



The Natural Environment in Berkshire

Biodiversity Strategy 2014 – 2020



BIODIVERSITY:

‘Biological diversity’ - the variety and abundance of all life.

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Foreword

The Berkshire Biodiversity Strategy is the result of hard work, knowledge and the collaboration of over 20 partners working in the conservation sector, local authorities, government bodies, health and business. To everyone that has been involved, I am hugely grateful and I do not under-estimate the effort it has taken to create what is essentially, a blueprint for our natural environment.

This document is a shared vision, without political or territorial boundaries, that sets out how we can ensure that Berkshire remains a sustainable, healthy, economically viable and wonderful place to live and work.

Berkshire is recognised as an economic powerhouse in the UK. Many well known international brands have chosen to make Berkshire their home. Berkshire is where talented people choose to live and work because it is where they find inspiration, it is where they find time to relax with friends and family, and it is where they become part of their local community. They become motivated, energised and connected not when they are inside their homes and offices but when they step outside and fill their senses with Berkshire's nature.

The natural environment has a huge part to play in the success of Berkshire. We have some of the most forward thinking and wildlife friendly farms in the UK, we have parks, forests, rivers, lakes, nature reserves, areas of outstanding natural beauty and a cultural heritage to be proud of. Our natural environment, the places that we share together, are the foundation of Berkshire's success.

This is more than just a biodiversity strategy; it is a strategy to ensure that the people, businesses and the wildlife of Berkshire continue to support each other in a balanced and mutually beneficial way.

The people and the organisations that have helped create this document are among the most knowledgeable and respected in their field. What they have given us is an opportunity, an opportunity to protect and enhance what we already have. I would urge every decision maker in Berkshire to read this document and make the most of this opportunity.



A handwritten signature in dark ink, which appears to read 'Andrew Cameron'. The signature is fluid and cursive, written on a light-colored background.

Andrew Cameron

Local Nature Partnership Chairman

Introduction

This report is both a statement of the current state of nature in Berkshire and a strategy for protecting and enhancing our natural environment. It is an important step forward in understanding our natural environment and identifying what we can do to protect it.

We need to have the facts and figures about Berkshire's habitats and species in order to make informed decisions about where to focus our efforts and we need to have up-to-date evidence about whether the benefits we derive from nature are getting worse or better so as to best inform local decisions and plans.

This strategy builds on, and replaces the Berkshire Biodiversity Action Plan (BAP), developed by the Berkshire Nature Conservation Forum, by incorporating the relevant messages and actions from the Government's 'Biodiversity 2020: A strategy for England's wildlife and ecosystem services'. We have identified local objectives which will also contribute towards achieving the desired national outcomes.

This strategy will remain a fluid document, with action plans being developed for our objectives and reviews made as new information becomes available. We will evaluate the strategy in 2020.

The natural services identified in this report are vital to the health and wellbeing of Berkshire residents and to the local economy. By identifying these services we add to the value of the natural environment, in addition to the intrinsic value that we know nature to have. When considered along with the drivers of change, this will help for nature to be better considered in local planning, and will help engage the whole community in its protection and enhancement.



Vision

To create a sustainable, healthy and vibrant Berkshire; ensuring that Berkshire remains an attractive place to live and work and that we continue to benefit from Nature.



Bowdown Woods © Rob Appleby 2008

The Berkshire LNP will do this by promoting the conservation and enhancement of nature, and the benefits we all receive from a healthy environment.

This strategy is intended as a joined up, single vision for the protection and enhancement of Berkshire's natural environment, which will bring together the many groups and organisations delivering nature conservation in the county.

By setting out the facts and figures regarding the local environment we envisage empowering the local community to make the best possible decisions regarding nature, and to be confident that their actions will make a difference.

By working in partnership we ensure that resources are used effectively and feel safe in the knowledge that we are all working together towards the same aim; to protect and enhance our natural environment and the benefits it provides us.

The strategy section of this report sets out actions which have been identified as vital to achieving our aim. The Berkshire LNP will coordinate, monitor and report on these actions. We will also work closely with neighbouring LNPs, after all nature does not follow administrative boundaries.

Nature in Berkshire

Habitats

Berkshire is located in the south east of England and has a varied natural landscape. National Character Areas (NCAs) divide the country based on the differing landscape character and underlying geological diversity. The administrative county of Berkshire has five NCAs (Figure 1), each with a distinct landscape, habitats and species.

Berkshire is 126, 389 ha in size, that's approximately 1263km². Within this area there are many different uses of the land (Figure 2). Registered farm land occupies 50% (63,465 ha) of the county¹.

