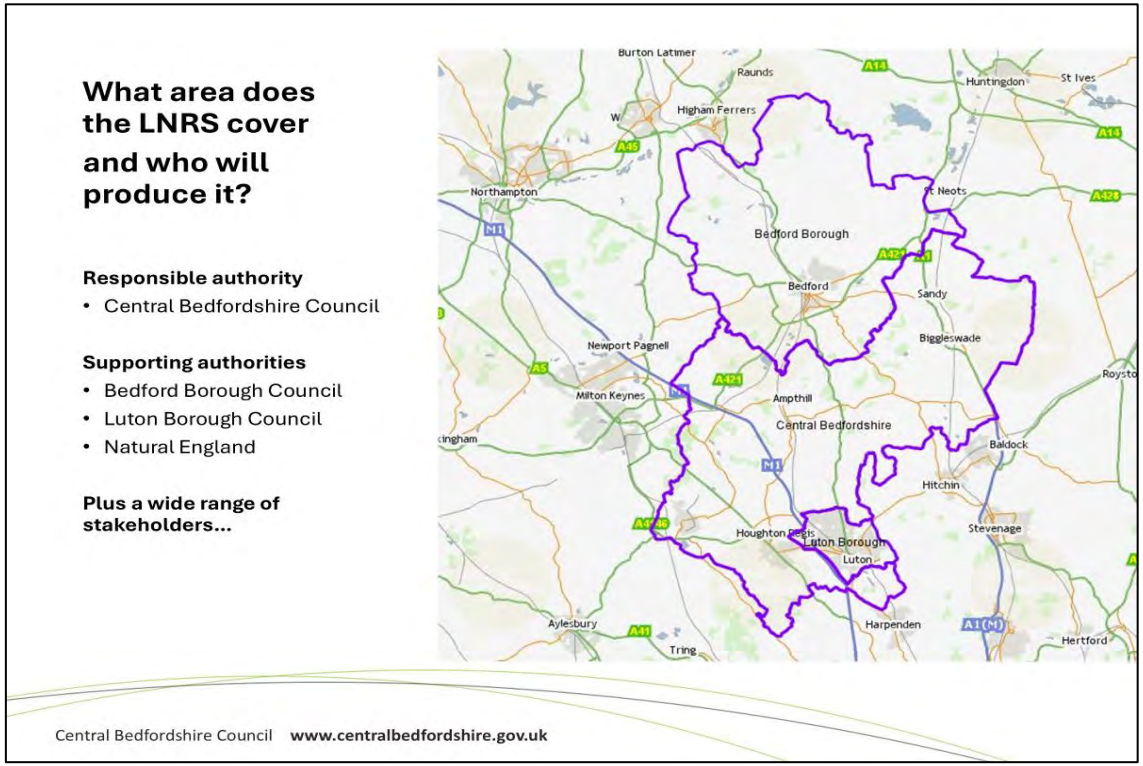
'Local nature recovery strategies are a system of spatial strategies for nature and environmental improvement required by law under the Environment Act 2021. Each strategy must:

- *agree priorities for nature's recovery in each county*
- *map the most valuable existing areas for nature*
- *map specific proposals for creating or improving habitat for nature and wider environmental goals'*

4. How it is being developed, and which organisations are involved

Delivered by: Setting out the organisations and other stakeholders involved in the development, along with the role of the Responsible and Supporting Authorities.

Diagram 3: Example of message given during presentation to:



5. **What it means for landowners if land is identified as an opportunity area**

Delivered by: Setting out the link between the LNRS and potential funding mechanism such as Biodiversity Net Gain (BNG) and possible land management funding from central government – For example, through updated Environment Land Management Schemes (ELMS). Also clarifying what the strategy does not do such as explaining that the LNRS does not dictate how land must be used.

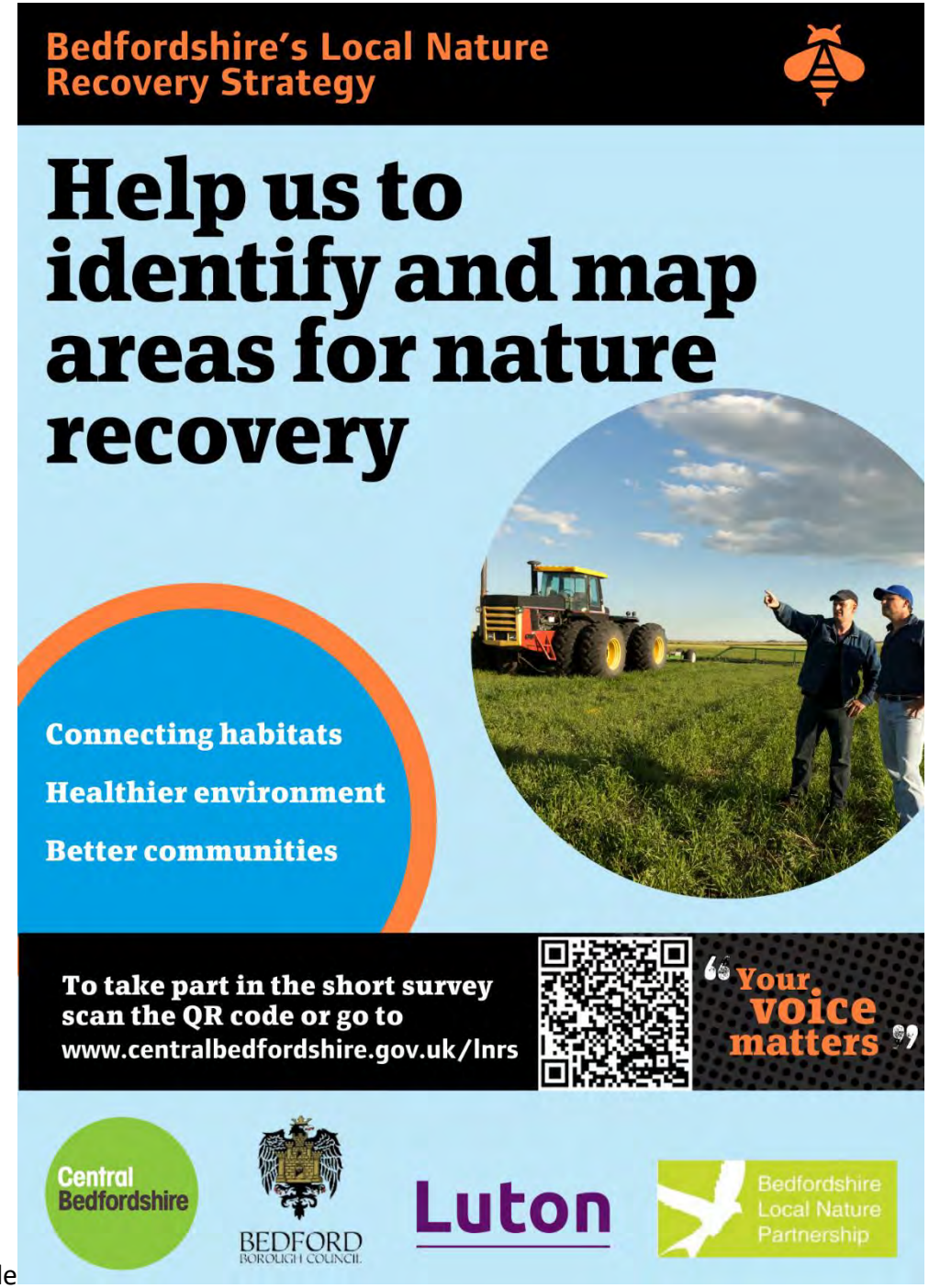
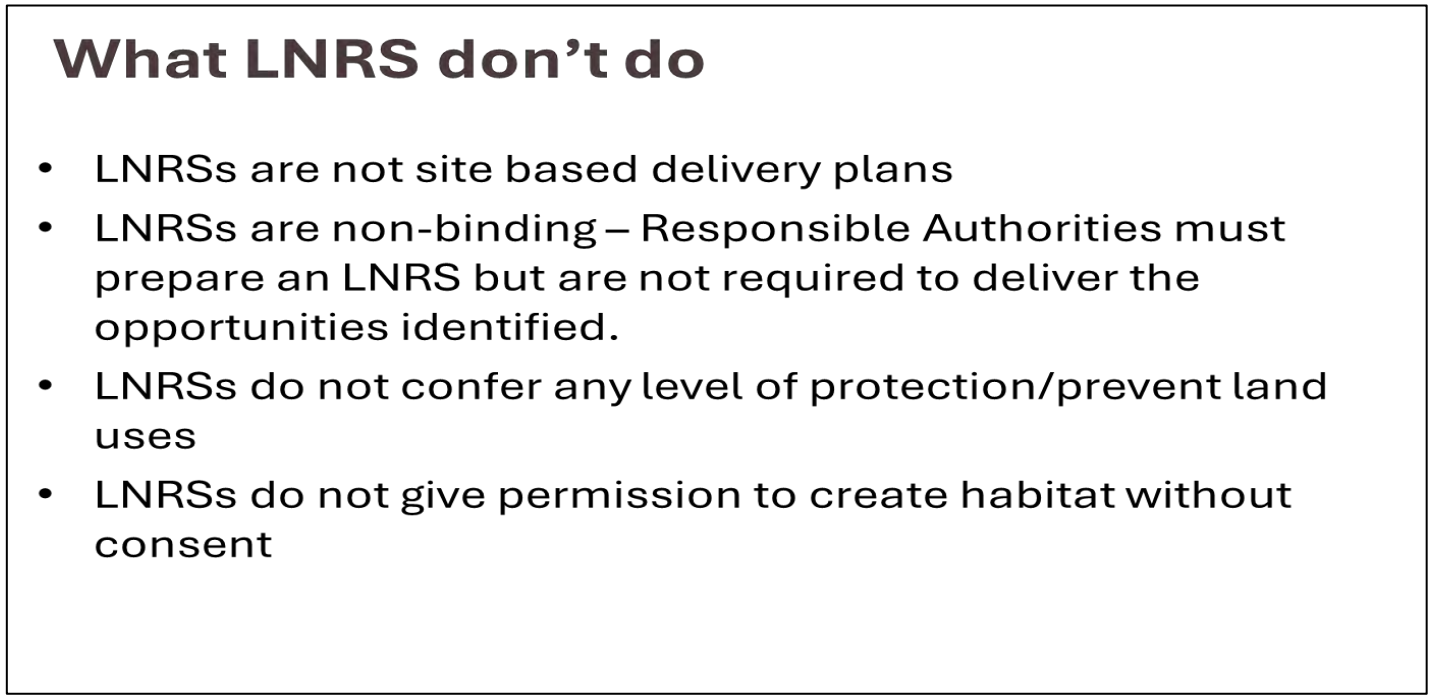


Diagram 4: Example of message from presentation given within Farmer and



Phase 1 - Inception

During this phase, the project governance was established. This included 3 core groups, 4 working groups and stakeholders identified. Raising awareness was again, an important part of this phase.

Project governance

Steering group

This group provided strategic steer and guidance to the RA on developing the strategy.

This was formed from the Bedfordshire Local Nature Partnership (LNP) and chaired by Dr Paul Leinster CBE. The members included representatives from CBC, BBC, LBC, the Greensand Trust (GST), Bedfordshire, Cambridgeshire and Northamptonshire Wildlife Trust (BCNWT), Country Land and Business Association (CLA), Bedford and Milton Keynes Waterway (BMKW), Forestry Commission, Natural England, Environment Agency, Forest of Marston Vale, Chilterns National Landscape and Bedfordshire, Milton Keynes and Luton Integrated Care Board.

Steering sub-group

This group was made up of core members of the Bedfordshire LNP and provided additional guidance and advice.

