BedsLife
Bedfordshire & Luton Biodiversity Partnership

Rebuilding Biodiversity in Bedfordshire & Luton

October 2006

NATURAL ENGLAND

Bedfordshire & Luton Biodiversity Recording & Monitoring Centre

Bedfordshire county council

Bedfordshire and Luton Biodiversity Forum

The Forum forms the core of a wide partnership of organisations and individuals committed to implementing some or all of the Bedfordshire and Luton Biodiversity Action Plan. Forum members steer and stimulate evolution of the partnership.

Objectives

1. To identify strategic priorities for biodiversity action in the County
2. In conjunction with the biodiversity working group produce a coherent programme of biodiversity action
3. To identify and pursue opportunities to integrate biodiversity with other initiatives
4. To promote a wide understanding of biodiversity issues.
5. To ensure the effective implementation and monitoring of the Biodiversity Action Plan
6. To secure the resources necessary to make substantial progress
7. To facilitate networking between members and encourage partnership working.

Membership

Members are expected to play an active part in setting the agenda and for producing concise reports or recommendations necessary for effective decision making.

All Local Authority Planning Departments, Local Authority ecologists/conservation officers, Wildlife Trust, RSPB, English Nature, Bedfordshire Natural History Society, BTCV, The Greensand Trust, The North Chilterns Trust, Forest of Marston Vale, Ivel and Ouse Countryside Project, Environment Agency, FWAG, Internal Drainage Board, DEFRA/RDS.

Acknowledgements

Rebuilding Biodiversity has been developed by the Biodiversity Recording and Monitoring Centre for Bedfordshire and Luton on behalf of Bedfordshire and Luton Biodiversity Forum. Information which forms much of the basis for the report has been collated and managed by Keith Balmer and Katharine Banham who have also drafted and redrafted the maps, displaying considerable expertise and patience as many subtle alterations and additions have arisen from consultations. The massive task of drafting and subsequently updating the biodiversity characterisations has been carried out single-handedly by Phil Irving of the Greensand Trust. The initial draft of the whole report was completed to a tight and demanding timetable to enable a final draft to inform work on a green infrastructure report for the County. Subsequent redrafting of volume 1 during 2006 has been carried out by John Comont, County Ecologist for Bedfordshire County Council on behalf of the Biodiversity Forum.

Funding, without which completion of the project would not have been possible, has come from English Nature, now part of Natural England, Bedfordshire County Council and the Bedfordshire and Luton Green Infrastructure Consortium.

John Comont.
Chair – Bedfordshire and Luton Biodiversity Forum

October 2006

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Rebuilding Biodiversity

1 Summary

The Biodiversity Action Plan for Bedfordshire and Luton (BAP) launched in 2001 envisaged thriving urban and rural areas increasingly rich in biodiversity. Subsequent work has looked closely at the distribution of key habitats and species and the development of the Biodiversity Recording and Monitoring Centre has allowed improved analysis of biodiversity information from many sources. In parallel, the Bedfordshire Design Forum has developed a landscape assessment and strategy for Bedfordshire which integrates natural and cultural aspects of the countryside. Overshadowing all of this work climate change studies predict local changes which could have profound affects on the present viability of important habitats and species populations.

Rebuilding Biodiversity sets out to address three key issues:

- *What is the biodiversity character of the various landscape units of Bedfordshire and Luton and how do the BAP targets relate to these areas?*
- *Where in Bedfordshire and Luton are the areas of greatest potential for the conservation, enhancement, restoration and creation of BAP priority habitats?*
- *Is it possible to identify opportunities for reduced fragmentation of habitats by building ecological networks which will allow expansion of populations of important species and allow species movement across landscapes?*

In addressing these issues the document draws on the work carried out since production of the Biodiversity Action Plan to describe the biodiversity assets and opportunities for the whole landscape of the county and relates the habitat and species targets of the plan to the various landscape areas identified in the landscape strategy.

The existing biodiversity resource has been mapped and related to physical variables of the landscape such as soil type and susceptibility to flooding. Analysis of the biodiversity characterisation and mapping work identified areas with significant quantities of priority habitats, species and designated sites which, if restored, conserved, expanded, linked and buffered against adverse influences could form important ecological networks. The work identified some zones which were of particular importance for one type of habitat such as lowland calcareous grassland and in these areas achievement of very specific Biodiversity Action Plan objectives is seen as a priority. Elsewhere the landscape contained important collections of a range of different habitats. In these areas options for an improved ecological network are more varied and restoration and enhancement of biodiversity could involve new woods, grasslands, hedgerows and arable wildlife conservation initiatives. The resultant opportunity map illustrates the potential for a coherent network of wildlife rich greenspace which could form a more robust and resilient ecologically functional landscape.

Inevitably, focus on core areas of existing biodiversity and identification of areas of opportunity for reversal of habitat fragmentation leads to the separation of these opportunity areas from the remainder of the landscape. These areas have a much more dispersed biodiversity interest and emphasis is more towards achieving Biodiversity Action Plan targets of the arable farmland landscape, though here too there may be future prospects for new habitat links which would improve the coherence of the biodiversity network.

Rebuilding biodiversity attempts to communicate a broad scale strategic vision and to place Biodiversity Action Plan targets in the context of the landscape. The more intimate and complex scale of urban areas sits uncomfortably with this broad approach and no attempt has been made to identify opportunity areas within the major towns. In many cases however

it can be seen that these strategic biodiversity networks do abut urban areas and their exact relationship with the towns is a priority for further work.

The biodiversity characterisation will inform further development of the Landscape Strategy and future reviews of the Biodiversity Action Plan. The opportunity map has already been used to form strategic green infrastructure planning and will form the context of more detailed spatial analysis of biodiversity objectives. Both form an important step in the development of the Biodiversity Action Plan and will help the Biodiversity Forum work towards achieving the long term vision of that plan.

2 Relating the Biodiversity Action plan to the landscape: biodiversity characterisation

2.1 Landscape character as the basis for biodiversity characterisation

At a national level the English Nature Natural Areas map is supported by detailed descriptions of the biodiversity of each area. This map was then incorporated with the Countryside Commission's Countryside Character map to produce Joint Character Areas. This provides a picture of landscape character at the national scale, incorporating both the natural and cultural aspects of the landscape.