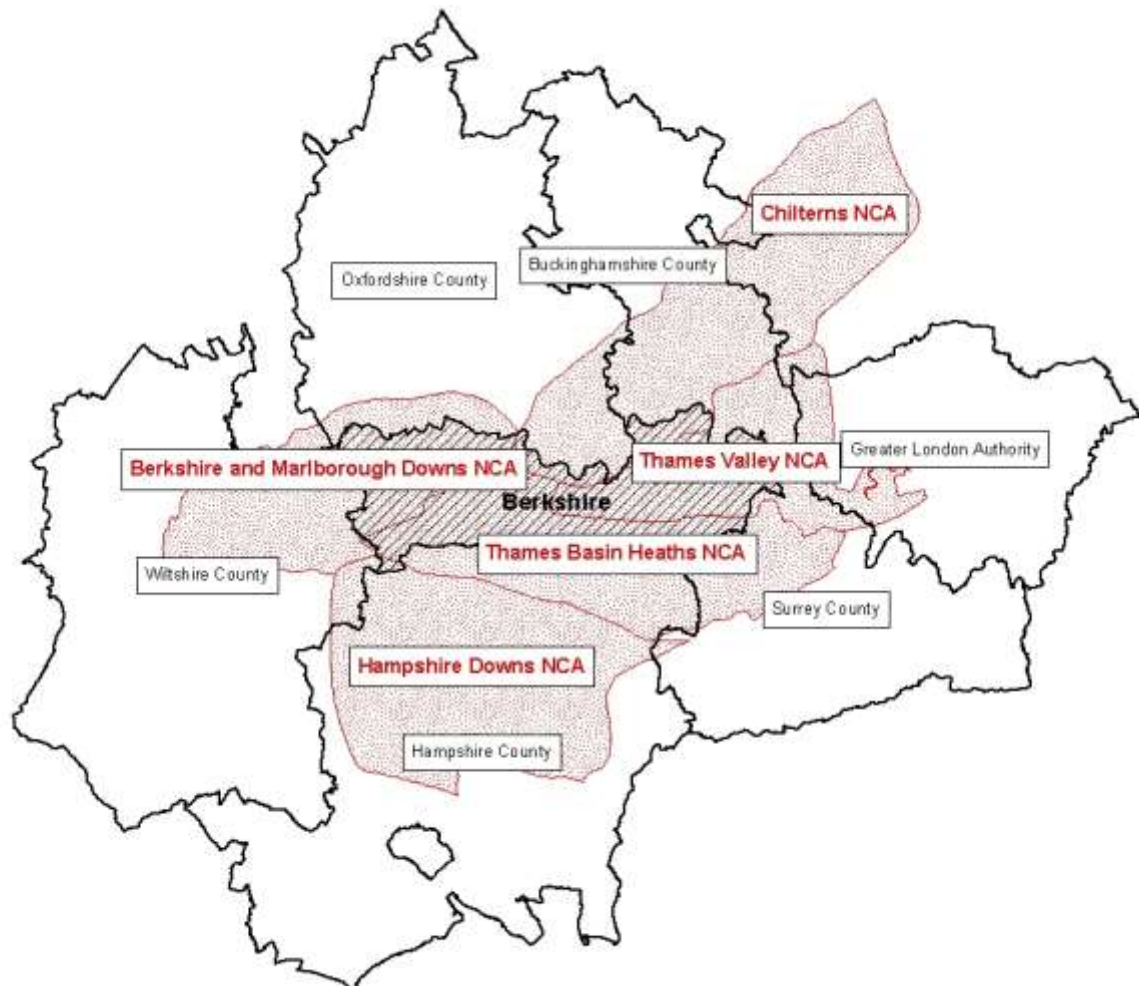


Figure 1. Berkshire and surrounding counties and NCAs

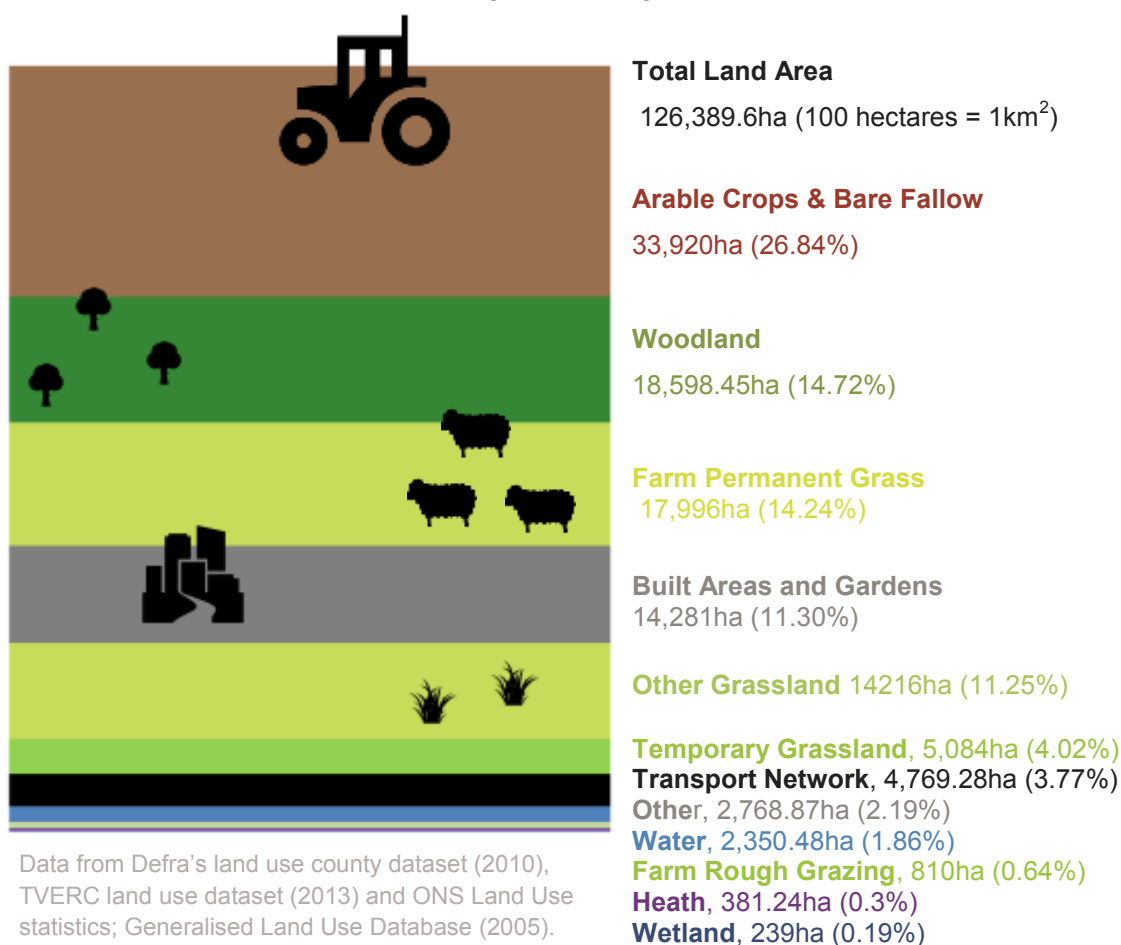
Berkshire has a diverse natural environment, made up of many different natural habitats. Some of these habitats have been identified as a priority for conservation (Table 1). Priority habitats currently occupy 11% of land (14,489ha) in Berkshire, but are supported by the other natural and semi-natural habitats found throughout the county. Descriptions of the different habitat types are available from the Joint Nature Conservation Committee (JNCC)².

Priority Habitat:

Habitats identified as conservation priority which are under threat because of their rarity and fast rate of decline. These habitats are listed under Section 41 of the National Environment and Rural Communities (NERC) Act 2006, where they are referred to as 'habitats of principal importance'.

Figure 3 shows the current distribution of priority habitats. Much of this habitat (55.6%) is located within designated sites, including; EU designated Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites, nationally designated Sites of Special Scientific Interest (SSSI) and locally designated Local Nature Reserves (LNR) and Local Wildlife Sites (LWS) (Figure 4).

Some funding is available to assist in the positive management of our habitats. Agri-environment schemes provide a range of funding options. In Berkshire 6634ha (43.58%)



Data from Defra's land use county dataset (2010), TVERC land use dataset (2013) and ONS Land Use statistics; Generalised Land Use Database (2005). Graphics by Jerry Wang, Bryn Mackenzie, Unrecognised MJ, Bjorn Anderson, Hysen Drogu of thenoun-project.com.