This group was chaired by Dr Paul Leinster CBE and informed by representatives from Natural England, GST, BCNWT, Forest of Marston Vale and the RA.

Client group

The client group was set up to aid collaboration between the RA, SA and LNP. It helped make key decisions on the allocation of project funding and resources and identify where SAs were able to provide support to the RA on the delivery of the strategy.

The members included representatives from the RA, SA and LNP.

Working groups

- **Data and mapping**: this group focussed on discussing and guiding the mapping elements of the LNRS. The members included representatives from the RA, SA, GST, Forestry Commission, Natural England and Bedfordshire Biodiversity Monitoring and Recording Centre (BRMC).
- **Prioritisation**: This group was formed to focus on developing the method of prioritising the potential outcomes and measures for inclusion in the final strategy. It included representatives from RA, SA, GST, Forest of Marston Vale, Chilterns National Landscape, BCNWT, Natural England, Bedfordshire Natural History Society and landowner representation.
- **Species prioritisation**: This group was tasked to focus on identifying potential species priorities, working from a longlist of species. It included representatives from RA, SA, GST, Forest of Marston Vale, Chilterns National Landscape, BCNWT, Natural England and Bedfordshire Natural History Society (BNHS).

Identifying stakeholders

Stakeholders were identified by the RA, SA and the BLNP. Stakeholders were identified based on potential interest and influence in the LNRS or how the LNRS may impact on them. The main stakeholder groups are

- **Bedford, Luton and Central Bedfordshire Councillors.** Councillors from the responsible and supporting authorities have a vital role in strategy development and approval and adoption.
- **Town and Parish Councils** from across Bedfordshire provide local knowledge and can represent residents and businesses. They are also potential partners in delivering nature recovery on land under their management.
- **Local Environmental Organisations** including the BCNWT, GST and Bedfordshire Rural Communities Charity provided expert knowledge on environmental issues in Bedfordshire and manage some of the most important sites for nature.
- **Land managers, farmers and landowners** including individual farmers, landowners, sports facility owners, are key to delivering the outcomes and provided local knowledge on land use, nature conservation and what actions may be deliverable in practice.
- **Government Environmental Organisations** including Natural England, Forestry Commission, Environment Agency provided strategic steer on relevant issues and guidance.
- **Strategic environmental partnerships** such as the LNP, Upper Bedford Ouse Catchment Partnership and Greensand Landscape Partnership are made up of numerous relevant organisations and provided valuable network for engagement opportunities.
- **Local authority officers** including those from responsible and supporting authorities provide input on other strategies and issues relevant to the LNRS, guidance on internal processes and policies, and will be end users of the LNRS.
- **Neighbouring county LNRS representatives** from Hertfordshire, Cambridgeshire, Buckinghamshire and North Northamptonshire work together to ensure strategies link up across county borders.
- **Developers** including construction companies and their agents will need to be aware of the LNRS and its relationship with Biodiversity Net Gain
- **Community groups and general public** provide input on the aspects of nature recovery important to local people and through community groups can raise awareness of its importance.

Methods of engagement

Suitable methods of engagement were identified to communicate the LNRS to the various stakeholders, understanding that not all stakeholders would want to engage in the same way. The information in *table 2* below shows the main engagement methods used.

Types of engagement
Online platform with survey Used to share and capture information. We provide a multiple-choice survey to help refine the longlist of outcomes. We also captured land put forward for inclusion or to be excluded by landowners in polygon format to feed into the opportunity mapping areas. Share FAQ, latest news, links to Beds LNP, Defra guidance on LNRS, 25 Year Environment Plan and relevant LNRS events. The Commonplace platform, licenced through CBC. bedslocalnaturerecoverystrategy.commonplace.is/ was used.
Workshops In person facilitated events to engage with stakeholders, providing an overview of the LNRS and capturing input in the developing priorities and measures, species priorities and mapping. Workshops were either facilitated by independent facilitators including Ron Donaldson and Greensand Trust or by Central Bedfordshire Council.
Drop-in sessions Used to interact with different stakeholders around the county. Providing information on the LNRS and opportunity for stakeholders to give us their views. Drop-ins provide a flexible approach for stakeholders as they can arrive at any time and discuss issues important to them. They were also be used to capture input into the strategy through the online survey or via paper copies. Locations included sites across Bedfordshire such as Rushmere Country Park, Priory Country Park and Stockwood Park.
Utilising existing events Used to share and capture information. Different locations around the county (CBC, Bedford, Luton). Opportunities to join existing events such where key stakeholders are involved. These allowed further awareness raising, directing those interested towards the online platform or providing information material.
Webinars Used to present to key stakeholders, highlighting the latest information on the LNRS, answering questions and encouraging participation in the survey. Webinars were recorded and made available for those unable to attend.
Magazines and newsletters Magazines, newsletters and websites advertised the LNRS and promoted the survey.

Presentations
Used to share information. Information shared through online webinars or in person presentations. Raising awareness of LNRS and linking with the online survey to capture input.

Individual discussions
Used to share and capture information. One to one conversations with key individuals to capture their input into the strategy. This included briefings to senior managers and Councillors at RA and SA as well as major landowners.

Direct email/letter
Existing email distribution lists were used to share information, ensuring compliance with GDPR, to contact key stakeholders such as landowners and farmers directly.

Social media
Facebook, Instagram and X were used to share information with specific stakeholder groups and the wider public, encouraging participation in the survey.

Posters
Posters created with a QR and placed in public areas such as libraries, leisure centres, countryside parks and nature reserves to raise awareness of the survey. Example of a poster used is shown below**.**

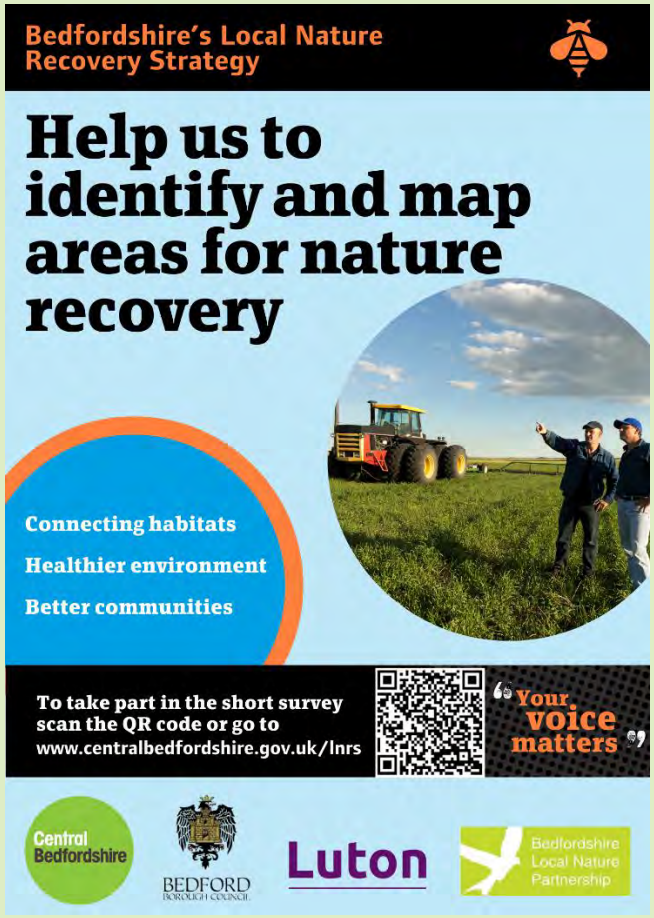


Table 2 - the main engagement methods used within the development of the Bedfordshire LNRS

Accessibility

Stakeholders were engaged using a wide range of methods to ensure those that would like to input into the strategy are able to. These are shown in *table 4*. This incorporated both online and in person events at various times during the day to avoid exclusion. We ensured that sufficient time was given to stakeholders to respond or participate. Any in person events were held in venues with disabled access.

Written materials were available using large, clear font and written in plain English and made available in alternative languages if required. Our webpage also had an accessibility menu function to allow for changes to the text size and other features.

Consideration was given to the time of year and farming practises to try and ensure as may land managers were able to engage with the LNRS process as possible.

Existing channels and networks were utilised through Central Bedfordshire, Luton Borough and Bedford Borough Councils and other partner organisations to communicate with stakeholders and raise awareness of wider engagement opportunities.

Existing events were used to promote the LNRS where possible and appropriate to reduce the burden on stakeholders' attendance.

Phase 2 - Development

The development phase of the strategy focussed continuing to raise awareness and beginning the process of capturing stakeholder input. This input included aspects of Bedfordshire's natural environment that was important to people and initial thoughts on possible priority outcomes and measures which make up a key part of the LNRS. This phase was split into two stages as set out below.

Main engagement and communication activities

The following *table 3* highlights the main engagement that took place. It shows the event, an overview of the stakeholders involved and the purpose of the engagement. The purpose of engagement was determined by the goals of engagement to ensure that resources were used effectively to deliver engagement that was required for the LNRS development.

Stage 1		
Engagement activity	**Stakeholders**	**Purpose of engagement**
Prioritisation Workshop 1 – 6 October 2023	37 attendees from across a range of organisations including local environmental organisations, supporting and responsible authorities and government environmental organisations.	To raise awareness of the LNRS and begin the process of identifying what nature recovery could look like in Bedfordshire.

		
Councillor Presentation 22 March	Local Authority Councillors	To raise awareness of the LNRS, what it may mean for local authorities and promote stakeholder survey 1
Stakeholder survey 1 25 March 2024 to 31 May 2024	175 contributions from a variety of stakeholders including general public, environmental organisations, town and parish councils and farmers.	To gather initial stakeholder views on the biggest challenges for nature in Bedfordshire and suggestions for possible priority outcomes and measures and views on possible locations for nature recovery.
Prioritisation Workshop 2 21 March 2024	29 Attendees from across a range of organisations including local environmental organisations, supporting and responsible authorities and government environmental organisations.	To identify possible LNRS outcomes, what actions are currently being taken to deliver these outcomes and additional actions may be required to deliver those outcomes. Also considered, criteria which could be considered for prioritising the actions.

		
Blue Lens LNRS online workshop 26 April 2024	37 attendees online from across a range of organisations including land managers, local environmental organisations, supporting and responsible authority's officers and government environmental organisations	To review the outputs of the Blue Lens LNRS project and provide input into its findings and potential uses.[1]
Drop-in sessions 7-21 May 2024	7 locations were chosen throughout Bedfordshire to engage with the public.	To raise awareness and request people complete the stakeholders survey. Also attending were the Central Bedfordshire Council Sustainability team sharing information on tree planting grants.
Webinars Town and Parish Council 25 March 2024	Attendees from Town and Parish Councils	To raise awareness of the LNRS and answer questions and concerns about the LNRS that attendees may have. And to encourage attendees to complete the stakeholder survey

[1] Project focussing in on the water environment and how this can be assessed as part of the LNRS process https://bedfordshirenaturally.com/beds-lnrs/

Farmer and land manager 8 May 2024	Attendees from the farming and land manager sector across Bedfordshire	

Stage 2		
Engagement activity	**Stakeholders**	**Purpose of engagement**
Councillor Briefing note 11/1/24	Local Authority Councillors	Briefing note to raise aware of the LNRS
Stakeholder survey 2 16 September 2024 to 31 October 2024	Total respondents 316 - General public 194 - Farmer, landowner and land manager 33 - Community volunteer 28 - Environmental organisation 22 - Local authority officer 15 - Town and Parish Councillor 12 - Ward councillor 4 - Other 8	To seek stakeholder views on the emerging priorities through voting or suggestion additional options for consideration. Identify potential location for nature recovery by capturing suggestions on an online map

LNRS Promotion Community magazine and website	Approximately 100,000 recipients across North Bedfordshire and Ampthill & Flitwick edition of Bedslife magazine and eLuton newsletter	To raise awareness of the LNRS and encourage stakeholders to take part in the Stakeholder Survey
Species prioritisation 29 October 2024	12 attendees from supporting and responsible authorities and environmental organisations	To review shortlist of species and identify potential priorities
Park owners LNRS workshop 8 October 2024	Attendees from across Bedfordshire who own or manage designated Parkland. Event organised by the Greensand Trust. Attendees included • Wrest Park • Pollhill Estate • Bedfordia • Whitbread Estate	To raise awareness of the LNRS and provide an update on progress. Also to capture input into nature recovery opportunities on parkland. 