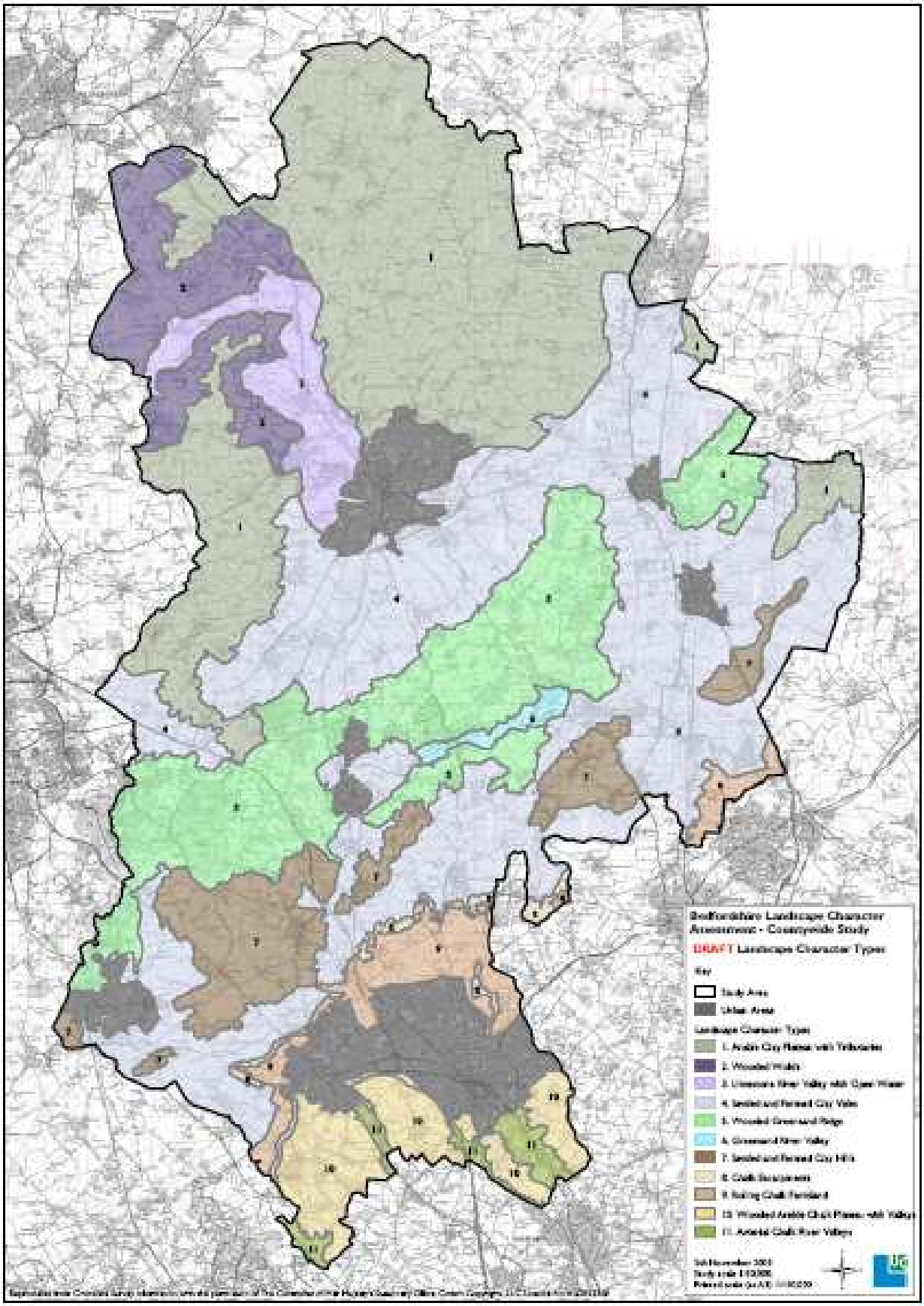
At a regional level the East of England Biodiversity Mapping Project identifies:

- Biodiversity conservation areas,
- Three different categories of Biodiversity enhancement areas,
- Strategic corridors – essentially rivers with buffer zones, and
- Urban biodiversity deprivation areas.

These four components were defined using "landscape description units" as the mapping unit on the assumption that, at a broad scale, each LDU has roughly uniform biogeographic character (Land Use Consultants & Terra Consult, 2005). Landscape description units are a spatial framework that integrates the natural (physical and biological) and cultural aspects of the countryside at the landscape scale. The framework has been developed in partnership with national agencies, local authorities and academic institutions.

The Bedfordshire landscape character assessment and strategy consists of a county-wide study undertaken at a scale of 1:50,000 followed by more detailed studies at a scale of 1:25,000. The "assessment" moves in the direction of being a "strategy" as more detail of steps needed to conserve or enhance the landscape are built into the document.

Bedfordshire Landscape Character (Draft 2003)



2.2 Biodiversity characterisation

The Bedfordshire and Luton Biodiversity Action Plan does not include any attempt to map the habitats although there have been initiatives over the last few years that have mapped priority habitats and looked at restoration strategies including the Wet Woodland Project and the Wildlife Trust Environmental Action Fund Chalk Grassland Restoration and Boulder Clay Ancient Woodland Strategies. The biodiversity elements of the landscape character assessment are of limited detail and do not link explicitly to the biodiversity action plan for Bedfordshire and Luton.

The data gathered to inform the development of the strategic biodiversity opportunity map offered the opportunity, not just to identify important areas for habitat conservation, enhancement and reduction of fragmentation, but to inform analysis of the biodiversity assets and opportunities within the whole landscape of the County. This information could then be informed by a summary of the biodiversity issues in each area and linked to the biodiversity action plan targets most relevant to that area. It was agreed that this would be done using the same landscape description units that have been defined for the Landscape Character Assessment.

For all landscape units a biodiversity characterisation has been compiled to include:

- The physical characteristics of the unit drawn in part from the landscape assessment and including geology and landform,
- A short general description of the existing biodiversity interest of the Landscape Description Unit (LDU) highlighting priority habitats and any rare/protected/characteristic species. Where appropriate for each subdivision of an LDU there may be a very brief note of any biodiversity characteristic peculiar to that area.
- An analysis of biodiversity trends, opportunities and constraints relating to each unit.
- Recommendations for conserving and enhancing biodiversity. Aspirations for habitat enhancement and linkages and reference to relevant BAP targets where ever appropriate.

This piece of work stands on its own as a description of the biodiversity character of all landscape units of the County and is included in full as **Volume 2 of Rebuilding Biodiversity.**

With the biodiversity maps included in this report it helps describe the special features and opportunities in every part of the County. It shows where biodiversity action plan targets are most relevant and may be used to target biodiversity action. The characterisation also of course puts flesh on the strategic opportunity map and should help focus and guide efforts to realise the

"*network of biodiversity areas and corridors to both conserve existing biodiversity and restore and regenerate biodiversity in areas which may be suffering from a current deficit, all set against the uncertain background of climate change",*

- envisaged by the Regional Biodiversity Forum.

3 Mapping the biodiversity resource and illustrating opportunity space for achieving BAP targets: opportunity mapping

3.1 Objectives

The Biodiversity Forum agreed that the biodiversity opportunity map should:

- Show, in broad strategic terms, areas of the greatest potential for the conservation, enhancement, restoration and creation of key habitats,
- Outline a future ecological network and provide a means focussing BAP targets in a manner that is accessible and potentially inspirational,
- Help crystallize the long term vision developed in the biodiversity action plan,
- Be capable of being used in community and spatial planning as well as by those involved in biodiversity conservation and countryside management, and
- Be the context for the development by local communities of more detailed biodiversity conservation strategies and projects.

The background to opportunity mapping is summarised in Appendix 2.

The national biodiversity action plan identifies national priority habitats and species and, in the Biodiversity Action Plan for Bedfordshire and Luton, these are supplemented by a number of local priorities. These national and local priorities form the basis for both the biodiversity characterisation of landscape units and the identification of biodiversity opportunity and enhancement areas on the Biodiversity Opportunity Map. Local and regional biodiversity targets and a full list of priority species and habitats are given in Appendix 4.

3.2 Data collection

Mapped data were collected from a wide range of sources (Appendix 3) and merged with a range of data sets already being developed within the Biodiversity Recording and Monitoring Centre. Information held by the Centre on the location, extent and character of approximately 400 County Wildlife Sites covering approximately 7% of the area of the County formed a key part of the data on existing non wooded habitats. Within all County Wildlife Sites patches of habitat were categorised wherever possible according to the biodiversity action plan broad habitat and priority habitat classification. The Record Centre has also been building a database of national priority species information. As these species may occur throughout the landscape records of their occurrence were added to the mapped data. During the period 2001 to 2005 there have been a number of detailed habitat studies including a chalk grassland restoration strategy, wet woodland project, heathland opportunity mapping (a regional project with local application), wetland restoration strategy and woodland cluster mapping. Data from all these sources were fed into the strategic map to help identify key biodiversity areas which would form the basis of ecological networks.

3.3 Map 1 Grassland habitats

3.3.1 Acid grassland and heathland

Soils capable of supporting acid grassland and heathland are largely limited in Bedfordshire to the greensand ridge, the environs of the Flit valley and land south of the Luton/Dunstable conurbation. The acid grassland and heathland BAP group have been active in recent years surveying and assessing the extent of these habitats and regionally, there has been detailed work on heathland opportunities. This regional work has been studied and amended locally and was used to delimit the opportunity area for these two habitats mapping shows the sites with around them opportunity areas defined by soil type. Soils which may be appropriate for heathland or acid grassland habitat but which presently support other priority habitat such as ancient woodland have been excluded from the heathland/acid grassland opportunity areas.