Figure 2. Land Use and Habitats in Berkshire

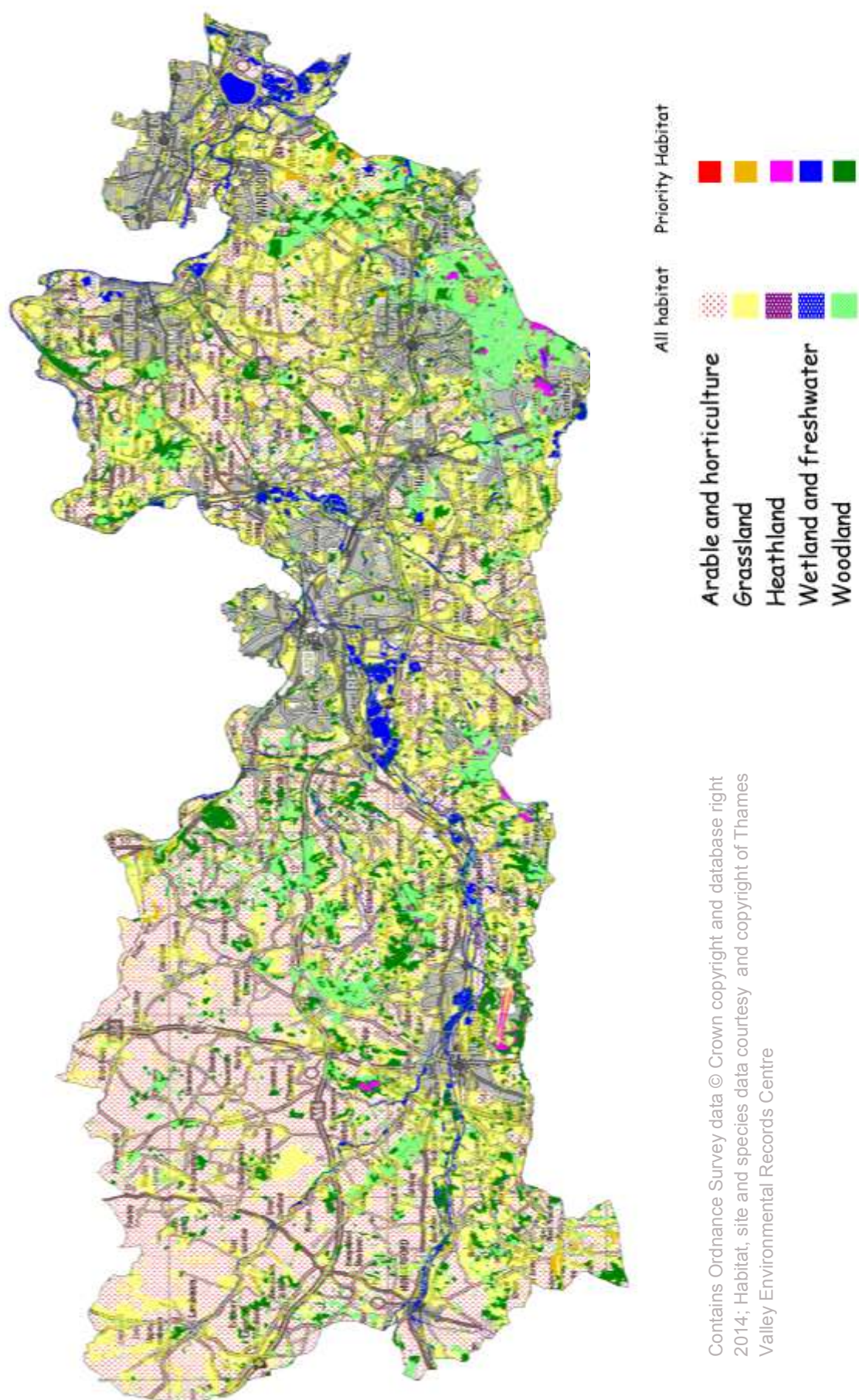
1. Defra Land Use dataset 2010
2. JNCC (2014) Habitats in the UK. Available at <http://jncc.Defra.gov.uk/page-2> (accessed 20/05/2014)

of priority habitat is currently under either Higher Level Stewardship or English Woodland Grant Schemes, and therefore receiving grants for positive management. The Water Framework Directive has recently adopted a catchment based approach to help deliver more appropriate River Basin Management Plans and better engage on a local level. Its purpose is to establish a framework for all water bodies, ensuring that they reach 'good ecological status' by 2015 and some funding is in place to help achieve this.

Table 1. Priority habitat in Berkshire

Habitat Type	Amount (ha)	% of National Resource
Freshwater		
Eutrophic standing water	1472.01	unknown
Mesotrophic lakes	25.46	unknown
Oligotrophic and dystrophic lakes	3.1	unknown
Ponds	14.47	unknown
Rivers	161.7	unknown
<i>Total Freshwater</i>	<i>1676.74</i>	<i>unknown</i>
Wetland		
Reedbeds	42.9	0.61%
Lowland Fen	105.43	0.48%
<i>Total wetland</i>	<i>148.33</i>	<i>0.05%</i>
Coastal		
Coastal and floodplain grazing marsh	2044.2	0.94%
Grassland		
Lowland calcareous grassland	210.61	0.32%
Lowland dry acid grassland	143.17	0.91%
Lowland meadows	251.14	0.7%
Purple moor grass and rush pasture	7.37	0.08%
<i>Total Grassland</i>	<i>612.29</i>	<i>0.44%</i>
Woodland		
Lowland beech and yew woodland	428.06	unknown
Lowland mixed deciduous woodland	8457.64	1%
Wood pasture and parkland	865.02	0.43%
Wet woodland	480.43	unknown
<i>Total woodland</i>	<i>9614.32</i>	<i>unknown</i>
Arable and horticulture		
Traditional orchard	100.75*	0%
Heathland		
Lowland heathland	378.41	1%
Inland rock		
Open mosaic habitats on previously developed land	8.59	0%
Total	14,488.78	

Extents from TVERC's Habitat and Land Use dataset Feb 2014, and % national resource from Defra's Biodiversity 2020: a strategy for England's wildlife and ecosystem services Indicators 2013. * Taken from Natural England's Single Habitat Dataset.