Mapping workshops 18 to 28 November 2024	4 dedicated workshops covering Wetland, Woodland, Neutral Grassland and Calcareous Grassland Approximately 15 attendees from Environmental Organisations and BRMC at each event.	To review draft opportunity maps of different habitats and suggest additional areas or those that should be removed.
Greensand Landscape Partnership Heathland Forum 22 November 2024	Workshop and site visit organised by the Greensand Trust at Rammamere Heath. Approximately 20 attendees from across a range of organisations including local environmental organisations, aggregates industry, supporting and responsible authorities and government environmental organisations who manage land or have an interest in heathland along the Greensand Ridge	To connect those with an interest in heathland conservation and raise awareness of the heathland priorities and opportunity maps and ask for input.
Natural England – Catchment Sensitive Farming Partnership presentation 4 December 2024	Workshop organised by Natural England on Catchment Sensitive Farming. Provided an opportunity to discuss LNRS with farmers 19 Farmers attended	To present the latest information on the LNRS and raise awareness of the strategy. 

Farmer and Landowner webinar 14 October 2024	Attendees from the farming and land manager sector across Bedfordshire	To raise awareness of the LNRS and answer questions and concerns about the LNRS that attendees may have. And to share the progress of the strategy and encourage attendees to complete the stakeholder survey.
Prioritisation Workshop 3 11 November 2024	19 attendees from across a range of organisations including local environmental organisations, supporting and responsible authorities and government environmental organisations.	Update on LNRS, timescales and prioritisation process Refine the long-list – prioritise down to a 'shortlist' (main task) Consider how to utilise alongside survey data – LNRS guidance encourages an approach that combines quantitative data with expert opinion Begin process of mapping Measures against Priorities

Table 3 - the main Bedfordshire LNRS engagement activities in the development of the draft strategy.

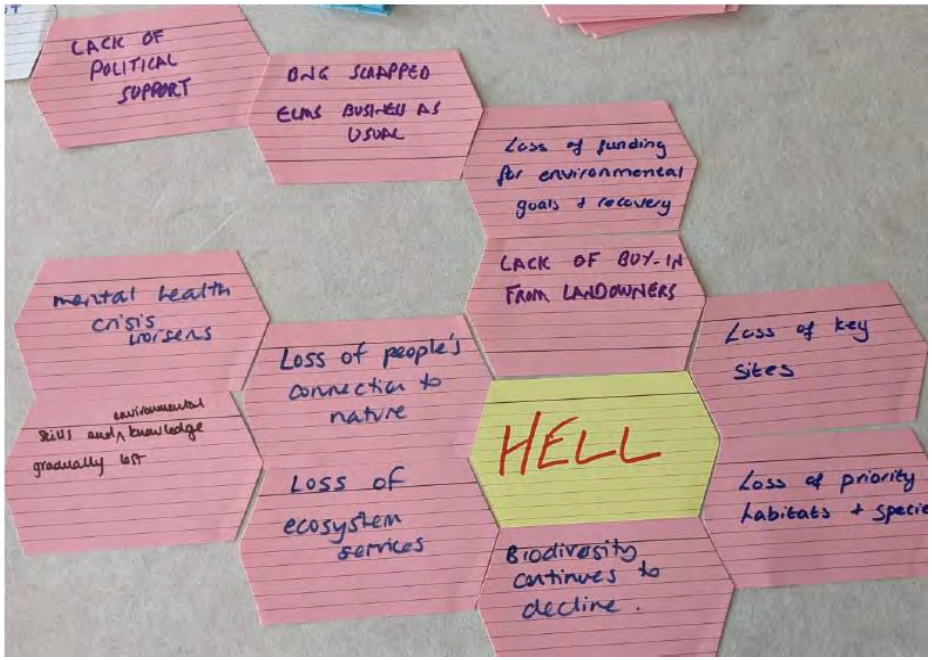
Engagement outputs – stage 1

The first phase of engagement involved significant awareness raising of what the LNRS is and what it may mean for different stakeholders. In particular land managers such as farmers, environmental organisations and local authorities. It also provided an initial opportunity for stakeholder to suggest possible priorities for nature recovery in Bedfordshire. This engagement, whether through the survey or workshops, was largely formed of open questions, allowing stakeholders to suggest their own ideas without being led.

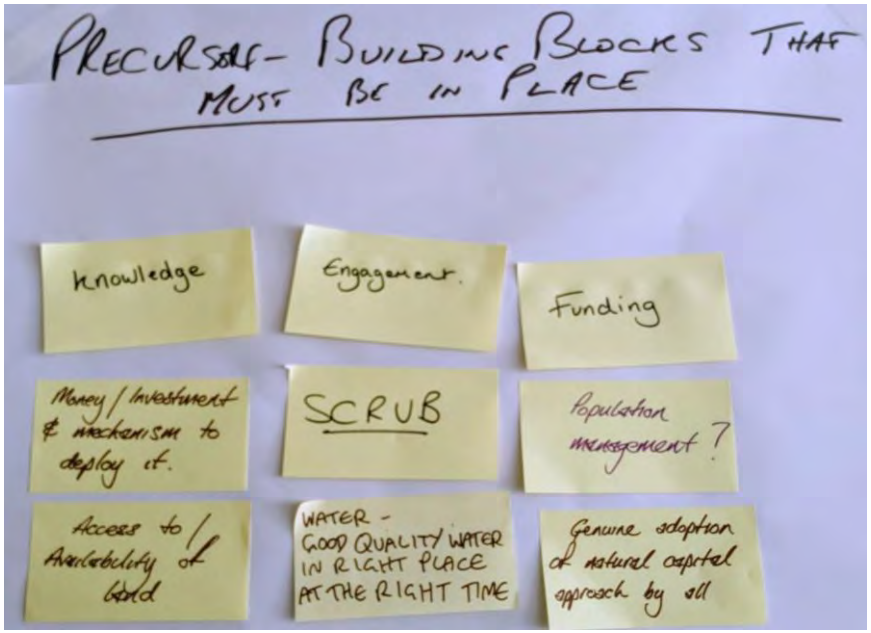
A summary of the outputs of stage 1 can be seen below. For example, within the survey, stakeholders were asked what changes they would like to see for the different habitats in Bedfordshire.

Prioritisation Workshop 1 (8 October 2023)

The key aims of the day were to explore the current 'LNRS' system, build a stronger community, to make sense of the narrative landscape and to look for innovative ideas to inform the future LNRS Initiative. An exercise during this workshop was to understand the current state of nature recovery 'TODAY, captures the current state of the system and the need to shift it ', what 'HELL – Everything possible goes wrong (by 2033)' could look like and 'HEAVEN – A perfect future (by 2033)' might be.



In addition, attendees were asked to highlight the building blocks that must be in place to deliver the HEAVEN scenario. The outputs show below

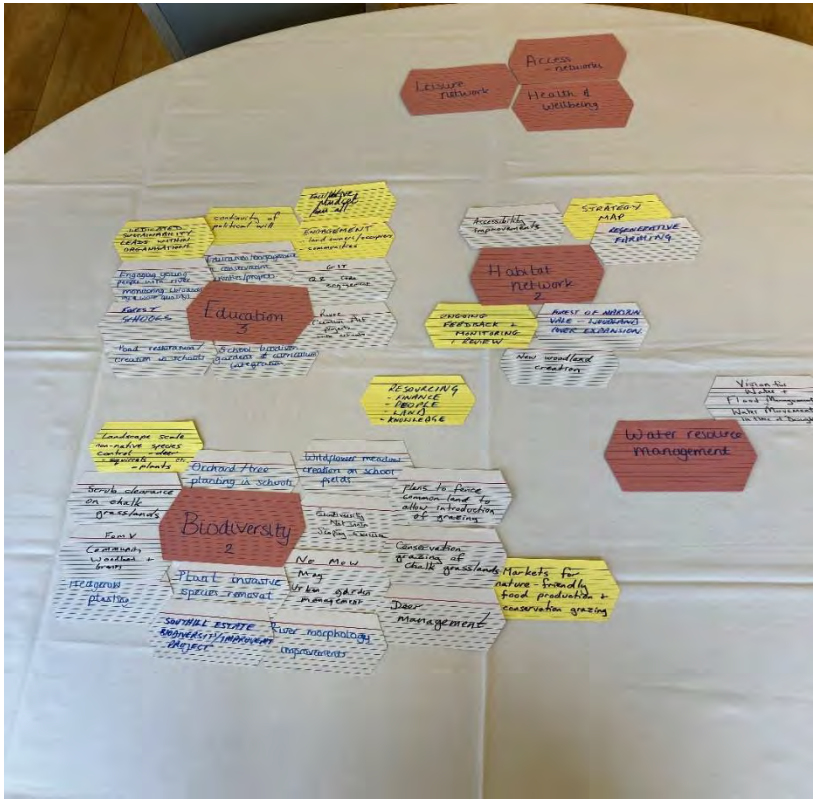


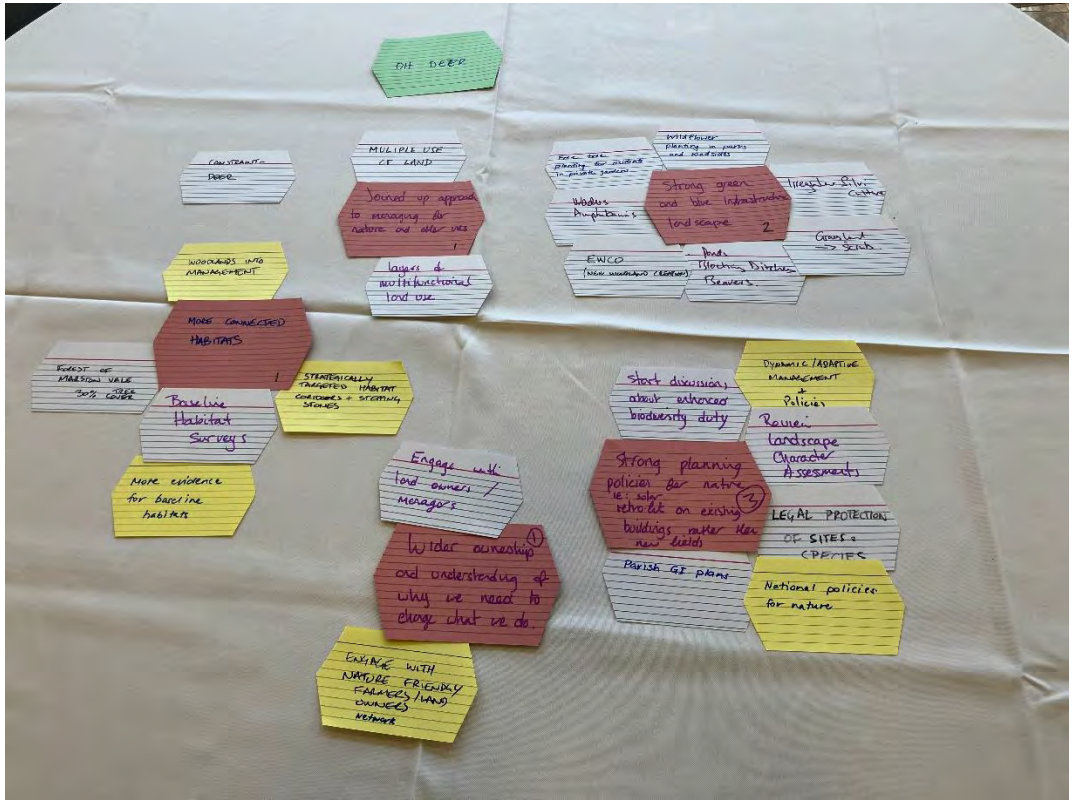
Prioritisation workshop 2 (21 March 2024)

Prioritisation workshop 2 built on the awareness raised through the first workshop and the initial aspirations set out for nature recovery. The aims of the workshop were to:

- Work through participant thoughts on the outcomes they'd like to see delivered through the strategy.
- What actions are currently being taken to deliver these outcomes.
- What additional actions may be required to deliver those outcomes.