3.3.2 Calcareous grasslands, neutral grasslands and lowland meadows.

Soils derived from and heavily influenced by chalk in the south of the County are well mapped and the area contains many nationally important grassland sites. Unfortunately over the last 60 years or so many of these sites have developed extensive cover of mixed species scrub. With a threshold of just 20% canopy cover qualifying a site to be recorded as woodland parts of the key chalk grassland sites therefore show up on Forestry Commission mapping as “existing broadleaved woodland”! Data sets were adjusted in the final opportunity map to show much of each key site as calcareous grassland and it should be acknowledged that this is likely to include sometimes substantial areas of calcareous scrub and grassland mosaic. There has been extensive and careful study of conservation and enhancement opportunities for this habitat by the calcareous grassland BAP group and, as the appropriate soil types are well defined the identified opportunity area is clearly defined.

Elsewhere there are known to be calcareous grassland remnants along the edges of the upper Ouse valley over oolitic limestone and scattered in north Bedfordshire on chalky boulder clay soils. These are not the classic lowland calcareous grasslands of the chalk downs and for this mapping regime have been included within the broad spectrum recorded as “existing neutral grassland”. Semi-improved neutral grasslands were recorded in the 1987/88 phase 1 habitat survey of the County as occupying over 8000 hectares of land. Much of this grassland is of limited botanical, and probably general ecological, value. At present only those areas of neutral grassland that are within County Wildlife Sites have been digitally mapped. It is known that some other sites supporting this habitat are of ecological importance and recording and mapping these is a priority.

Lowland meadows are a national priority habitat. Within the broad spectrum covered by neutral grassland there are some important lowland meadows, some of which are Sites of Special Scientific Interest. Where ever possible these have been recorded separately.

Areas of opportunity around calcareous grassland are defined by soil types whilst around other grasslands a 300 metre buffer zone has been fitted to help illustrate potential patterns within the landscape.

3.4 Map 2 Arable field margins, hedgerows and national priority farmland species

Grassland sites are often associated with hedgerow systems, many of which add considerably to the overall biodiversity value of the site. Ancient and/or species rich hedgerows are a national priority habitat. Within arable farmland many hedgerows remain. Sometimes these are associated with headlands, lanes and ditch systems forming ribbons of significant habitat throughout the countryside. Unfortunately there is as yet no available mapping of the distribution of this important habitat.

Arable field margins are a national priority habitat and arable farmland supports a range of national priority species, some of which remain widespread in Bedfordshire. Agri-environment schemes have focussed on the establishment and conservation of field margins and hedgerows and data concerning the distribution of approved schemes from the Department of Environment, Food and Rural Affairs has been combined with records of priority species as an indication of the spread of some elements of farmland biodiversity.

3.5 Map 3 Woodland habitats

Broadleaved and mixed woodland has been mapped by the Forestry Commission. Information on this habitat is supplemented by identification of ancient woodlands and of a limited number of wood pasture sites. Whilst Bedfordshire contains the remnants of over 90 ancient “parks”, very few retain a collection of ancient trees within a grassland setting of sufficient quality to raise them to County Wildlife Site status for this factor alone. Also included within the woodland mapping is the location of habitat identified as national BAP priority, wet woodland. Pure conifer woods are scarce in Bedfordshire. Where such woods were identified they were excluded from the mapping process.

Notional opportunity areas have been illustrated by 300 metre buffers around sites except where more detailed studies have show that other factors, such as archaeological conservation make this impractical. Buffers on the woodland map do overlap other habitats of biodiversity value as these can be a vital element of a wooded environment. It is not intended to imply that woodland could supplant these habitats.

3.6 Map 4 Wetland habitats

Bedfordshire and Luton contain a range of important wetland habitats including eutrophic lakes, ponds, fen, marsh, swamp, floodplain grazing marsh, purple moor grass and rush pasture, rivers and streams, including some small chalk streams. Many of these habitats are part of the suite of national priority habitats. Unfortunately many sites are rather small and may often contain more than one habitat. For this strategic mapping process it was decided to pool the majority of the blocks of habitat under the generic umbrella term “wetland” with rivers and streams remaining separate. Unlike terrestrial habitats, rivers and streams have never been rigorously assessed against quality criteria for conservation but are increasingly being surveyed and found to be of significance for rare and protected species such as otter, water vole, white clawed crayfish and spined loach. Rivers and streams have therefore been mapped as part of the key wildlife resource.

Opportunity for wetland habitat extension and reduction of fragmentation was judged greatest within the floodplain systems of the river and stream network. It is acknowledged that not all floodplain has great potential in this regard so the wetland opportunity area was refined down by the biodiversity working group to show those areas within which the main objectives of the project could best be achieved.

3.7 Map 5 National priority species and designated sites

Important wildlife sites may be covered by a range of designations. In the past a map of designated sites has often been the only system used for identifying the wildlife resource of the County. All designated sites have been aggregated onto one map together with the small number of non designated sites known to have biodiversity significance. The final layer of existing features of importance contains locations from which national priority species have been recorded. The data set is incomplete for some species groups but it was felt there was sufficient information to help establish a picture of the areas of greatest biodiversity significance.

4 Identification of Opportunity Areas and Enhancement Areas and production of a strategic biodiversity opportunity map

The thrust of the national and regional biodiversity policy is to conserve, enhance and restore the diversity of England's wildlife and repair networks by avoiding or repairing the fragmentation or isolation of natural habitats. Having collected together the available data buffer zones or areas of opportunity placed around sites as described above to help with objective identification of assemblages of sites in close proximity to one another. Standard buffers are used unless habitats were known to have specific soil requirements or water regimes. In these circumstances opportunities for habitat expansion and linkage are described by other available data.

Analysis of the habitat maps aimed to identify areas which had a significant quantity of priority habitats, designated sites and priority species records. These aggregations of important biodiversity are set within surroundings that offer opportunities for expansion, linking and buffering of the habitats in question and have been called **Opportunity Areas.** These are broadly analogous to the Biodiversity Conservation Areas and Biodiversity Corridors of the regional mapping project (for definitions see Appendix 2)

Analysis of patterns revealed by maps 1 to 5 was carried out separately for wetlands, grasslands/heaths and woodlands and the resultant maps merged to create an overall pattern. These patterns of habitat distribution were checked against the more detailed information contained within the biodiversity characterisation to ensure the maximum possible number of ecological and environmental variables were considered. Final analysis of the overall pattern was carried out by the Biodiversity Working Group to create a broad strategic map which shows key sites, potentially expanded, buffered and linked to form habitat networks across the landscape. This work revealed some zones that were of particular importance for one type of habitat. The lowland calcareous grasslands of south Bedfordshire and Luton are a good example of this. Elsewhere the landscape contained important collections of a range of different habitats. Where opportunity was very specific within these mixed zones, as it is for heathland expansion then this has been shown in the final strategic opportunity map. Where options are more diverse this is illustrated as a broad zone where restoration of biodiversity and repair of fragmentation could involve new woods, grasslands, hedgerows, arable wildlife conservation initiatives etc.

Opportunity areas are based on specific priority habitats in some cases tightly defined by environmental variables such as soil type. Their boundaries do not therefore exactly match landscape description units as these have been formed from consideration of a wide range of environmental and cultural factors.

Within the strategic map opportunity areas are not depicted on a field by field basis. Whilst existing sites are shown precisely as core areas, it would be implying an unwarranted degree of precision to give opportunity areas hard boundaries. Boundaries of these areas are therefore "fuzzy" and are intended to fade into adjacent areas (as far as our technology at present allows). The map must not be viewed at increased resolution. If, in a particular area increased resolution is desired, this needs to be done via a more detailed examination of options informed by the strategic map.

Once opportunity areas are identified there remain areas where important habitats, even when buffered, remain distant from one another. These areas of more dispersed biodiversity interest may have considerable potential for habitat creation to conserve and enhance biodiversity priorities of agricultural land and they have been described on the opportunity

map as **Enhancement Areas**. They are analogous to the biodiversity enhancement areas of the regional mapping project. It was considered important to indicate possible future links through the enhancement areas which would improve the coherence of the biodiversity network illustrated by the opportunity areas. These are shown as dotted lines. It was also considered important to show links to similar networks in adjacent counties, these have been identified by arrows.