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 2014; Habitat, site and species data courtesy of Thames
 Valley Environmental Records Centre

Figure 3. The current distribution of natural space and priority habitats in Berkshire

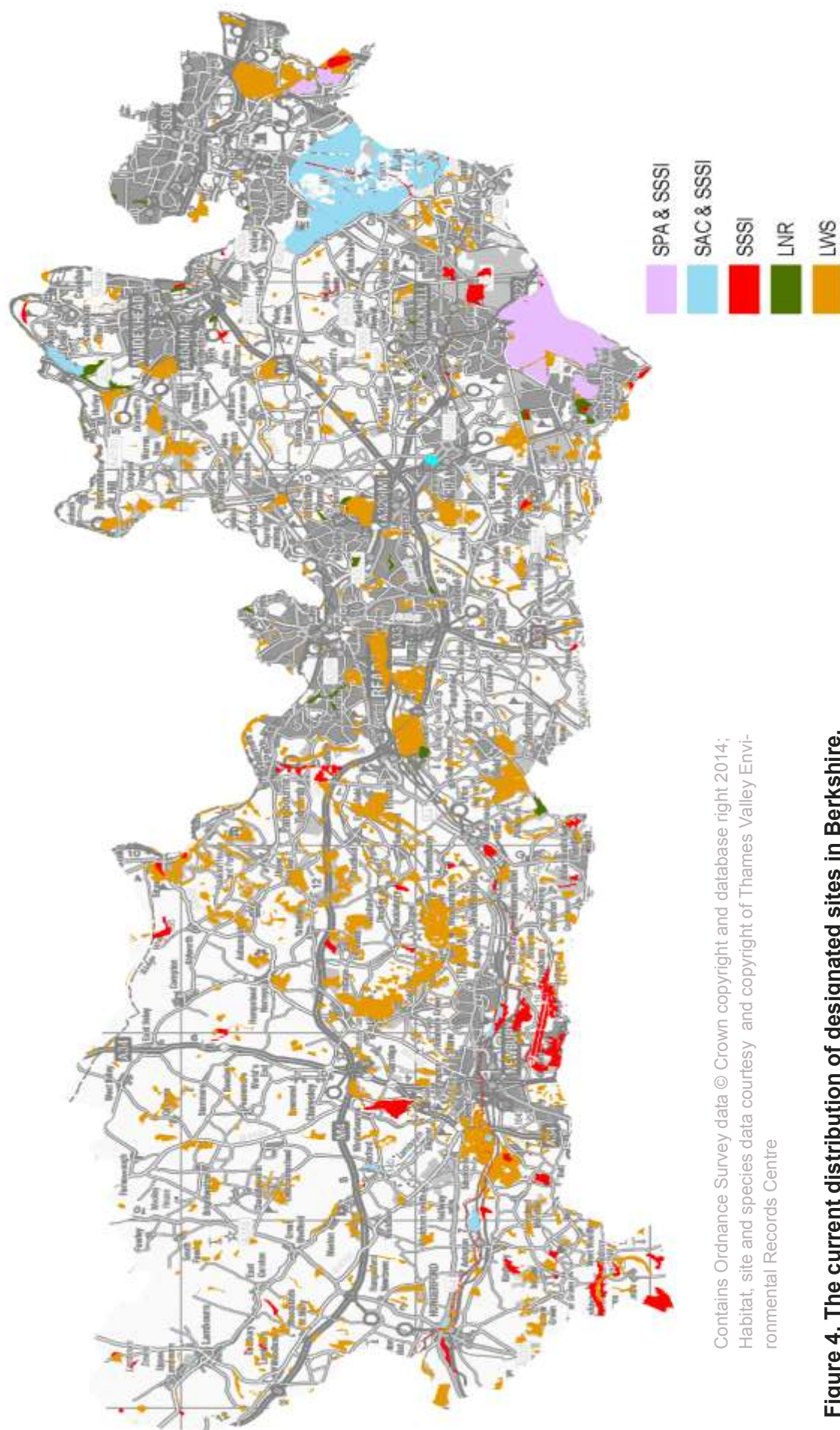


Figure 4. The current distribution of designated sites in Berkshire.

Habitat Condition:

As well as protecting the amount of habitat that we have, it is also important that this habitat is of good quality in order to support a diverse range of wildlife and provide the services that we depend on. Habitat condition of SSSIs is assessed using Common Standards Monitoring (CSM) by Natural England. Preferable habitat condition is classed as 'favourable' condition, this means that the habitat has met a set of favourable condition targets which are set specifically for the site and based on expert knowledge of the habitat. Habitats which do not meet all of the favourable condition targets, but have a management plan believed to be leading to favourable condition are classed as 'unfavourable recovering'. Habitats can also be assessed as being 'unfavourable no change' or 'unfavourable declining'.

Local Wildlife Sites are monitored by Thames Valley Environmental Records Centre (TVERC), and are described as being in 'favourable' condition if they are being managed for nature. They get reported on each year.

For priority habitat outside SSSIs and LWSs, a proxy has been established whereby habitat known to be under a positive management plan can be recorded to be in at least 'recovering' condition, without having assessed whether the habitat currently meets the favourable condition targets. Positive management includes:

- Freshwater habitats progressing towards 'Good Ecological Status' under the Water Framework Directive.
- Habitats with actions recorded on the Biodiversity Action Reporting System (BARS).
- Habitats under Natural England's environmental stewardship or woodland grant schemes.
- Management that contributes to maintaining or enhancing the features of interest for which a site has been selected as a LWS.

However habitat condition, using this proxy measure, is yet to be reported for all priority habitat in Berkshire.

Table 2. Priority habitat and condition within designated sites in Berkshire

Designation	Number of sites	Priority habitat on site (ha)	% in favourable condition*	% in unfavourable recovering condition*	% unfavourable Condition*
Undesignated		6920.84	unknown		
Local Wildlife Sites	765	5823.42	42**		48
Local Nature Reserves	40	330.44	unknown		
Sites of Special Scientific Interest	71	2508.92	55.18	41.27	3.55

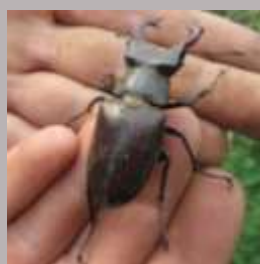
*As of end 2013, ** under positive conservation management. Data from NE SSSI condition report (2013) and TVERC Local Wildlife Site SDL160 report (2012/13). NB: many sites have more than one designation. Not all sites have been assessed.

Wildlife species

Of the UK species assessed using Red List criteria, over 10% are thought to be at risk of extinction³. In England there exists a list (Section 41 of the National Environment and Rural Communities (NERC) Act, 2006) of all the species thought to be of 'principal importance' to biodiversity conservation. This includes 943 priority species, all of which require action and conservation prioritisation to prevent extinction. By focusing on landscape scale habitat conservation we envisage that these species will benefit as a result.