Attendees were asked to put down potential outcomes on red card. Following this, what measures are currently being delivered to achieve these outcomes on white card and then what else is required on yellow. These measures were matched with the outcomes they would help achieve as show in the picture below. Examples of this exercise are shown below.





The outputs of this workshop and stakeholder survey were used to inform the draft outcomes and measures which were reviewed in stage 2 engagement below. Outcomes and measures are a core part of the strategy and should be described as set out in national statutory and non-statutory guidance. The results from the engagement in phase 1 were reviewed by the RA along with the prioritisation working group and consolidated into a draft list of outcomes. Further details of this process are shown within *Appendix 2 – Bedfordshire LNRS Prioritisation Methodology.*

Stakeholder survey 1 (25 March-31 May 2024)

An example of some of the responses to questions relating to changes to woodland and orchards and rivers and wetlands are shown in the table below:

What changes would you like to see in Bedfordshire's woodlands and orchards to support nature?	**What changes would you like to see in Bedfordshire's rivers and wetlands to support nature?**
more access to woodlands and water activities (so people don't have to travel out of county and so young people know their environment	Clean the water - see earlier replies re water activities
Fenced off areas so the public cannot enter	Maintain unpolluted water Retain wetland areas
Improved protection both at a site level and within sites, e.g. better control of access within these areas to ensure that nature has the space to recover. For example, trampling within ancient woodlands has a huge impact on wildflowers. We must recognise what we have before it is lost.	DEFRA's reports on the River Flit & Hit are worrying..... Too much sewerage and fertiliser run off.
Encouraging integrated environments - e.g. pig farming in orchards, wildflowers in woodlands	"Natural" management to optimise wider environmental benefits of watercourses.
I love dogs but currently worry about the sheer number of dogs *off the lead* constantly in many of our beautiful woodlands & country parks. They risk harming small mammals & ground nesting birds. As for orchards, a program of restoration & maintenance to prevent further loss.	Clean water, natural courses, should by appropriate habitats and natural flood management practises.
Larger buffers for existing woodland, allowance for natural regeneration and connection of habitat. Orchards and woodland to be managed with environmentally friendly practises.	Limiting water abstraction. Too much house building leads to loss of ground water reserves.

Inclusion of rewilding schemes, keeping dogs on a lead in environmentally sensitive areas	No dumping of sewerage into rivers and waterways.
Greater and enforceable protection for the woodlands that exist especially where SSI status is given. No infringement into those woodland margins by other 'projects.' Where tree planting takes place, these to be appropriate native species for the existing habitat.	I would like to see all rivers and their tributaries given wide wildlife buffers - no development right up to the river / brook or on the immediate floodplain to support connectivity. Also fewer pollution events to support water quality, unstraightening of drainage brooks to diversify habitat.
Recognition of the habitats and the potential irreversible impact of uncontrolled access.	Less sewage dumping, fertiliser run off. and control of invasive species. Clean river water is the bedrock of promoting a broader recovery of nature.
Management programs that encourage biodiversity, re introduction or support of native species, with measurable and transparent monitoring. Communication and visibility of programmes.	Flood plain management. Slowing rivers by re wiggling where previously straightened. Showing riverbanks to wild.

Table 4 - Example of responses from Stakeholder Survey 1

Below shows a wordcloud showing the outputs of this questions relating to grassland and heathland is shown below and highlighted the importance to people of roadside verges and has helped shape the draft priorities.

Stakeholders were also asked if there are '*any species which you believe are particularly important in/for Bedfordshire'*. The outputs are shown below in a wordcloud.

This information has helped form the priorities but also the description of the strategy area.

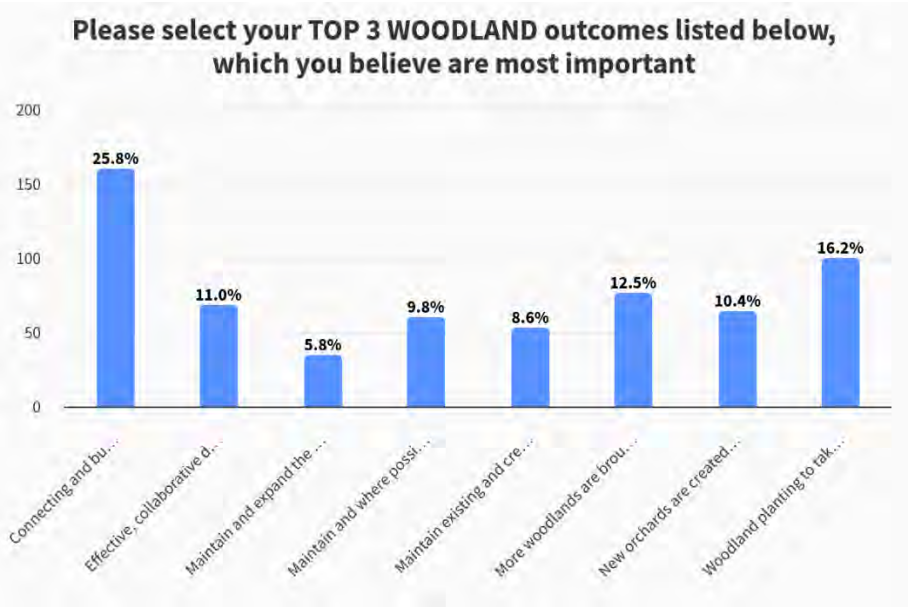
The prioritisation workshops had a similar aim to provide stakeholders with an open forum to suggest potential priority outcomes and measures.

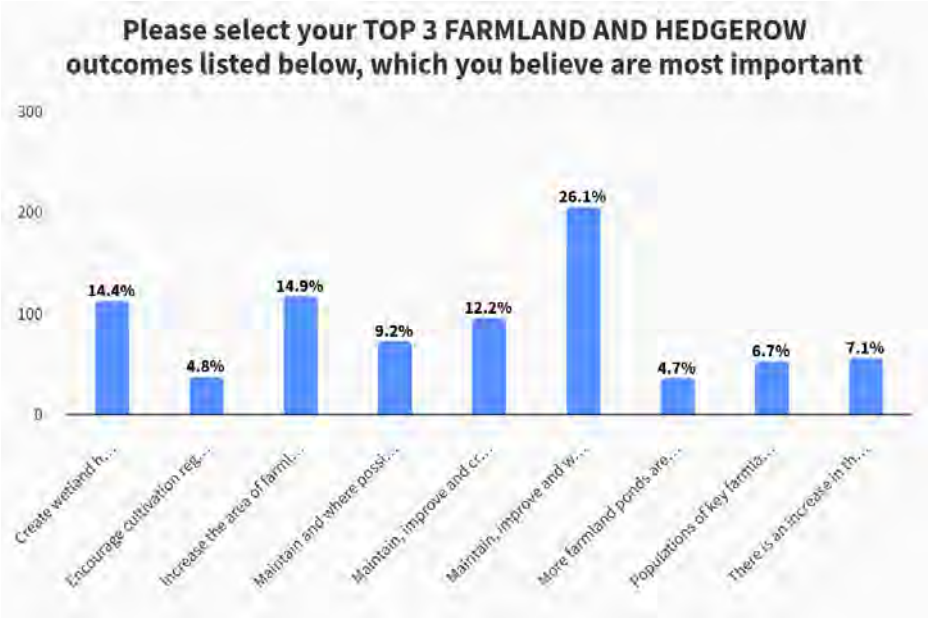
Engagement outputs – stage 2

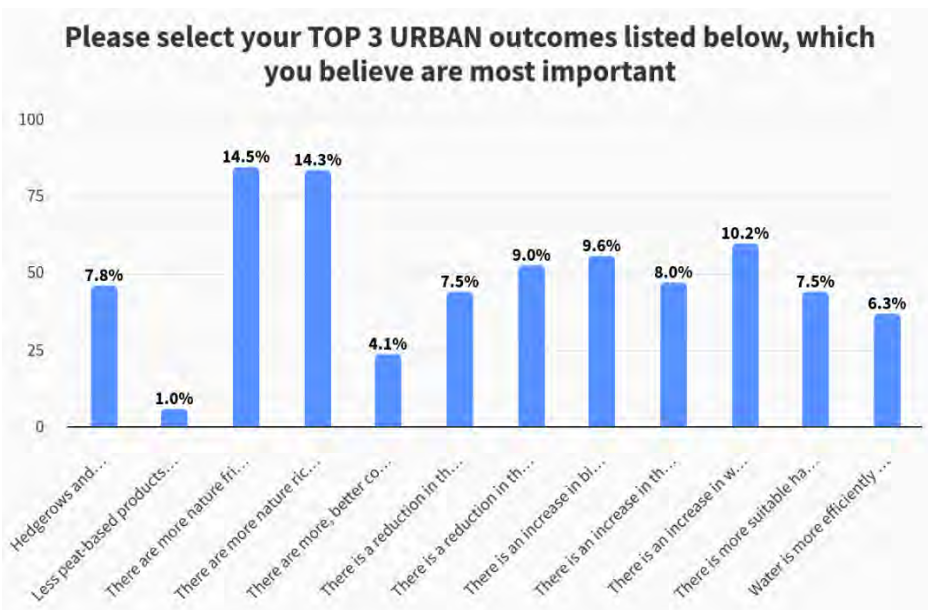
The second phase developed the phase 1 initial input into a longlist of possible priority outcomes and actions which would need further refining through phase 2. In addition, potential nature recovery opportunity areas were identified by stakeholders. This would contribute to the mapping of measures set out in the Local Habitat Map. Further information on this process is shown within *Appendix 1 – Bedfordshire LNRS Mapping Methodology.*

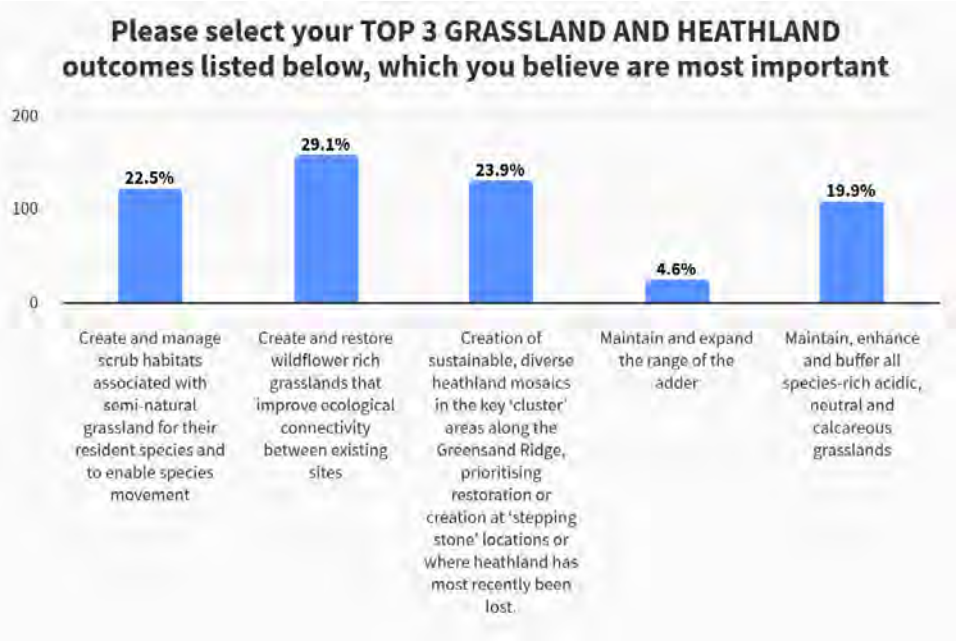
Stakeholder survey 2 (16 September – 31 October 2024)