The East of England map shows urban areas of over 35,000 population that are either predicted to grow quickly or already have significant deprivation. Bedford and the Luton/Dunstable/Houghton Regis conurbation fit this definition. As the Bedfordshire and Luton mapping is at this stage strategic, it has not proved possible to study the intimate mosaics of habitat in urban areas. The existing urban areas are prime candidates for more detailed local analysis as part of the development of community plans, biodiversity action/nature conservation plans or green infrastructure projects.

In the Luton, Dunstable, Houghton Regis, Leighton-Linslade area detailed study of the biodiversity resource is being carried out to inform complex development planning issues. This project yielded valuable practical information which has informed the characterisation process. The project also effectively translates the broad strategic map to at a much more detailed level. This strategic mapping project should form the context for similar more detailed studies to more clearly define how best to achieve the ecological networks that will support robust and resilient biodiversity in Bedfordshire and Luton.

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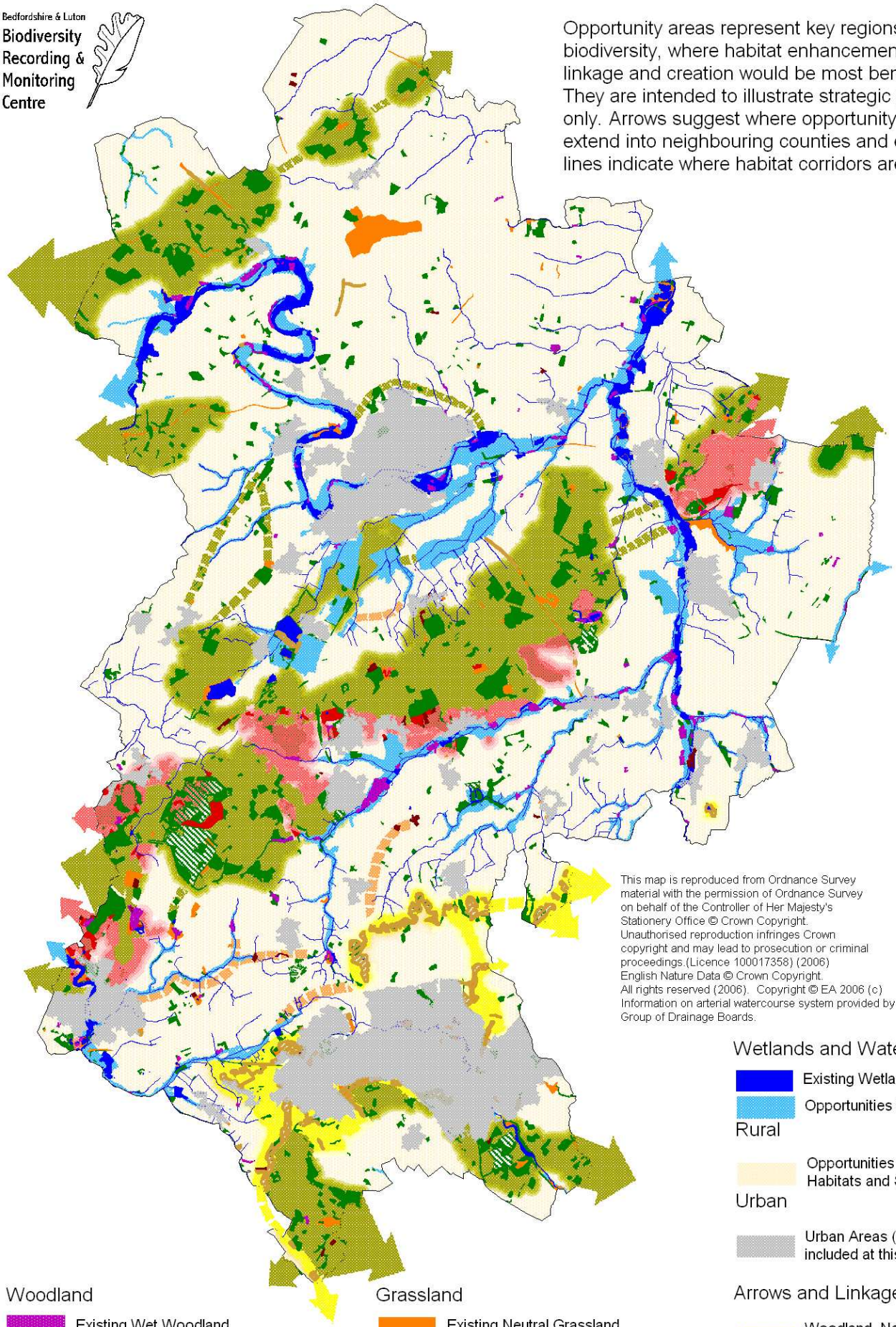
Opportunity areas represent key regions for biodiversity, where habitat enhancement, linkage and creation would be most beneficial. They are intended to illustrate strategic patterns only. Arrows suggest where opportunity areas extend into neighbouring counties and dotted lines indicate where habitat corridors are desirable.



Wetlands and Waterways

- Existing Wetlands and Waterways
- Opportunities for Wetlands

Rural

- Opportunities for Farmland BAP Habitats and Species

Urban

- Urban Areas (opportunities not included at this scale)

Woodland

- Existing Wet Woodland
- Existing Wood Pasture and Parkland
- Existing Broadleaved and Mixed Woodland
- Opportunities for Woodland, Neutral Grassland and Hedgerows

Grassland

- Existing Neutral Grassland
- Existing Lowland Meadows
- Existing Calcareous Grassland
- Opportunities for Calcareous Grassland
- Existing Heathland and Acid Grassland
- Opportunities for Heathland and Acid Grasslands

Arrows and Linkages

- Woodland, Neutral Grassland and Heathland Links and Arrows
- Neutral Grassland Links
- Calcareous Grassland Links and Arrows
- Heathland and Acid Grassland Arrows
- Waterway and Wetland Arrows

5 Rebuilding Biodiversity in Bedfordshire & Luton in a regional context

In 2004 The East of England Biodiversity Forum recognised *"the need to establish a network of biodiversity areas and corridors to both conserve existing biodiversity and restore and regenerate biodiversity in areas which may be suffering from a current deficit, all set against the uncertain background of climate change".* The Forum produced a map of the region which identifies both biodiversity conservation and enhancement areas (Appendix 2 for definitions). This map compliments a simple listing of the priority habitats that occur in the region and the "Natural Areas" that are of particular significance to them. Both projects will inform, and have been included within, the East of England Plan (RSS 14). This document sets out spatial planning policy for the region to 2021 and may be expected to influence development of the region well beyond that date.

Beneath the regional plan will be a whole series of local development documents. These documents will translate and develop the principles and policies of the regional strategy at the local level. The regional strategy focuses on where may be most appropriate for particular forms of built development but it also indicates the need to identify areas for focussing various forms of biodiversity effort. The regional map mentioned above attempts to do this on a regional scale but the following policy excerpts from the draft strategy and enquiry panel report indicate that there is a need to refine this at a more local level.

Excerpts from RSS14 draft Policy Env. 1 Green Infrastructure

Areas and networks of green infrastructure will be identified, protected, created, extended, enhanced, managed and maintained throughout the region…Local Development Documents will:

- *Define a multiple hierarchy of green infrastructure…at every spatial scale and across all areas of the region based on analysis of existing natural, historic, cultural and landscape assets…*
- *Identify and require the retention and provision of substantial networks of green space, in urban, urban fringe and adjacent countryside…*
- *Areas of particular regional significance for the retention, provision and enhancement of green infrastructure are: The Chilterns AONB, Forest of Marston Vale and Milton Keynes to Bedford Waterway Park.*

Excerpts from RSS14 draft Policy Env. 3 Biodiversity and Earth Heritage

…the region's wider biodiversity, earth heritage and natural resources will be protected and enriched through conservation, restoration and re-establishment of key resources by:

- *Ensuring that new development minimises damage to biodiversity…*
- *promoting the conservation, enhancement, restoration, re-establishment and good management of habitats and species populations in accordance with the East of England regional biodiversity targets…and the targets set out in the UK, England and local biodiversity action plans, and the priorities established in the East of England Regional Biodiversity Network Map...*
- *Identifying and safeguarding areas for habitat restoration and re-establishment, in particular for large-scale (greater than 200ha) habitat restoration for human and wildlife benefit.*
- *Ensuring the appropriate management and further expansion of wildlife corridors that are important for the migration and dispersal of wildlife…*

Excerpts from RSS14 draft Policy Env. 4 Woodlands

Planning authorities and other agencies…will seek to achieve an increase in woodland cover…where it would be consistent with landscape character.
New woodland creation should be targeted specifically at: schemes for the restoration of derelict land…green infrastructure projects at towns planned for significant growth…Forest of Marston Vale...transport corridors…schemes to expand and link areas of native woodland and create new wet woodland.