Most species require a number of elements in order to complete their life cycle; for example small patches of bare ground, tall flower-rich vegetation or veteran trees. Ensuring that these elements are found throughout the landscape will enable many of these species to thrive and move across the landscape.

In Berkshire 788 priority species have been recorded. Appendix 4 has a list of these species, a few are shown below.



Stag Beetle



Silver-studded Blue Butterfly



Fly Orchid



Tubular Water-dropwort



Great Crested Newt



Long-eared Bat



Lapwing



Hazel Dormouse Brown



Sand Lizard

3. RSPB (2013) State of Nature report

Landscape scale conservation

The report 'Making Space for Nature'⁴ tells us that we need to change our current approach to nature conservation, from simply trying to protect what we have to a large-scale approach which re-establishes habitat networks and the services they provide us.

Wildlife needs to be able to move and disperse across the landscape, in much the same way that people do. When species become isolated they are at much greater risk of extinction; perhaps cut off from their food source, potential mate, or unable to flee from an extreme event such as flooding. Habitat networks also allow re-colonisation if local extinction events do ever occur. Habitat networks are a way of making sure our wildlife can move around as needed, in a similar fashion to how our transport networks allow us to travel.

Habitat networks are an effective method of conserving nature in landscapes that have become fragmented by human actions. An ecological network is a suite of high quality sites that together contain a sustainable level of biodiversity, and which have connections, or ways of moving between core sites to ensure gene flow between populations is maintained. Isolated populations are more at risk from external pressures; climate change, pollution, changes in human activity etc.

To create such ecological (habitat) networks in Berkshire we need to make our current habitats more numerous, bigger, better, and more joined up, as described in 'Making Space for Nature'. The process of defining habitat networks across the whole of the South East, including Berkshire has already begun. Areas which have a high density of priority habitat, and which have opportunity to be developed as a habitat network have been identified. They are known as 'Biodiversity Opportunity Areas'⁵ (BOAs) and we currently have 29 BOAs identified in Berkshire (Figure 5). These encapsulate 73% of our priority habitat.



Warburg Reserve © Louise Print-Lyons

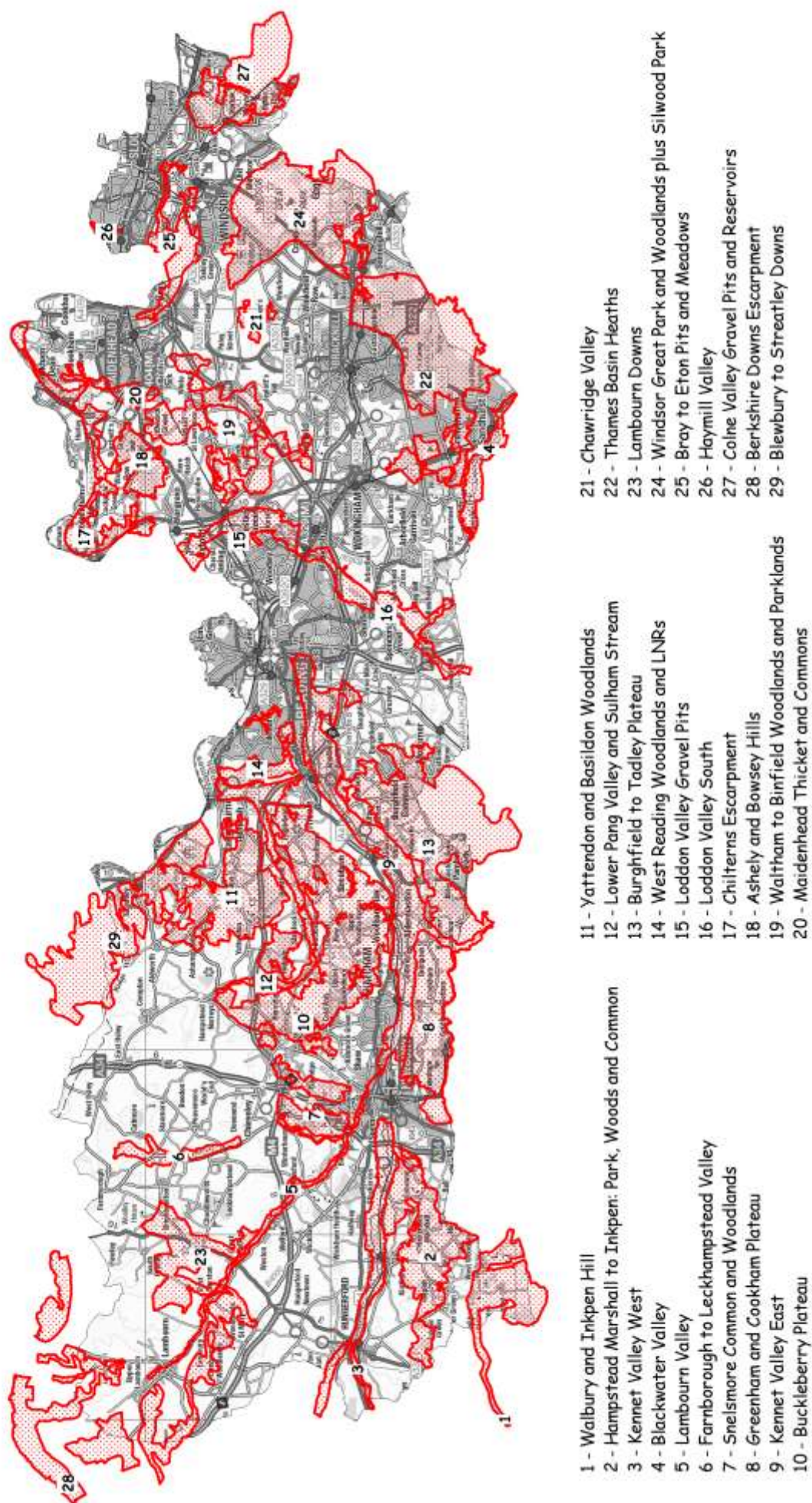
Ensuring that core habitat areas are protected is also important. In Berkshire 3.8% of land is designated as SSSI, compared to a national average of 7.7%.

Ecosystems:

A community of living things, which interact and work together as a system.

For example; a woodland ecosystem includes the microbes fungi, plants, trees, insects, birds and mammals within the non-living environment (soil, air and water).