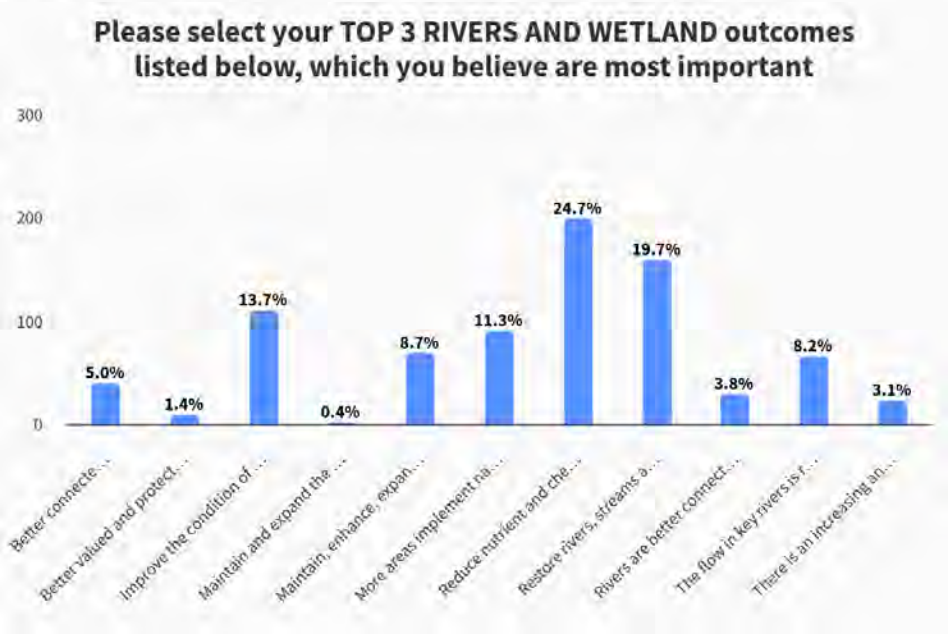
The survey focussed on the longlist of outcomes. It was shared with a wide range of stakeholders and received a good response. The survey primarily asked participants to vote for their preferred outcomes from the draft longlist provided. These outcomes were split into broad habitat categories and participants were asked to vote for their top 3. The results of the survey are shown below.



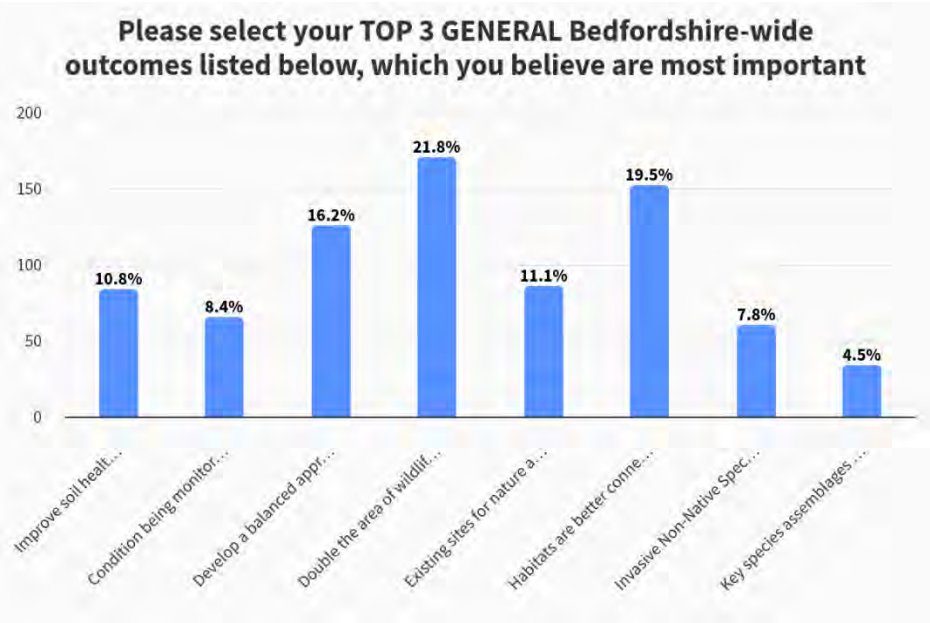



Please select your TOP 3 URBAN outcomes listed below, which you believe are most important
100
75
50
25
0
7.8%
1.0%
14.5%
14.3%
4.1%
7.5%
9.0%
9.6%
8.0%
10.2%
7.5%
6.3%
Hedgerows and…
Less peat-based products…
There are more nature fri…
There are more nature ric…
There are more, better co…
There is a reduction in th…
There is a reduction in th…
There is an increase in bi…
There is an increase in th…
There is an increase in w…
There is more suitable ha…
Water is more efficiently …


Please select your TOP 3 GRASSLAND AND HEATHLAND outcomes listed below, which you believe are most important
200
100
0
22.5%
29.1%
23.9%
4.6%
19.9%
Create and manage scrub habitats associated with semi-natural grassland for their resident species and to enable species movement
Create and restore wildflower rich grasslands that improve ecological connectivity between existing sites
Creation of sustainable, diverse heathland mosaics in the key 'cluster' areas along the Greensand Ridge, prioritising restoration or creation at 'stepping stone' locations or where heathland has most recently been lost.
Maintain and expand the range of the adder
Maintain, enhance and buffer all species-rich acidic, neutral and calcareous grasslands


Please select your TOP 3 RIVERS AND WETLAND outcomes listed below, which you believe are most important
300
200
100
0
5.0%
1.4%
13.7%
0.4%
8.7%
11.3%
24.7%
19.7%
3.8%
8.2%
3.1%
Better connecte…
Better valued and protect…
Improve the condition of …
Maintain and expand the …
Maintain, enhance, expan…
More areas implement na…
Reduce nutrient and che…
Restore rivers, streams a…
Rivers are better connect…
The flow in key rivers is r…
There is an increasing an…

Stakeholders were also asked to vote for the top 3 General Bedfordshire-wide outcomes. The results of the survey are shown below. Following a review of these general outcomes, it was felt some would fit better within existing habitats. For example, the general outcome *Invasive Non-Native Species are managed to reduce impacts upon biodiversity* was thought to fit better within the River and Wetland outcomes and measures.



The Commonplace online platform used for the Bedfordshire LNRS, allowed stakeholders to suggest areas of land that may be suitable for nature recovery. As part of this survey participants who own, farm or manage land were encouraged to *'let us know any areas you would like included in the strategy as opportunities for nature recovery*'. Through this process 33 land parcels were identified and have helped inform the Local Habitat Map.

Prioritisation workshop 3 (11 November 2024)

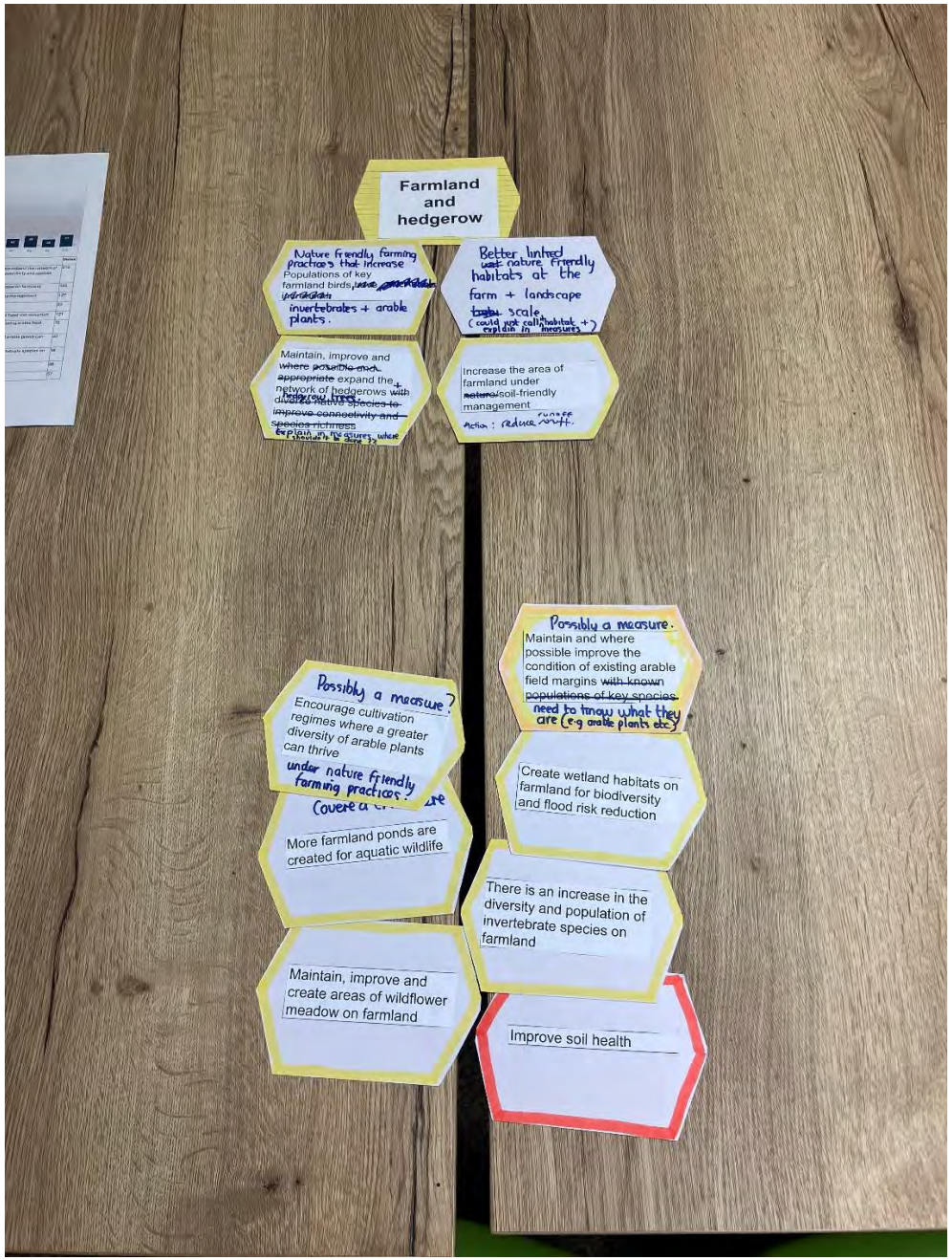
The aims of Prioritisation workshop 3 were to:

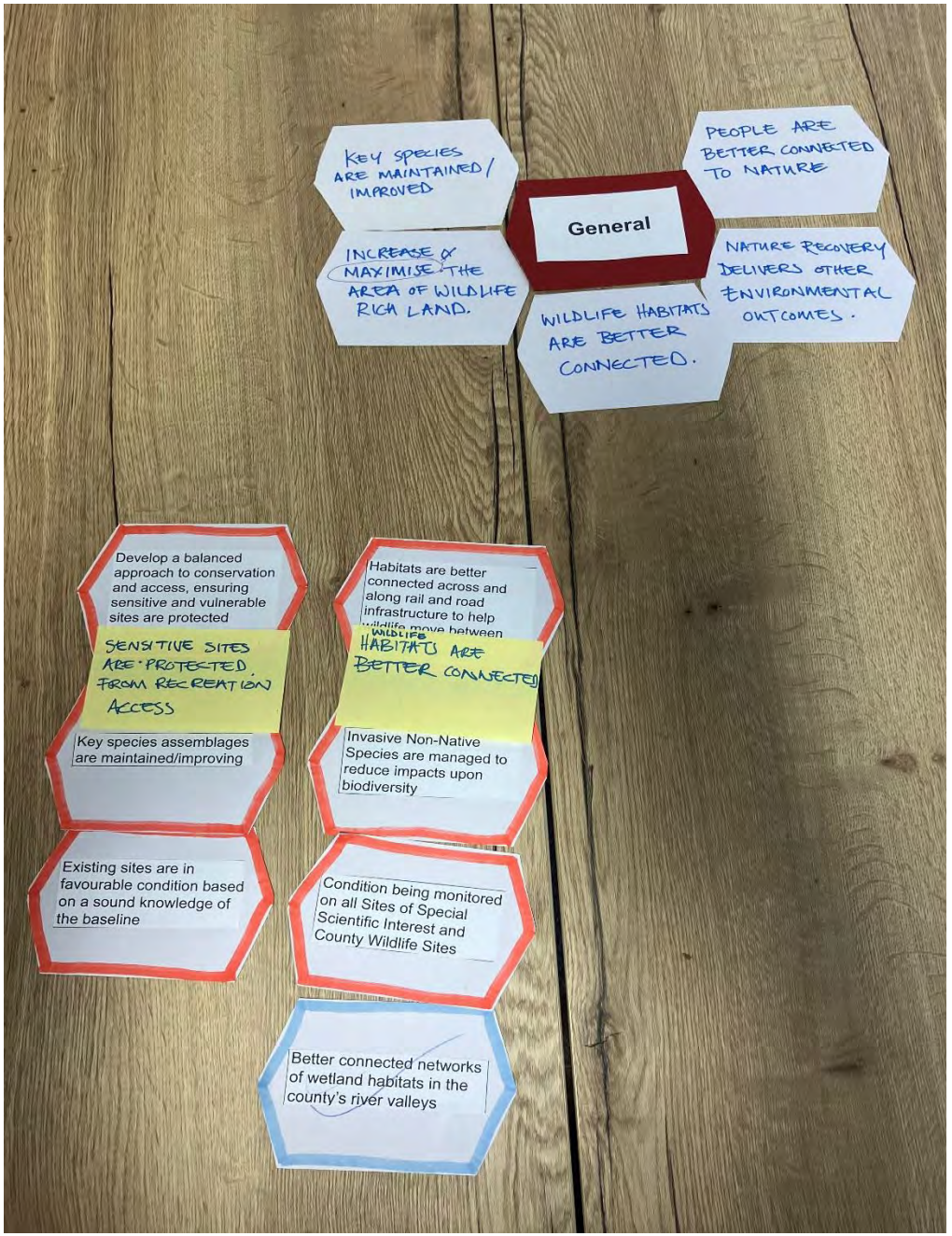
- Update attendees on the progress of the Bedfordshire LNRS including timescales and the prioritisation process
- Refine the longlist – prioritise down to a ‘shortlist’ (main task)
- Consider how to utilise alongside survey data
- Begin the process of mapping measures against priority outcomes

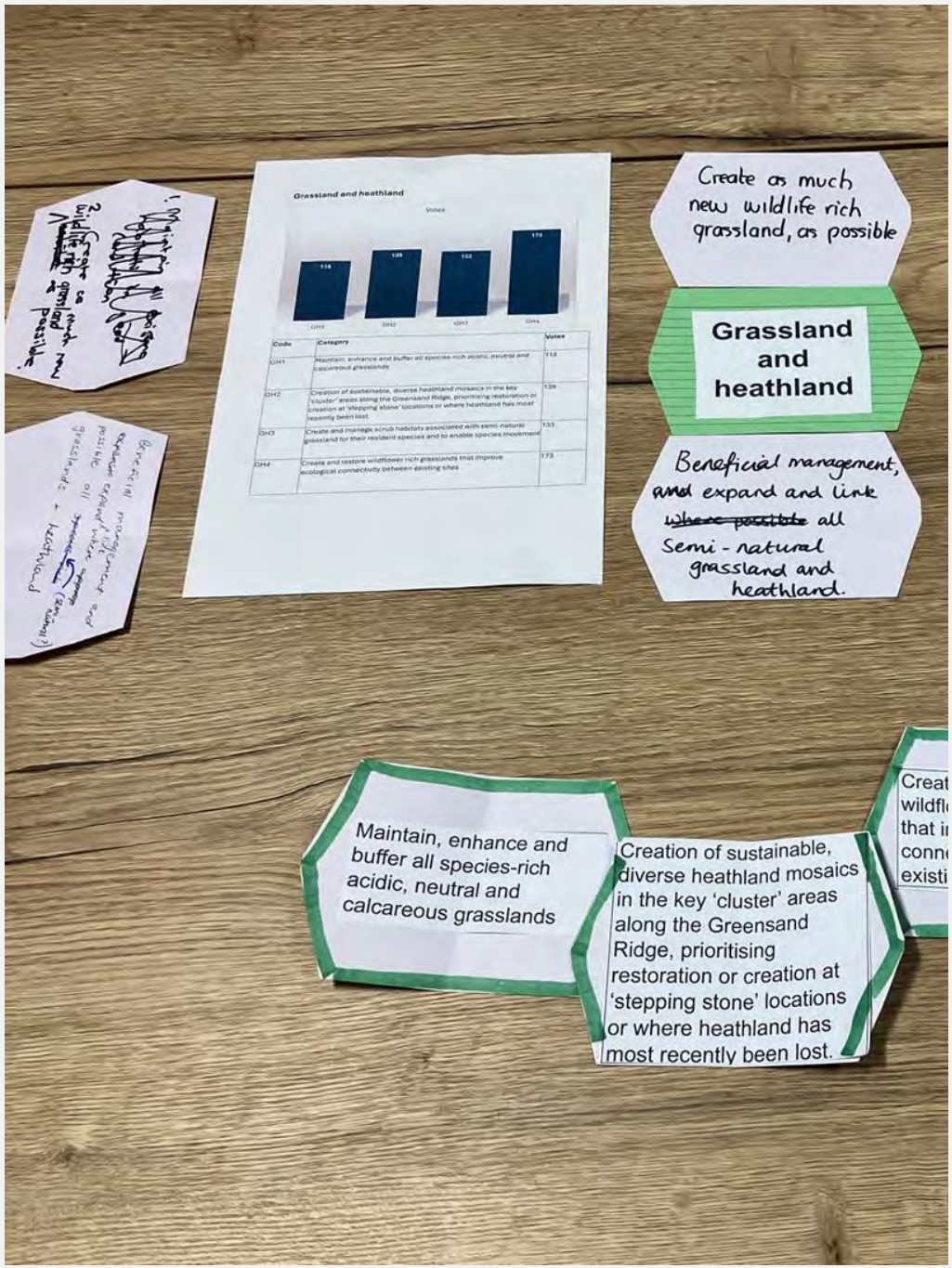
Participants were separated out into broad habitat groups on separate tables. The longlist of outcomes was then provided on card along with a broad criterion and the results from the stakeholder survey 2 to aid in decision making. Participants were then asked to:

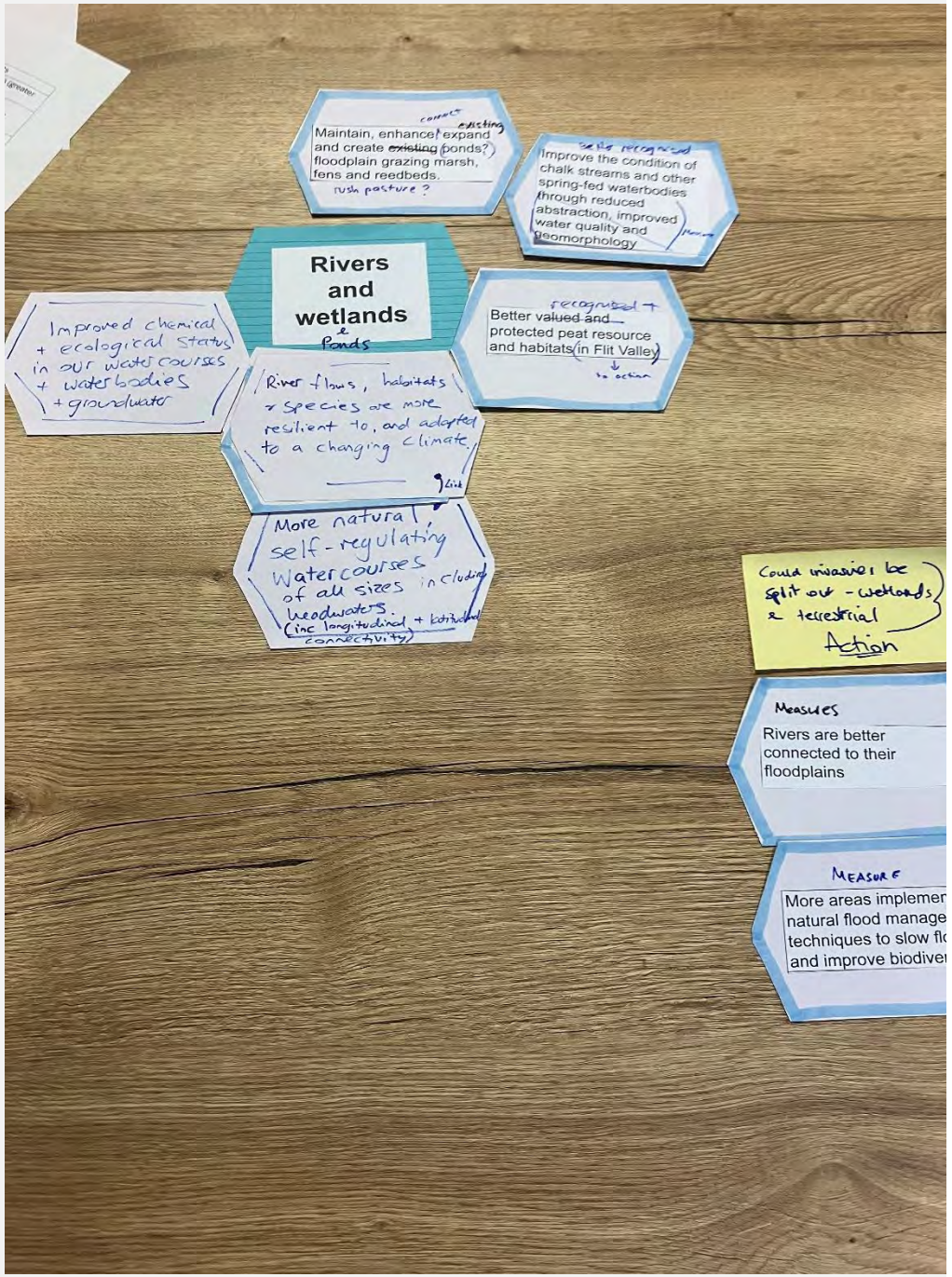
1. Separate 'Must have' touching the Group title and 'Nice to have' separated below the grouping.
2. Check if any outcomes can be combined.
3. Review the wording on each outcome.
4. Present the completed array to the group. Obtain consensus and note any differences of opinion.
5. Identify and capture all possible measures for your group next to the relevant outcome.