Away from the development planning agenda agri-environment schemes, which operate regionally, have increasingly moved towards a targeting system based on Countryside Character Areas and on an improved understanding of biodiversity priorities across the varied landscapes of the region. Similarly biodiversity action planning has a developing regional dimension which aims to bridge the gap between national and local plans.

Rebuilding Biodiversity fills out the local picture of biodiversity opportunity. It can fit upwards into the regional biodiversity agenda outlined above and can form the local context for more detailed studies which will inform Community Plans, Local Development Frameworks and local Biodiversity Action Plans.

6 The National Policy context for the characterisation and opportunity map

In August 2005 the Government produced Planning Policy Statement 9 with its accompanying explanatory circular. Within the statement it is stated that the Governments objectives for planning include:

…"conserve, enhance and restore the diversity of England's wildlife and geology by sustaining and where possible improving the quality and extent of natural habitat, geological and geomorphological sites; the natural processes on which they depend, and the populations of naturally occurring species that they support"…

The Planning policy states that Local Development Frameworks should indicate the location of the protected site hierarchy and identify any areas or sites for the restoration or creation of new priority habitats which contribute to regional targets. Further guidance indicates the need for policies to conserve and enhance important natural habitat types identified on the section 74 list (CROW, 2000) and to protect the habitats of section 74 species. These are essentially the Biodiversity Action Plan priority habitats and species (Appendix 4). Perhaps more importantly from a landscape perspective the guidance now contains a requirement to:

"aim to repair networks by avoiding or repairing the fragmentation or isolation of natural habitats. Such networks should be protected from development and where possible strengthened by or integrated within it"…

Appendix 1 Maps for priority habitats, species and designated sites

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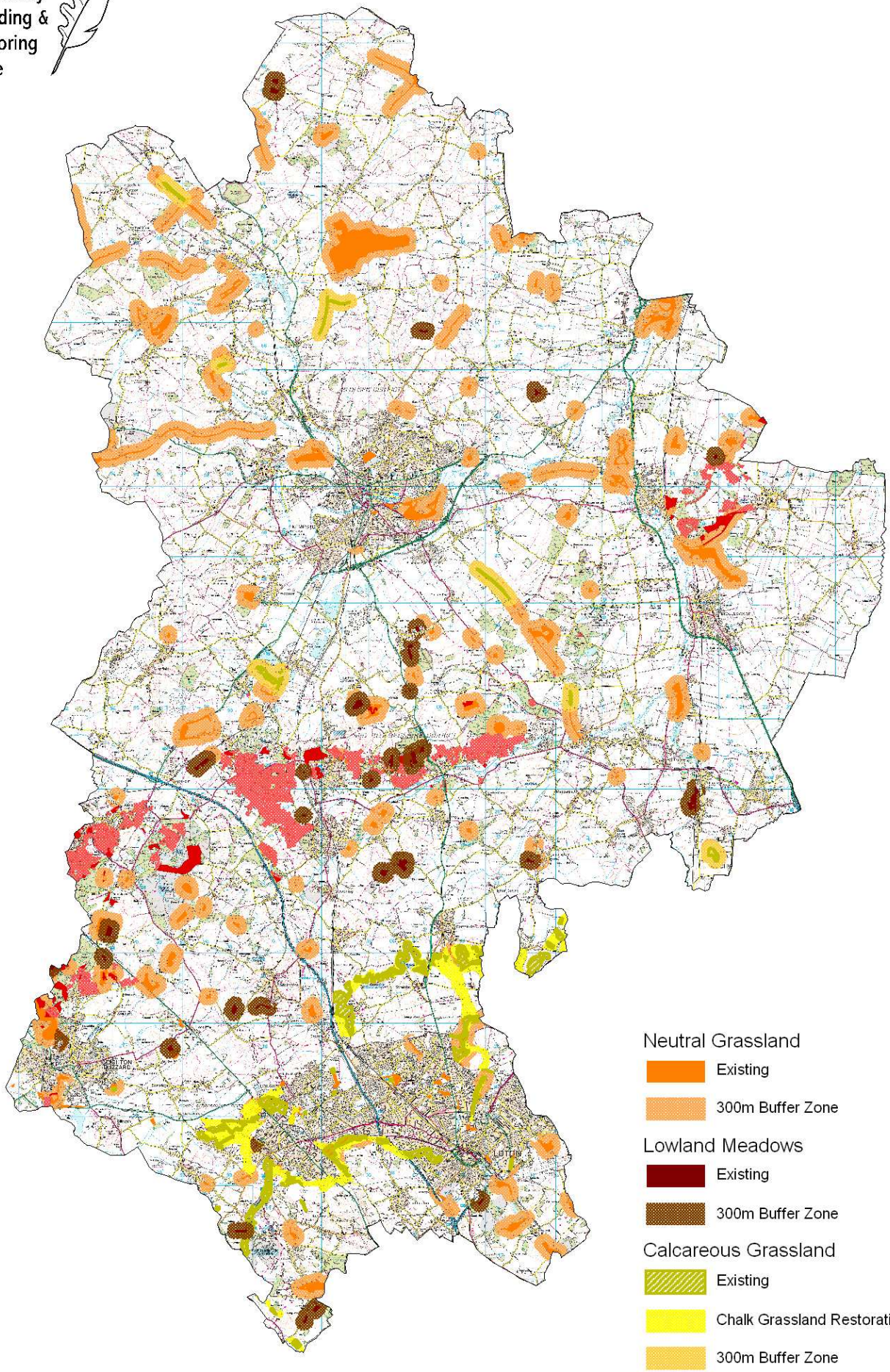
Map 1: Grassland habitats



Neutral Grassland
- Existing
- 300m Buffer Zone

Lowland Meadows
- Existing
- 300m Buffer Zone

Calcareous Grassland
- Existing
- Chalk Grassland Restoration Strategy
- 300m Buffer Zone