4. Lawton, J. (2010) Making Space for Nature: A Review of England's Wildlife Sites and Ecological Network
5. BLNP: <http://berkshirelnp.org/index.php/what-we-do/strategy/biodiversity-opportunity-areas> (accessed 2014)



Contains Ordnance Survey data © Crown copyright
 and database right 2014 - Habitat, site and species data courtesy and copyright of Thames Valley Environmental Records Centre

Figure 5. Biodiversity Opportunity Areas in Berkshire

Berkshire's Biodiversity Opportunity Areas (BOAs)

Twenty nine BOAs have been defined in Berkshire, and they form the basis for our vision of a habitat network across the South East. They identify where the greatest opportunities for habitat restoration and creation are. For more information see www.BerkshireLNP.org.

1. Walbury & Inkpen Hills

The high chalk Walbury Hill & escarpment run west into Wiltshire. Opportunity for chalk grassland & woodland.

2. Hampstead Marshall to Inkpen

The plateau between Kennet Valley & the chalk downs. There are a number of SSSIs.

3. Kennet Valley West

The river Kennet is a rich chalk river. The valley has wet grassland, lowland meadows & fen.

4. Blackwater Valley

Flat riverside land, containing Berks' main concentration of purple moor grass & rush pasture.

5. Lambourn Valley

Alluvium & river gravels. Includes the River Lambourn SAC as well as lowland meadow & fen.

6. Farnborough to Leckhampstead Valley

A chalk valley in the Berkshire Downs. Chalk grassland restoration potential.

7. Snelsmore Common & Woodlands

Two plateau areas topped with acidic sandy soils. Heathland and acid grassland potential.

8. Greenham & Cookham Plateau

A flat plateau that slopes away to river valleys.

9. Kennet Valley East

Includes large areas of gravel pits and the West Berkshire Living Landscape Project

10. Buckleberry Plateau

Mixed habitats including ancient woodland and parkland. An extensive area of heathland at Bucklebury.

11. Yattendon & Basildon Woodlands

The largest BOA with many woodlands on the clay and Head topped chalk.

12. Lower Pang Valley & Sulham Stream

Flat riverside land and chalk river. River management and lowland meadow restoration.

13. Burghfield to Tadley Plateau

The plateau south of the River Kennet. Mixed habitats include heath, woodland and grassland.

14. West Reading Woodlands & LNRs

Urban fringe woodland and LNRs.

15. Loddon Valley Gravel Pits

Gravel pits north of the Loddon Valley. Wet woodland, fen and grassland habitats.

16. Loddon Valley South

Alluvium and River Terrace sand and gravel. The river supports uncommon aquatic species.

17. Chilterns Escarpment

Steeper sloped chalk valleys and riverside land. Chalk grassland, woodland and fen.

18. Ashely & Bowsey Hills

Two hills with extensive areas of woodland and replanted ancient woodland sites. Opportunity to protect geological exposures and woodland restoration.

19. Watham Woodlands & Parklands

Ancient woodlands north of Wokingham and Bracknell.

20. Maidenhead Thicket & Commons

A flat area of chalk & Lambeth Group with secondary woodland, ancient woodland & acid grassland

21. Chawridge Valley

A small BOA in the narrow Chawridge Bourne Valley. Grizzled Skipper butterflies can be found in the meadows.

22. Thames Basin Heaths

Includes the SPA. Extensive areas of heathland with some woodland.

23. South Lambourn Downs

Steep slopes with areas of chalk grassland and a concentration of ancient woodland sites.

24. Windsor Great Park & Woodlands including Silwood Park

The SAC has the largest number of veteran Oaks in the country and many rare insects.

25. Bray to Eton Pits & Meadows

Encompasses the main group of Thames Valley grasslands in East Berks.

26. Haymill Valley

A local BOA in an urban location with reedbed, fen and woodland.

27. Colne Valley Gravel Pits & Reservoirs

Extensive gravel pits and large reservoirs provide an important site for birds.

28. Berkshire Downs Escarpment

Chalk Downland Slopes with chalk grassland and arable land. Important for farmland birds.

29. Blewbury to Streatley Downs

Steep chalk slopes with chalk grassland, woodland and arable land. Important for Stone Curlew, butterflies and arable wildflowers.

People and Nature's Services

Nature is valued for the services and products it provides as well as for its intrinsic value. People rely on the natural environment and the services it provides us. Some examples of the benefits we receive from the natural environment in Berkshire are given below.

Clean Air

As well as literally providing the air that we breathe, nature helps filter out the pollutants and removes carbon.

Water

Nature helps to regulate our water supply, cleaning the pollutants out of our drinking water (saving water companies money). For example, the Berkshire Downs chalk aquifer and chalk streams feed into the water supply in Berkshire, this water supplies London and the surrounding areas⁶. Most of our water supply comes from the river Thames⁷.

Natural Capital:

The elements of nature that produce value to people.

For example our stock of forests, water, land and minerals provide us with food, clean air, wildlife, energy, wood, recreation and protection from hazards.

It also provides valuable flood defences; floodplain grazing marsh soaks up flood water, and vegetation on slopes help surface water absorb into the ground. Flood regulation is an issue in Berkshire, the Thames Catchment Flood Management Plan identifies the further action required to alleviate the risk of floods and has policies to store water or manage run-off while also providing environmental benefit. Adequate water flow is important; the River Lambourn has a near-natural flow regime which supports the breeding of game fish. The Water Framework was adopted into UK law in 2003 to ensure that all water bodies reach 'good ecological status' by 2015.

Food

About half of farming in Berkshire is of cereal crops, with 8% other crops, 5% horticulture, 16% grazing livestock, 7% dairy and 12% mixed farming. There are also a small number of specialist pig and poultry farms⁸.

Some crops (fruit, many flowers, rapeseed, alfalfa etc.) rely on the services of wild insects to pollinate them. This service has been estimated to be worth £691 million to the English economy. In other words, if we lose our pollinating insects England would need to find an extra £691 million each year in order to continue producing the same amount of food⁹.



Climate

Climate projections suggest that the impacts of extreme events; flooding, drought, heat waves, storms, snow and ice, are likely to intensify in coming decades¹⁰. Our natural environment both helps reduce our contribution to climate

6. Natural England (2013) NCA Profile: 110 Chilterns.

7. Natural England (2014) NCA Profile: 115. Thames Valley

8. Defra (2010) Land Use County Dataset.

9. S. Potts (2014) Personal Comment.

10. Climate UK (2012) A summary of Climate Change Risks for South East England

change and can help us adapt to the changes.

Vegetation locks up carbon, helping reduce overall emissions. Woodland is particularly good at this. Trees and vegetation in urban areas can also help cool the temperature by as much as 8°C, reducing energy costs in buildings and contribute to flood alleviation¹¹.

Health and Wellbeing

Access to green space has a significant impact on our levels of physical health.