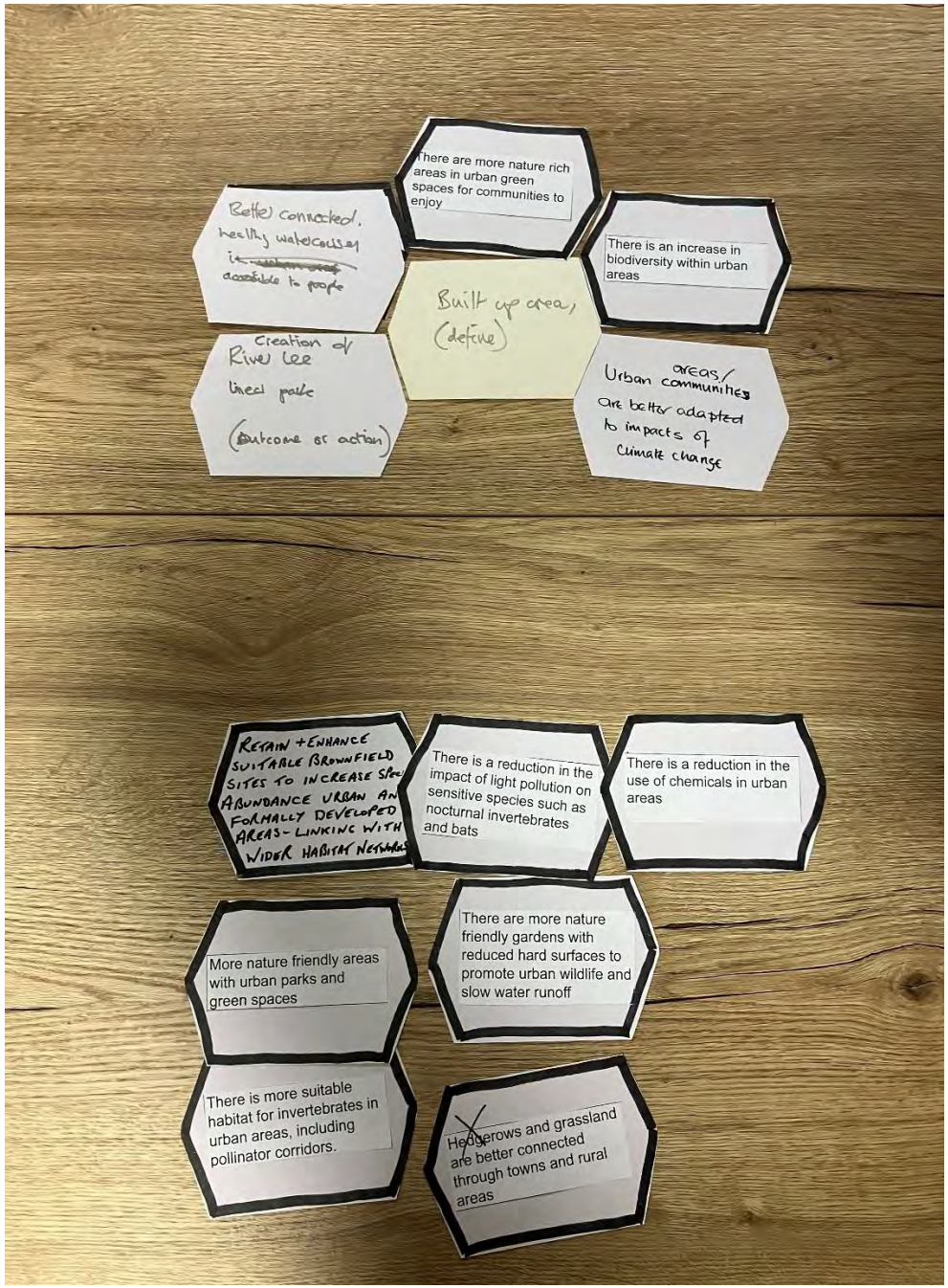
The outputs of this workshop are shown in the photographs below.

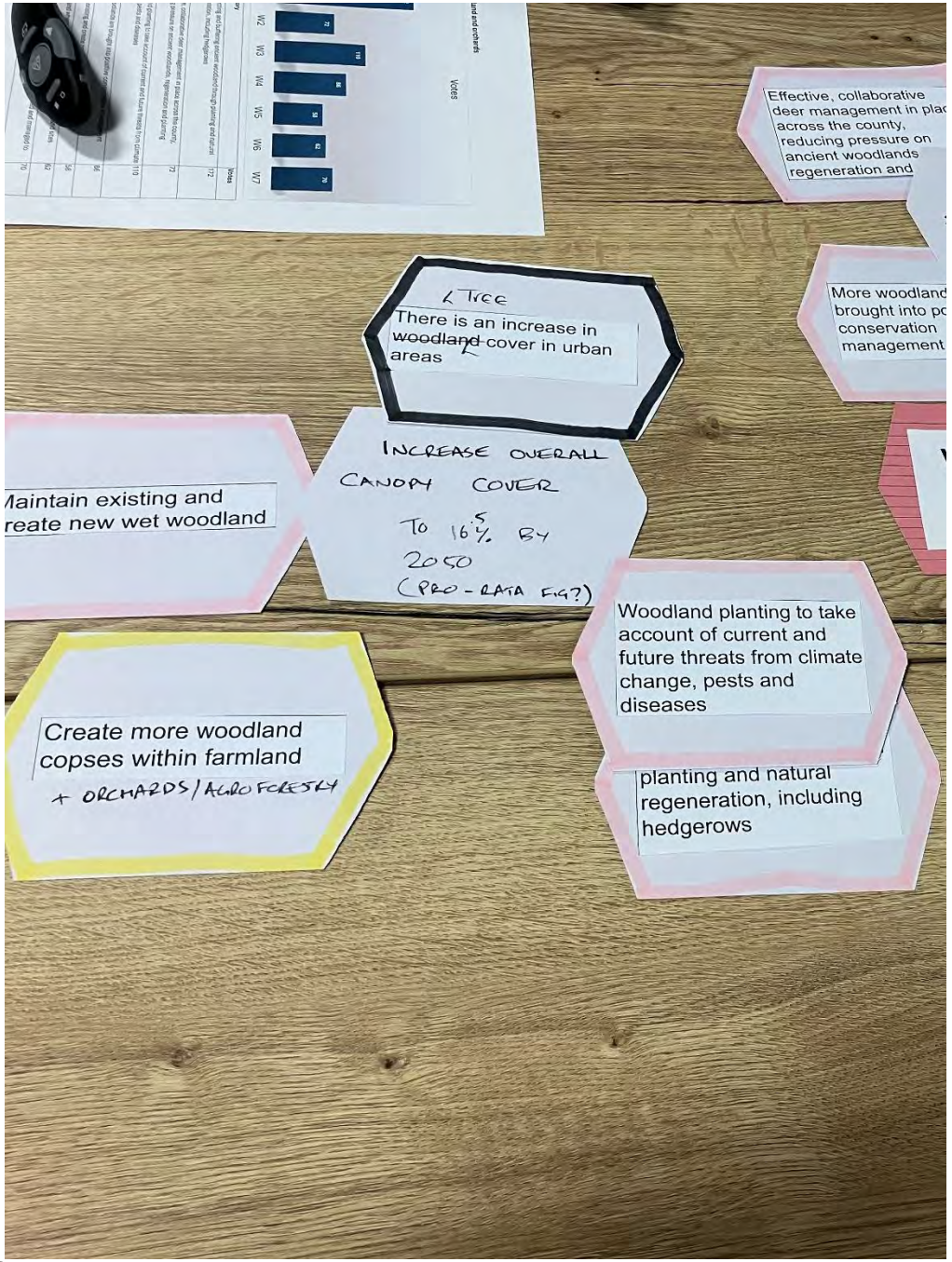

Farmland and hedgerow
Nature friendly farming practices that increase
Populations of key farmland birds, ~~and~~ invertebrates + arable plants.
Better linked nature friendly habitats at the farm + landscape scale
(could not call habitat + measures)
Maintain, improve and where possible ~~and appropriate~~ expand the network of hedgerows with ~~diverse~~ native species to improve connectivity and ~~species richness~~
Increase the area of farmland under ~~nature~~/soil-friendly management
Action: reduce runoff.
Possibly a measure.
Maintain and where possible improve the condition of existing arable field margins ~~with known populations of key species~~ need to know what they are (e.g arable plants etc)
Possibly a measure?
Encourage cultivation regimes where a greater diversity of arable plants can thrive under nature friendly farming practices.
Create wetland habitats on farmland for biodiversity and flood risk reduction
More farmland ponds are created for aquatic wildlife
There is an increase in the diversity and population of invertebrate species on farmland
Maintain, improve and create areas of wildflower meadow on farmland
Improve soil health


KEY SPECIES ARE MAINTAINED / IMPROVED
PEOPLE ARE BETTER CONNECTED TO NATURE
General
INCREASE & MAXIMISE THE AREA OF WILDLIFE RICH LAND.
NATURE RECOVERY DELIVERS OTHER ENVIRONMENTAL OUTCOMES.
WILDLIFE HABITATS ARE BETTER CONNECTED.
Develop a balanced approach to conservation and access, ensuring sensitive and vulnerable sites are protected
SENSITIVE SITES ARE PROTECTED FROM RECREATION ACCESS
Habitats are better connected across and along rail and road infrastructure to help wildlife move between
WILDLIFE HABITATS ARE BETTER CONNECTED
Key species assemblages are maintained/improving
Invasive Non-Native Species are managed to reduce impacts upon biodiversity
Existing sites are in favourable condition based on a sound knowledge of the baseline
Condition being monitored on all Sites of Special Scientific Interest and County Wildlife Sites
Better connected networks of wetland habitats in the county's river valleys


Grassland and heathland
Votes
118
139
133
173
OH1
OH2
OH3
OH4
Code
Category
Votes
OH1
Maintain, enhance and buffer all species-rich acidic, neutral and calcareous grasslands
118
OH2
Creation of sustainable, diverse heathland mosaics in the key 'cluster' areas along the Greensand Ridge, prioritising restoration or creation at 'stepping stone' locations or where heathland has most recently been lost.
139
OH3
Create and manage scrub habitats associated with semi-natural grassland for their resident species and to enable species movement
133
OH4
Create and restore wildflower rich grasslands that improve ecological connectivity between existing sites
173
Create as much new wildlife rich grassland, as possible
Grassland and heathland
Beneficial management, and expand and link ~~where possible~~ all Semi-natural grassland and heathland.
Maintain, enhance and buffer all species-rich acidic, neutral and calcareous grasslands
Creation of sustainable, diverse heathland mosaics in the key 'cluster' areas along the Greensand Ridge, prioritising restoration or creation at 'stepping stone' locations or where heathland has most recently been lost.