Heathland and Acid Grassland
- Existing
- Heathland Opportunity Mapping

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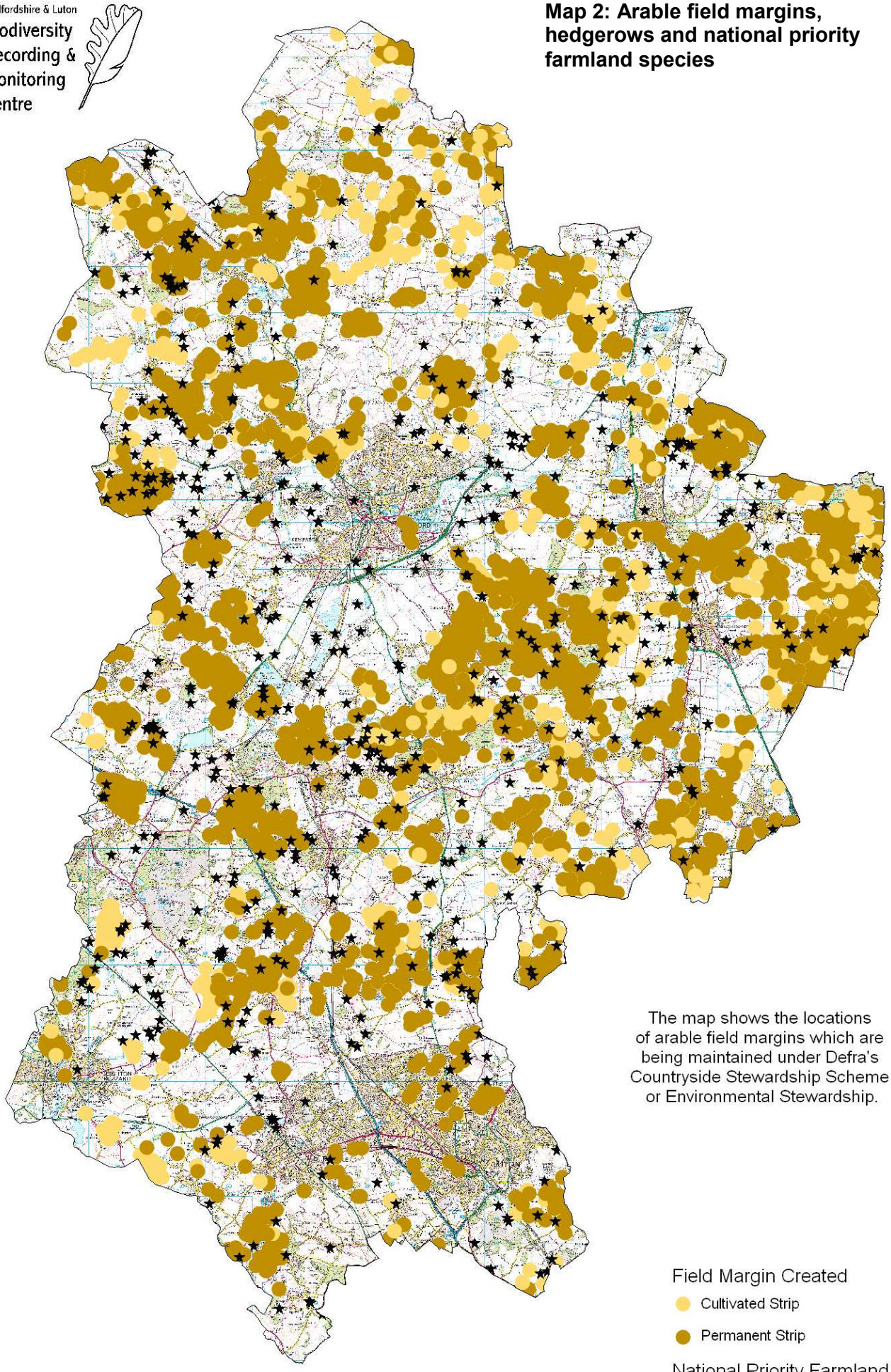
Map 2: Arable field margins, hedgerows and national priority farmland species



The map shows the locations of arable field margins which are being maintained under Defra's Countryside Stewardship Scheme or Environmental Stewardship.

Field Margin Created

- Cultivated Strip
- Permanent Strip

National Priority Farmland Species Sighting

★

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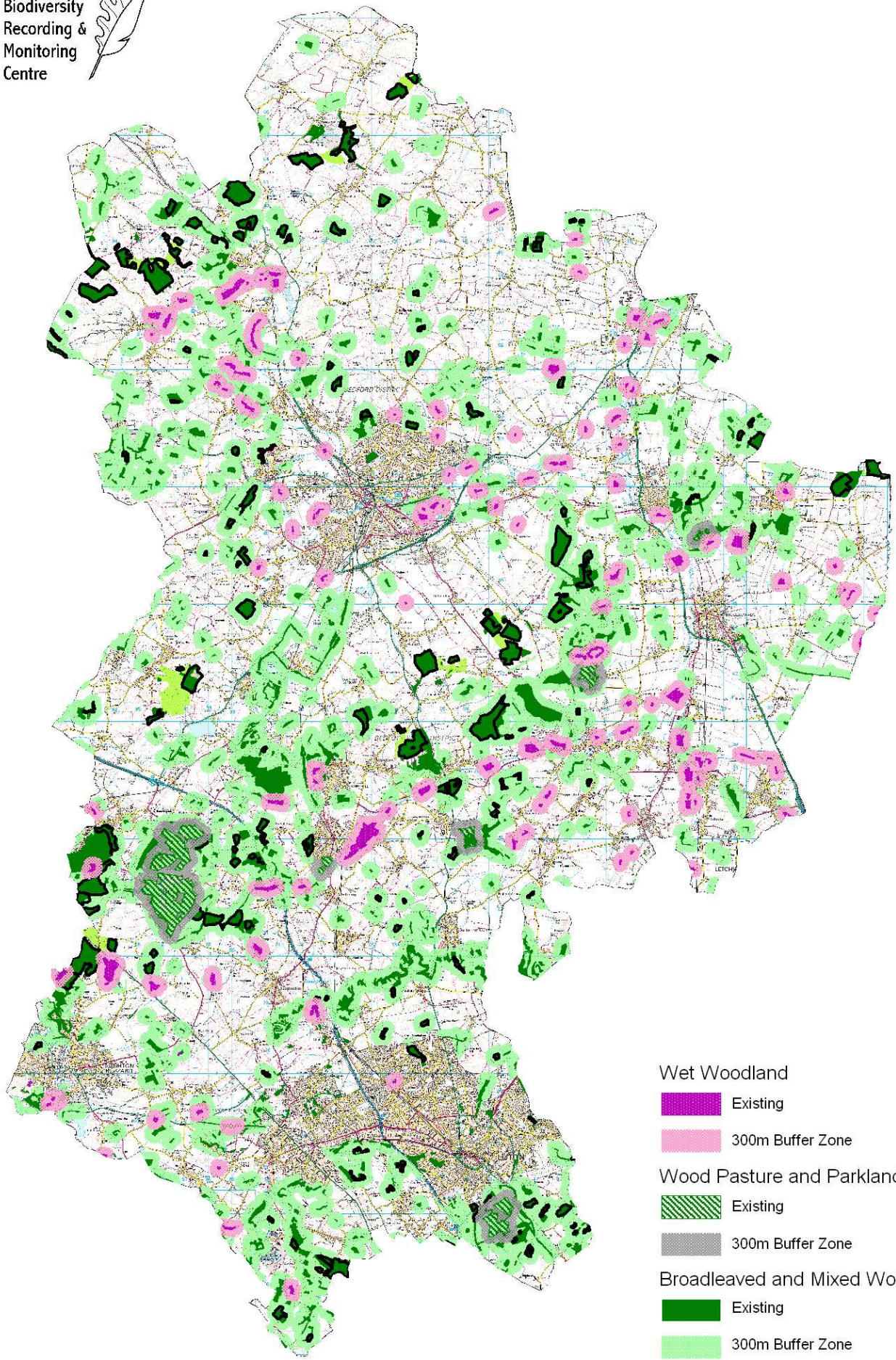
Map 3: Woodland habitats