Those who live furthest from public parks are more likely to be overweight or obese due to reduced levels of physical activity¹². The quality of the green space has also shown to have an effect, with people more likely to visit good quality green space. In Berkshire 4736ha (almost 4%) of land is designated by law as open access¹³, across which people can run, walk, explore, climb and watch wildlife without having to stay on paths. In addition to this, Berkshire has many public rights of way and other accessible land allowing access to the countryside. The Thames Path national trail runs through Berkshire following the river Thames. The Thames Valley national cycle route runs through Windsor Great Park, along the Jubilee River to Maidenhead through Reading and then via the Kennet and Avon Canal into West Berkshire, and the Ridgeway national trail runs through West Berkshire.



Access to green space has also been shown to have a positive impact on our mental health. People who live in greener urban areas show significantly less signs of anxiety and depression. Current costs to the UK economy from mental health issues in England are £105 billion¹⁴, compared to the £630 million required to maintain 27,000 parks and green spaces¹⁵. In Berkshire only 10% of households meet the Accessible Natural Greenspace Standard¹⁶ (ANGSt) advised by Natural England to ensure that everyone has adequate access to green space.

Fuel

The natural environment can be a significant contributor to our energy needs. The wood fuel industry contributes £7.2 billion worth of Gross Value Added (GVA) to the UK economy¹⁷. There exist several certification schemes which identify timber products from woodlands that are managed sustainably; as economic, environmental and social resources.

Economy and Business

All businesses benefit from a healthy natural environment, whether that is through the supply of raw materials, resilience to climate change, the health and wellbeing of employees or the attractiveness of the area to the workforce.

Berkshire is attractive to highly skilled individuals; the good quality of life associated with a healthy natural environment sets Berkshire apart from London, and means that businesses based here have the best talent available to them.

11. FC (2013) Air temperature regulation by urban trees and green infrastructure. Research Note.

12. Coombes et al (2010), The Relationship of Physical Activity and Overweight to Objectively Measured Green Space Accessibility and Use.

13. Countryside and Rights of Way Act 2000

14. HM Government (2011) No Health Without Mental Health: A Cross-Government Mental Health Outcomes Strategy for People of All Ages

15. RSPB (2004) Natural Fit: Can Green Space and Biodiversity Increase Levels of Physical Activity?

16. ANGSt results and Greenspace areas in unitary authorities in Berkshire compiled by Patrick McKernan, NE (2007)

Greener goods and services are also a multi-million pound opportunity in themselves. New markets based around the protection of natural resources are emerging. Generations are becoming more environmentally aware and demand for sustainable products is increasing.

Building materials

The extraction of aggregates as building materials is big business; in Berkshire sand and gravel are the main mineral deposits. In West Berkshire about 4.8 million tonnes of primary aggregates have been produced in the last 10 years. These resources are now much depleted¹⁸.

Forestry provides us with timber for construction and bio-fuel. For example, the Crown Estate manage Windsor and Swinley Forests in Berkshire, both are certified by the Forestry Stewardship Council (FSC) and are managed for wildlife, recreation and timber production. Approximately 12,000 tonnes of timber will be produced each year from 2012 to 2016¹⁹. Good woodland management will also benefit wildlife.



Moor Copse © Maria Radford

Culture

The natural environment provides an important sense of place. The history of an area has both been influenced by the natural environment, and has helped shape the present landscape. The Berkshire landscape includes historic parklands, ancient woodland, commons, reservoirs and gravel pits. Despite development over the years, it is still possible to appreciate the rich landscape character that attracted royalty and nobility.

Windsor Great Park is a Royal Park in the east of the county. It was once part of a Norman hunting forest, enclosed in the 13th century. Today it is a varied landscape of formal avenues, gardens, woodland and open grassland with many ancient veteran oak trees. Over 2.5 million people visit the park each year²⁰. Other places with significant natural heritage and interesting historical context include Basildon Park and Greenham Common.

The North Wessex Downs Area of Outstanding Natural Beauty (AONB) in the West of Berkshire is a unique and spectacular landscape that includes tranquil open chalk hills, ancient woodland and chalk streams. It attracts many tourists each year; providing a wide range of recreational activities from kite flying to horse riding. The Lambourn Valley is a well-known centre for the horse racing industry, and second only to Newmarket.



Flying Kites © Carl Everingham

Berkshire's natural history has inspired artists and writers such as Alexander Pope, Oscar Wilde,

17. Confor and the Forestry Commission (2006) The economic contribution of the forest industries to the UK economy

18. West Berkshire Council (2014) West Berkshire Minerals and Waste Development Plan Document.

19. The Crown Estate (2011) Our Contribution.

20. Crown Estate (2014) Windsor Great Park. Available at <http://www.thecrownestate.co.uk/windsor/parkland/windsor-great-park/> (accessed 15/05/2014)

Drivers of change

Population Growth

The national population projection suggests the number of people living in Berkshire could increase by around 60,714 people or 7% between 2012 and 2020²⁰. With this comes the pressure to increase the number of homes and to improve our infrastructure; expanding health and education services, increasing our transport network, increasing food production and to create new places of business. All of this requires land, which is a finite resource; 126,389 ha to be precise²².

Consumption of Natural Resources

A focus on economic development risks consuming more of our natural resources than is sustainable. We believe that economic development can be sustainable and considerate to our natural environment and the services it is providing us.

The environment has seemed to cope up until now, what has changed?

Climate Change

Climate change affects our natural environment, just as it affects us. Berkshire is predicted to face wetter winters and an increase in extreme temperature events during the summer²³. Flooding in the winter and droughts in the summer affects our wildlife; we need to ensure that our natural environment is resilient to change. The National Biodiversity Climate Change Vulnerability Model has been developed to identify areas of priority habitat most at risk from climate change²⁴. This information can be used in Berkshire to help us to target efforts on those habitats most at risk.



Cow on Greenham Common © John Spooner

Agricultural Land Use

Farmland is primarily used for food production, however cropped and uncropped areas can also provide habitats for wildlife. The choice of crops and management practices can have profound effects on the suitability of these habitats for supporting biodiversity. Agri-environment schemes provide options for farmers to manage their land to conserve wildlife and protect natural resources, and as such present important opportunities for enhancing Berkshire's biodiversity. Most agri-environment schemes are funded from the EU Common Agricultural Policy, which is currently undergoing drastic reform which will hugely affect the availability and nature of these agri-environment schemes.

21. Office for National Statistics (ONS) (2012) 2012-based Sub National Population Projections

22. Based on mapping reproduced from Ordnance Survey digital map data © Crown copyright 2007. All rights reserved. License number 0100031673.