Maintain, enhance/expand and create ~~existing~~ ponds? floodplain grazing marsh, fens and reedbeds.
rush pasture?
Improve the condition of chalk streams and other spring-fed waterbodies through reduced abstraction, improved water quality and geomorphology
Rivers and wetlands & Ponds
Improved chemical + ecological status in our watercourses + waterbodies + groundwater
Better valued and protected peat resource and habitats in Flit Valley
River flows, habitats + species are more resilient to, and adapted to a changing climate.
More natural, self-regulating watercourses of all sizes including headwaters. (inc longitudinal + lateral connectivity)
Could invasives be split out - wetlands & terrestrial
Action
Measures
Rivers are better connected to their floodplains
Measure
More areas implemen natural flood manage techniques to slow flo and improve biodiver


There are more nature rich areas in urban green spaces for communities to enjoy
Better connected, healthy watercourses ~~in~~ accessible to people
There is an increase in biodiversity within urban areas
Built up area, (define)
Creation of River Lee linear park (outcome of action)
Urban areas/ communities are better adapted to impacts of climate change
RETAIN + ENHANCE SUITABLE BROWNFIELD SITES TO INCREASE SPEC ABUNDANCE URBAN AN FORMALLY DEVELOPED AREAS - LINKING WITH WIDER HABITAT NETWORK
There is a reduction in the impact of light pollution on sensitive species such as nocturnal invertebrates and bats
There is a reduction in the use of chemicals in urban areas
More nature friendly areas with urban parks and green spaces
There are more nature friendly gardens with reduced hard surfaces to promote urban wildlife and slow water runoff
There is more suitable habitat for invertebrates in urban areas, including pollinator corridors.
Hedgerows and grassland are better connected through towns and rural areas


Effective, collaborative deer management in plac across the county, reducing pressure on ancient woodlands regeneration and
More woodland brought into po conservation management
1 TREE
There is an increase in ~~woodland~~ cover in urban areas
Maintain existing and reate new wet woodland
INCREASE OVERALL CANOPY COVER TO 16.5% BY 2050 (PRO-RATA FIG?)
Woodland planting to take account of current and future threats from climate change, pests and diseases
Create more woodland copses within farmland + ORCHARDS/AGROFORESTRY
planting and natural regeneration, including hedgerows

The outputs of this workshop and the survey, along with individual discussions with stakeholders, were reviewed by the RA and steering group to prepare the draft priority outcomes and actions for formal consultation.

Challenges

The LNRS is a new process and awareness was likely to be relatively low amongst key stakeholder groups. The relevance to them may not be obvious. This presented a challenge to gathering input into the strategy. Therefore, awareness raising was a key aspect of the strategy.

There was also a lack of understanding about what the strategy means for those whose land may be impacted. Clear messaging around what the LNRS and what it means for landowners had to be developed.

There was some scepticism about how this strategy would be different to previous strategies which were aiming to deliver nature recovery, and also how the LNRS would link to them.

Changes

- The survey was shared with a wide range of stakeholders and received almost twice the number of responses. This may be due to the much wider advertising publicly and the utilisation of existing events and awareness raising efforts through stage 1. Another possible reason is that survey 2 was simpler, with less free text which made survey 1 more time consuming to complete.
- Utilising existing events was considered productive. It reduced resource on both the organisers and the responsible authority. It also meant stakeholders needed to attend fewer events and those that were unaware of the LNRS could engage through other networks.
- The absence of a Farm Cluster in Bedfordshire meant that other mechanisms were needed to engage with the agricultural sector. Input and sharing of information relating to the LNRS from the NFU and CLA and individual land managers such as those from the Southill Estate was extremely valuable. However, further targeted engagement will be required with this sector to continue to deliver the engagement goals.
- External facilitation of workshops helped to provide impartiality and was well received. The prioritisation workshops were facilitated by Ron Donaldson – Narrative Ecologist. This consistency helped both the facilitator progress the workshops and attendees who were familiar with the style.
- Commonplace was used as an online engagement platform. This hosted the stakeholder survey, FAQs and links to events. Stakeholders could also sign up to news updates. Linking the mapping with this platform was challenging and alternatives platforms may need exploring.
- Posters were produced to place in locations such as leisure centres, libraries and nature reserves. These included a QR code and linked to the stakeholder survey
- Drop-ins had some success in capturing those interested in nature. Survey results and website visits did show an increase around the drop in period. However, more extensive advertising would encourage specific visits to chosen locations. More urban locations could be added to the possible drop-ins. Handouts with the QR code on worked well as stakeholder could take these away.

Additional information

Engagement activities list

The *Table* below shows the engagement activities that took place during the development of the LNRS

When	Stakeholder Group	Stakeholder(s)	Event type
19/09/23	Development	Luton Developers Forum	Presentation
06/10/23	Multiple	Environmental organisations, major landowners, government agencies	Workshop
08/11/23	Strategic Environmental Partnership	BEEN	Presentation
21/11/23	Farmers and landowners	Centre Parcs	Meeting
01/12/23	Farmers and landowners	Farmers, landowners	newsletter
11/12/23	Councillors	Council Councillors	Briefing
12/12/23	Strategic Environmental Partnership	Beds LNP	Presentation and survey
14/12/23	Local Planning Authority	CBC planners	Presentation
19/12/23	Farmers and landowners	Landowners	Newsletter
15/01/24	Multiple	Greensand Country Landscape Partnership	Presentation
16/02/24	Farmers and landowners	Anglia Water	Meeting
27/02/24	Farmers and landowners	Tarmac	email
27/02/24	Farmers and landowners	Bedfordia Estate	email
27/02/24	Farmers and landowners	Bedford Estate	email
27/02/24	Funding	Nature recovery project	email
05/03/24	Councillors	CBC Cllr Walsh	Meeting
08/03/24	Development	CBC Side panel event	Presentation

21/03/24	Multiple	Environmental organisations, major landowners, government agencies, local authorities	Workshop
22/03/24	Councillors	All CBC ward councillors	Presentation
25/03/24	All	All (main focus landowners and farmers/community groups)	Online survey
25/03/24	Town and Parish Cllrs	All CBC T&P councillors	Presentation
08/04/24	Landowners	Suez	Meeting
10/04/24	Neighbouring authority	Cambridgeshire Natural Env Planning and policy forum	Presentation and workshop
11/04/24	Farmers and landowners	Bedford Estates	Meeting
26/04/24	Multiple	Blue Lens LNRS	Workshop
29/04/24	Councillors	CBC Cllr Walsh, Cllr Wye	Meeting
07/05/24	Public	Public	Drop-in
08/05/24	Farmers and Landowners	Open to all farmers and landowners	Webinar
10/05/24	Public	Public	Drop-in
13/05/24	Councillors	BBC Cllr Weir	Meeting
15/05/24	Public	Public	Drop-in
17/05/24	Public	Public	Drop-in
17/05/24	Supporting authority	Bedford Borough Council planners	Presentation
18/05/24	Public	Public	Drop-in
19/05/24	Public	Public	Drop-in
20/05/24	Public	Public	Drop-in
21/05/24	Public	Public	Drop-in
29/05/24	Supporting authority	Luton Borough Council planners	Meeting
04/06/24	Landowners	Whitbread Estate	Meeting
25/07/24	Councillors	LBC Cllr Hussain	Meeting
01/08/24	Landowners	Woburn Safari	Meeting
19/09/24	Public	Bedslife Magazine - Ampthill and Flitwick & Bedford Editions	Advertising
19/09/24	Public	Bedslife - online	Advertising
19/09/24	Public	Bedford Blues Programme	Advertising

19/09/24	Public	Bedford Blue - webpage	Advertising
19/09/24	Business	Be Central Bedfordshire	Advertising
19/09/24	Landowners	County Wildlife Sites contacts	email
19/09/24	Landowners	Farmer contacts on webinar	email
19/09/24	Landowners	Country Land and Business Association	email
19/09/24	Landowners	National Farmers Union	email
19/09/24	Landowners	Young Farmers group	email
19/09/24	Public	Wildlife Trust newsletter	email
19/09/24	Public	Greensand Trust	email
19/09/24	Public	Forest of Marston Vale	email
19/09/24	Environmental Organisation	Chilterns Conservation Society	email
19/09/24	Environmental Organisation	Natural England newsletter	email
19/09/24	Environmental Organisation	Forestry Commission newsletter	email
19/09/24	Landowners	Local authority tenant farmers	email
19/09/24	Town and Parish Cllrs	Town and parish council clerks	email
19/09/24	Town and Parish Cllrs	Beds Association of Town and Parish Councils	newsletter
19/09/24	Public	Leisure facilities	Posters
19/09/24	Public	Libraries	Posters
19/09/24	Internal staff	CBC sustainability network	email
19/09/24	Public	CBC, BBC and LBC social media	email
20/09/24	Landowners	Greensand Landscape Partnership	Meeting
08/10/24	Landowners	Greensand Country Landscape Partnership	Workshop
08/10/24	Local Planning Authority	CBC sustainability network	Presentation
14/10/24	Farmers and landowners	Farmers and landowners	Webinar
18/10/24	Councillors	Members	email
21/10/24	Public	Leighton Buzzard Friends of the Earth	Presentation
24/10/24	Neighbouring authority	Hertfordshire LNRS	Workshop
25/10/24	Public	Luton Borough – eLuton Newsletter	newsletter
29/10/24	Multiple	Wildlife Working Group	Workshop
11/11/24	Multiple	Farmers, environment organisations, local authorities	Workshop
14/11/24	Farmers and landowners	NFU Bedford AGM	Meeting
22/11/24	Multiple	Greensand Landscape Partnership - Heathland Forum	Workshop

27/11/24	Farmers and landowners	NFU East Beds and Maulden	Meeting
04/12/24	Farmers and landowners	Natural Engalnd Catchment Sensitive Farming	Presentation
16/01/25	Councillors	BBC Cllr Gribble	Meeting
14/02/25	Councillors	CBC Cllr Zerny	Meeting

Table 5 - list of engagement and communication events as part of the LNRS development

Full organisation list

The *Table* below outlines the different organisations, and their sectors, that were involved in some capacity, in stakeholder events and engagement activities.

Council Councillors and officers	**Strategic environmental partnerships**
Central Bedfordshire Council	Bedfordshire Local Nature Partnership
Luton Borough Council	Greensand Country Landscape Partnership
Bedford Borough Council	Beds Environmental Education Network
Environmental Organisations	Bedfordshire Wildlife Working Group
Wildlife Trust	Upper Bedford Ouse Catchment Partnerships
Greensand Trust	**Town and Parish Councils**
Bedfordshire Rural Communities Charity	Bedfordshire Association of Town and Parish Councils
Royal Society for the Protection of Birds	Shefford Town Council
Canal and Rivers Trust	Sandy Town Council
Friends of Marston Vale	Fairfield Parish Council
Zoological Society London	Studham Parish Council
Woodland Trust	Blunham Parish Council
National Trust	Gravenhurst Parish Council
Freshwater Habitats Trust	Ampthill Town Council

Groundwork	Toddington Parish Council
NatureSpace Partnership	Old Warden Parish Council
Bedfordshire Biodiversity Recording and Monitoring Centre	Sundon Parish Council
Bedfordshire and Milton Keynes Waterway Park	Flitwick Town Council
Chiltern National Landscape	**Farmer, landowner and land managers**
Natural Capital Solutions	Country Land and Businesses Association
Affinity Water	National Farmers Union
Bedfordshire Natural History Society	Bedford Estate
South Bedfordshire Friends of the Earth	Centre Parks
Anglia Water	Southill Estate
Local funders	NHS estates
Nature Recovery Project	Crown Estate
Neighbouring county LNRS leads	Tarmac
North Northamptonshire Council	Toddington Park
Hertfordshire County Council	Hill Farm
Buckinghamshire County Council	Home Farm
Cambridgeshire County Council	Parrish Farm
Government agencies	Lower Farm
Natural England	Suez
Foresty Commission	Shuttleworth Estate
Enviornment Agency	Bedford Blues
Defra	

Table 6 - list of organisations who have been contacted or engaged about the LNRS in some form

Central Bedfordshire in contact

Find us online: www.centralbedfordshire.gov.uk

Call: 0300 300 8XXX

Email: customers@centralbedfordshire.gov.uk

Write to: Central Bedfordshire Council,
Priory House, Monks Walk, Chicksands,
Shefford, Bedfordshire, SG17 5TQ