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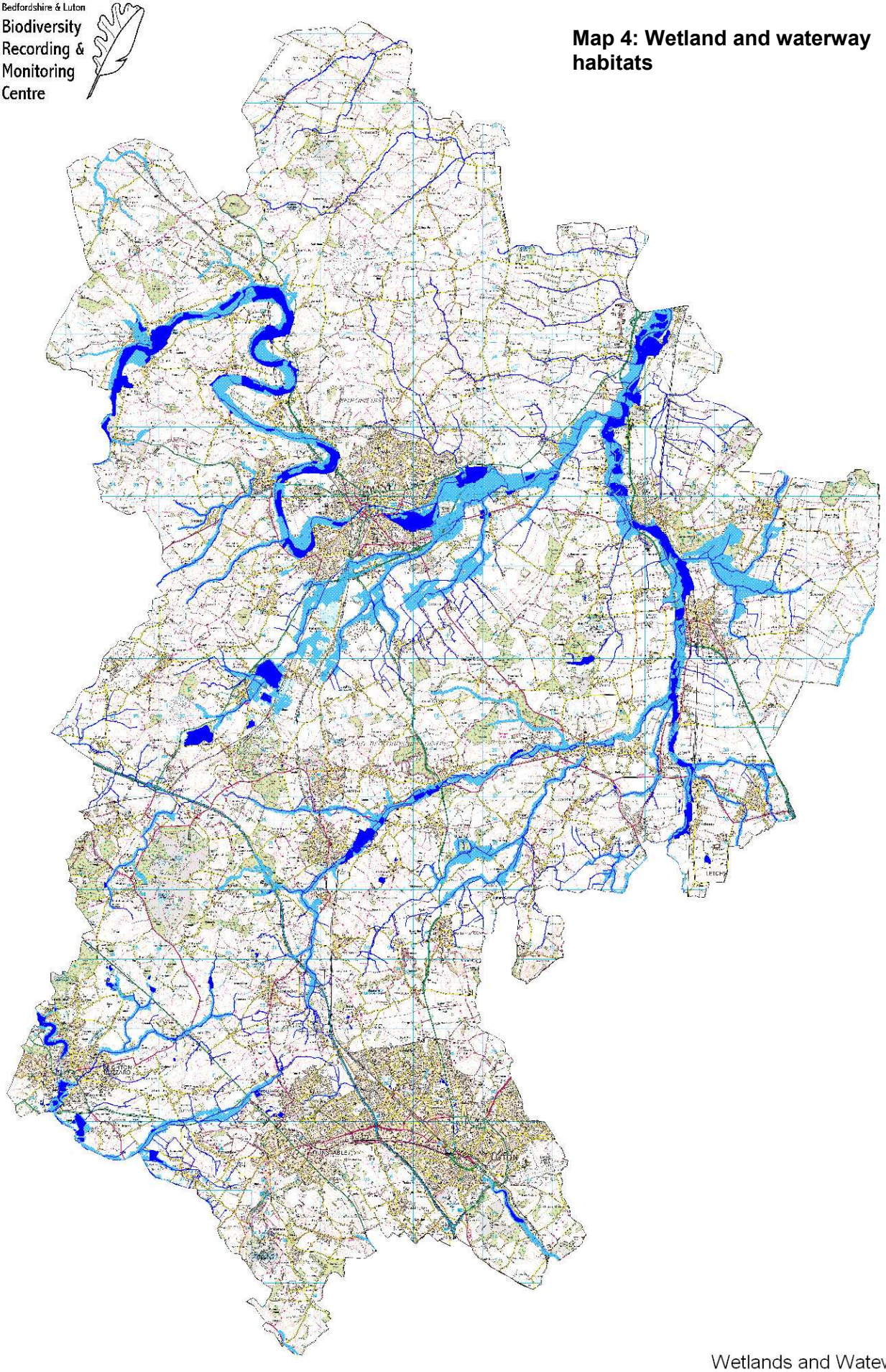
Map 4: Wetland and waterway habitats



Wetlands and Wateways

Existing

Opportunities for Wetlands

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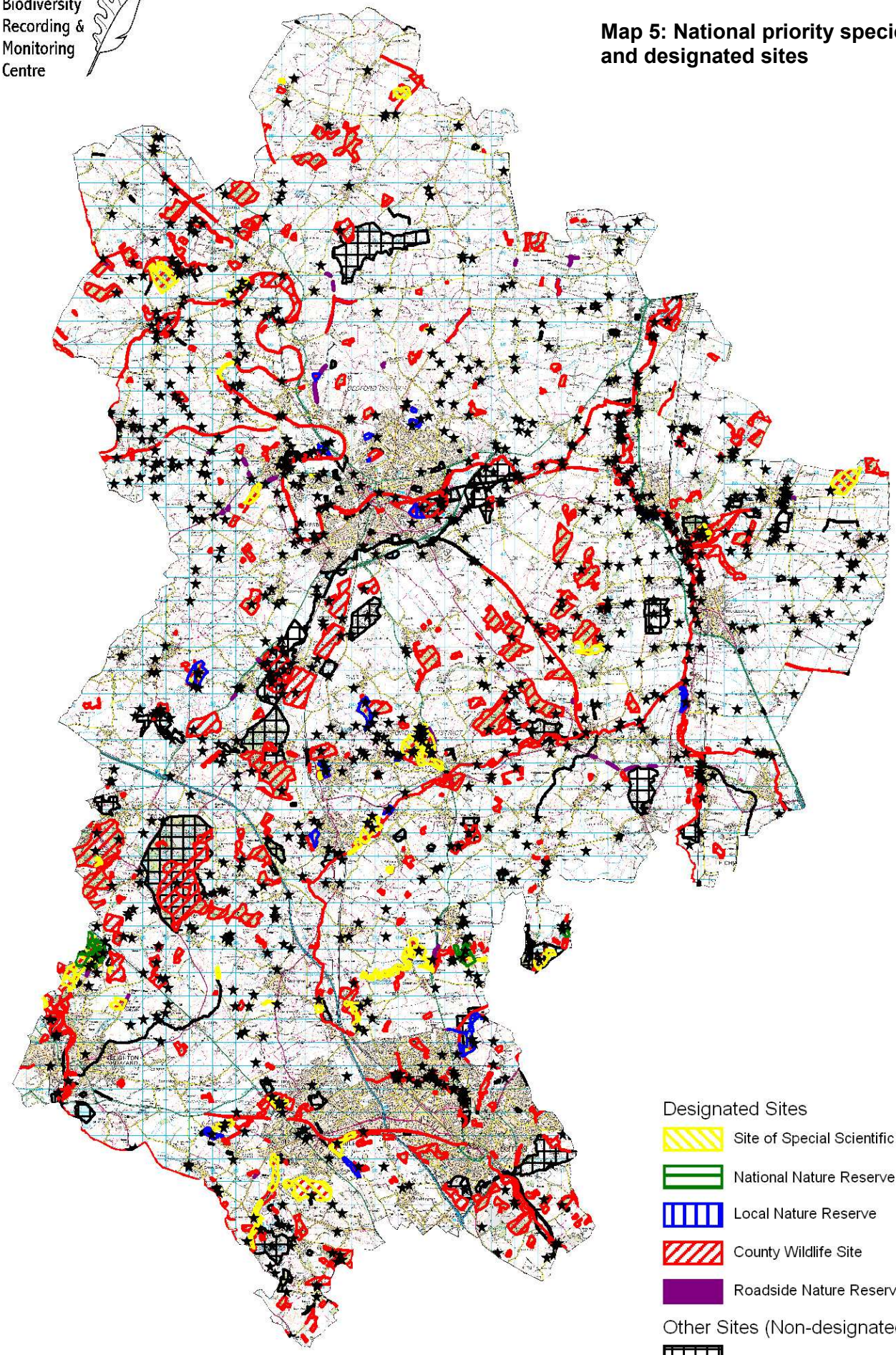
Map 5: National priority species and designated sites



Appendix 2 The concept of Opportunity Mapping and East of England Mapping Project definitions

Working with the grain of Nature – a biodiversity strategy for England (DEFRA 2002) states boldly that:

"Our vision is for a country – its landscapes and water bodies, coasts and seas, towns and cities – where wild species and habitats are part of healthy functioning ecosystems; where we nurture, treasure and enhance our biodiversity, and where biodiversity is a natural consideration of policies and decisions, and in society as a whole."

Development of national and local Biodiversity Action Plans has identified both national and local priorities. Targets have been set and a wide range of partnerships nurtured to deliver action on the ground. Increasingly it has been recognised that:

Protection, enhancement and enlargement of natural environment resources should form a central part of the future land use of the East of England. This should offer a coherent linked network of greenspace offering ecologically functional landscapes and linkages (river corridors, floodplains, migration routes etc.) (National Trust 2004). *Individual nature reserves cannot secure biodiversity given present fragmentation and anticipated climate change but are able to do so if linked into an ecologically functioning network* (Bates 2004).

These sentiments have in recent years received widespread attention, stimulated debate and become the basis for some elements of developing biodiversity policy throughout Europe. In the UK this train of thought has prompted extensive experimentation with mapping which allows the application of biodiversity action plan targets to specific parts of the landscape. Maps at a wide range of scales and covering everything from small localities to whole regions have been produced to show locations of key biodiversity resources and to illustrate the opportunity space that would allow achievement of national, regional and local BAP targets. These maps have been collectively termed **Opportunity Maps**. In a recent good practice guide (English Nature, 2005) opportunity maps are described as:

"broad scale strategic visions for change which offer a spatially based tool for identifying where environmental enhancement could or should be delivered in future, using existing areas of environmental value as a starting point."

Essentially the message conveyed by an opportunity map is that, if biodiversity is to be sustained, it is vital that not only must existing habitat patches be protected but that they must be expanded and connected across landscapes. The maps illustrate that such expansion is more appropriate or feasible in some locations than in others. Increasingly national and regional policy is steering in the direction of biodiversity conservation within the whole landscape rather than on a site by site basis.

The East of England mapping project set out to identify Biodiversity Conservation Areas, Biodiversity Enhancement areas, Biodiversity Corridors and Urban Improvement Areas. Definitions of these are included below.

Biodiversity conservation areas
These are priority areas for the management and enhancement of existing resources and for targeting the reversal of habitat fragmentation. They are intended to support a relatively diverse and resilient biodiversity resource and will have a significant quantity of priority habitats and statutory designated sites.

Biodiversity enhancement areas
These are by definition more impoverished than the biodiversity conservation areas and are areas with the greatest need or potential for the creation and or restoration of biodiversity to meet regional targets and to ensure the integrity of the regions ecological network.

Biodiversity corridors
It is intended that these comprise continuous or aggregated areas of biodiversity value with the potential to link biodiversity conservation and enhancement areas to achieve connectivity through the landscape.

Urban improvement areas
These are areas that support high levels of human population with relatively high levels of deprivation and/or areas where significant growth and development is planned

The project used Landscape Description Units as the basic subdivision of the countryside upon which to base their analysis. In doing this the assumption was made that, at a broad scale, each LDU has roughly uniform biogeographic character.

Appendix 3 Data Sources

DATASET	OWNED BY	FORMAT? AVAILABLE?	ACQUIRED BY BRMC?
Chalk grassland			
WT EAF restoration strategy	WT	Digital, yes	✓
Calcareous grassland	EN	Digital, yes	✓
Waterways and wetlands			
WT EAF restoration strategy	WT	Digital, yes	✓
EA floodplains data	EA	Digital, yes	✓
Fens, grazing marsh and reedbeds	EN	Digital, yes	✓
Chalk rivers	EA	Digital, yes	✓
Chalk streams	IDB	Digital, ?	×
Grassland			
Acid grassland	EN	Digital, yes	✓
Lowland meadows	EN	Digital, yes	✓
WT calcareous grassland restoration strategy	WT	Digital, yes	✓
WT heathland restoration strategy	WT	Digital, yes	✓
Woodland			
WT EAF boulder clay woodlands restoration strategy	WT	Digital, yes	✓
Ancient woodland, lowland mixed deciduous and wet woodland	EN	Digital, yes	✓
Woodland Grant Scheme	FC	Digital, yes	✓ (Point data only)
Woodland Inventory data	FC	Digital, yes	✓
Wet woodland project	FC, BCC	Digital, yes	✓
Heathland			
Regional heathland opportunity mapping	EN, RSPB	Digital, yes from Suffolk Biological Record Centre	✓
WT EAF heathland restoration strategy	WT	Digital, yes	✓
Lowland dry acid grassland	EN	Digital, yes	✓
Lowland heath	EN	Digital, yes	✓
Other			
CWS, SSSI, NNR, LNR, Natural areas boundaries	Mix of ownership	Digital, yes	✓
CWS habitat data		Paper, yes	✓
Soils	National Soils Research Institute, Cranfield University	Digital, yes	✓
Countryside Stewardship	Defra	Digital, yes	✓ (point data only)
Landscape description units	Beds CC	Digital, yes 1: 50, 000/no 1: 25,000	1: 50,000 LDUs

Appendix 4 Priority habitats and species in Bedfordshire and Luton

Regional and Local Biodiversity Action Plan habitat targets

Habitat	**East Region** Targets			**Beds & Luton** Targets		
	Maintain	Restore	Create	Maintain	Restore	Create
Lowland grass/heath	100%	100% by 2010	2385ha by 2010			
Heath				100%	100%	85ha by 2010
Acid grassland				100%	100%	215ha by 2010
Lowland meadow				?	100% by 2005	50ha by 2010
Calcareous grassland				100%	100% by 2010	50ha by 2010
Arable cereal margins	No loss	N/A	3500ha by 2010	?	?	100km by 2010
Semi natural woodland	100%	1700ha by 2010	1400ha by 2010			
Wood pasture				?	2 sites by 2010	?
Wet woodland				33%	33% by 2010	10ha by 2010
Lowland broadleaved woodland				100%	?	1000ha by 2010
Hedgerows	No loss	100%	200km by 2010	No loss	50% by 2010	75km by 2010
Reedbeds & fens	100%	?	2000ha by 2010	100%	50% by 2050	80ha by 2010
Freshwater	100%	?	N/A	?	?	?

In addition to the above targets the Bedfordshire and Luton Action Plan addresses the urban environment and includes the following targets:

1ha of Local Nature Reserve per 1000 population
1 accessible informal greenspace no more than 300 metres from home
1 accessible informal greenspace of 20ha no more than 2km from home
1 accessible informal greenspace of 100ha no more than 5km from home
1 accessible in formal greenspace of 500ha no more than 10km from home

Priority habitats and species in Bedfordshire and Luton

The Bedfordshire and Luton Biodiversity Action Plan lists both national and local priority habitats and species. National priorities are decided by central government and published by the Secretary of State for Environment Food and Rural Affairs under the provisions of Section 74(2) of the Countryside and Rights of Way Act 2000. The list is kept under review

and is due to be updated in 2006/07. Local priorities are selected by the Bedfordshire and Luton Biodiversity Forum.

Those habitats and species on the section 74 list that occur in Bedfordshire and Luton are:

Habitats

	BBC	MBDC	SBDC	LBC
Ancient and/or species rich hedgerows	x	x	x	x
Cereal field margins	x	x	x	?
Chalk rivers		?	x	x
Coastal and floodplain grazing marsh	x	x	x	
Eutrophic standing waters	x	x	x	x
Fens		x	x	
Lowland calcareous grassland	x	x	x	x
Lowland dry acid grassland		x	x	
Lowland heathland		x	x	
Lowland meadows	x	x	x	x
Lowland wood pasture and parkland	x	x	x	x
Purple moor grass and rush pastures		x		
Reedbeds	x	x	x	
Lowland mixed deciduous woodland	x	x	x	x
Wet woodland	x	x	x	x

Species

	BBC	MBDC	SBDC	LBC
Natterjack toad		x		
Great crested newt	x	x	x	x
Skylark	x	x	x	?
Nightjar		x	x	
Linnet	x	x	x	x
Reed bunting	x	x	x	x
Woodlark		?		
Corn bunting	x	x	x	
Spotted flycatcher	x	x	x	x
Tree sparrow	x	x		
Grey Partridge	x	x	x	x
Bullfinch	x	x	x	x
Turtle dove	x	x	x	
Song thrush	x	x	x	x
Water vole	x	x	?	x
Barbastelle bat	x	x	x	
Brown hare	x	x	x	?
European otter	x	x	x	
European dormouse		x	x	
Pipistrelle bat	x	x	x	x
Stag beetle			x	
White clawed crayfish		x		
Fine lined pea mussel	x			
White spotted pinion moth		x		
Bordered gothic moth	x			
Common fan foot moth	x	x	x	x
Pale shining brown moth	x	x	x	x
Argent and sable moth	x		x	
Sword grass moth		x		
Red hemp nettle	?	?	?	
Juniper			x	
Pennyroyal			?	
Shepherds needle	x	x	x	
Spreading hedge parsley	x			
Broad fruited cornsalad			x	

NB. Distribution by local authority is tentative and subject review and update.

Bedfordshire and Luton priorities in addition to the above include:

Marshy grassland, marsh and swamp	All LPA's
Scarce blue tailed damselfly	SBDC
Marsh violet	MBDC
All bat species	All LPA's
Field cow-wheat	MBDC & SBDC
Greater broomrape	MBDC
Grey mouse-ear	BBC
Ground pine	MBDC & SBDC
Adder	MBDC & SBDC
Black hairstreak butterfly	MBDC
Spined loach	BBC & MBDC
Cylindrical whorl snail	MBDC

Appendix 5 References

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