23. Met Office (2014) UK Climate Predictions. Available at <http://ukclimateprojections.metoffice.gov.uk/>

24. Natural England (2014) NERR054 edition 1 – National biodiversity climate change vulnerability model.

Invasive Species, Pests and Disease

Some of the non-native species introduced to Berkshire are invasive, and are having a detrimental effect on our habitats and ecosystems. Berkshire has an extensive river system and invasive plants are a particular problem along these waterways.

Gaps in our Knowledge

A lack of information relating to our natural environment hasn't helped either. We have only recently started to monitor changes in our natural environment, and we are still a long way from being able to properly account for all the services nature provides us. This has all too often led to nature not being valued at all.

Environmental Awareness

We have found ourselves in a downward spiral, where each generation has less natural space left to explore, and each generation spends less time outside in the natural world than the last. People are becoming disconnected from nature and therefore are less likely to expect or desire a healthy natural environment.



Girl writing © BBOWT

Research Needs

A challenge for us is to build the evidence base and improve our understanding of the natural environment, how it functions and what it provides. Some areas for future research and knowledge gathering identified by the Berkshire LNP include:

- Quantifying the connectivity between our priority habitats
- The impact of agri-environment schemes on farmland habitats
- The abundance, variety and distribution of wildlife
- The condition of and threats to priority habitat outside designated areas
- The role of different land uses in carbon capture and storage
- The extent of pollination in the county and the status of pollinators
- The impact of local human consumption of material goods
- Current and future impacts of climate change
- The value of natural services to our health and wellbeing and our economy
- The risks associated with our natural services.

The above are areas where research would greatly improve our current understanding of the natural environment in Berkshire. Some of this research will be best conducted at a national scale, and some may be better focused locally. Research into these areas will depend on funding and resource availability.



Biodiversity Strategy

Aims

As part of the England Vision for 2050, the England Biodiversity Strategy²⁵ set out national outcomes to be achieved by 2020. The aim of this strategy is to identify and carry out local actions which will help to ensure that the relevant outcomes are achieved in Berkshire by 2020.

National Outcomes

Outcome 1 – Habitats and ecosystems on land (including freshwater habitats)

- A. Better wildlife habitats with 90% of priority habitats in favourable or recovering condition and at least 50% of SSSIs in favourable condition, while maintaining at least 95% in favourable or recovering condition.
- B. More, bigger and less fragmented areas for wildlife, with no net loss of priority habitat and an increase in the overall extent of priority habitats by 2020 (details in Appendix 2).
- C. At least 17% of land and inland water, especially areas of particular importance for biodiversity and ecosystem services, conserved through effective, integrated and joined up approaches to safeguard biodiversity and ecosystem services including through management of our existing systems of protected areas and the establishment of nature improvement areas;
- D. Restoring at least 15% of degraded ecosystems as a contribution to climate change mitigation and adaptation.

NB: National outcome 2 is not applicable to Berkshire as it only covers marine environments.

Outcome 3 – Species

We will see an overall improvement of the status of our wildlife and we will have prevented further human-induced extinctions of known threatened species.

Outcome 4 – People

Significantly more people will be engaged in biodiversity issues, aware of its value and taking positive action.

Indicators for the above outcomes have been defined nationally and are published by the Department for Environment, Food and Rural Affairs (Defra) on the gov.uk website.²⁶

25. Defra (2011) Biodiversity 2020: As Strategy for England's wildlife and ecosystem services.

26. Defra (2013) England Biodiversity Indicators. Available from <https://www.gov.uk/government/publications/england-biodiversity-indicators> (Accessed 15/05/2014)

Berkshire Objectives

These are local objectives that have been identified by the Berkshire LNP as helping to achieve our vision for the natural environment and also contribute towards our aim of achieving the national outcomes for biodiversity. The LNP will coordinate, monitor and report on these objectives. It is envisaged that as more information becomes available, new objectives will be required. Each objective will require an action plan to be developed by the lead organisation. It is expected that many organisations in Berkshire will get involved in helping to achieve these objectives.

Table 3. Objectives to protect and enhance habitats and ecosystems on land

No.	Objectives	Achieve By	Lead Organisation(s)
1.1	Devise a method to record the condition of Berkshire's priority habitat outside of designated sites.	2017	TVERC
1.2	Record & report on the condition of Berkshire's priority habitat outside of designated sites on an annual basis.*	2020	TVERC
1.3	Provide advice and support to help landowners achieve favourable condition of priority habitats	2020	CFE, BBOWT
1.4	Increase habitat connectivity by encouraging targeted habitat creation within the BOAs.	2020	All
1.5	Establish a mechanism in Berkshire for recording priority habitat restoration and creation.	2017	TVERC & LAs
1.6	Record & report on priority habitat restored or created in Berkshire on an annual basis.*	2020	TVERC
1.7	To ensure that the Local Wildlife Site system is maintained and improved upon.	2020	LAs and TVERC
1.8	Promote the use of biodiversity opportunity areas when guiding nature conservation effort and spending.	2020	All
1.9	Promote the use of biodiversity opportunity areas in the planning system(s) so as to guide development to the best locations.	2020	LAs
1.10	To assess current habitat connectivity in Berkshire and relate to the Berkshire vision for habitat networks (BOAs).	2017	UoR & BBOWT
1.11	Increase the area of priority habitat designated as LWS.	2020	TVERC, LAs, BBOWT
1.12	Promote the natural environment as a tool for flood and soil erosion management.	2020	EA
1.13	Engage all relevant sectors in achieving the objectives of the WFD in order to secure good ecological status for all water bodies.	2020	EA
1.14	Promote the natural environment as a reservoir for beneficial insects.	2020	LNP, BBOWT
1.15	Promote better management of our woodlands.	2020	NWD AONB, FC

* Funding required for this action

Table 4. Objectives for Species

No.	Objective	Achieve By	Lead Organisation (s)
2.1	Maintain our species records and encourage local recording.	On-going	TVERC
2.2	Identify key species for Berkshire where specific objectives would help and facilitate production of species objective plans as required.	2020	LNP wider partners
2.3	Promote the implementation of the Invasive Non-Native Species Framework strategy.	2020	EA

Table 5. Objectives for People

No.	Objective	Achieve By	Lead Organisation (s)
3.1	Promote the reduction of air pollution for the benefit of nature and people.	On going	PH
3.2	Create ways to record the flow of benefits and services nature provides us.	2020	All
3.3	Promote conservation volunteering.	On going	TCV
3.4	Promote the utilisation of outdoor space for physical activity.	On going	PH
3.5	Encourage the use of British standard BS42020: Biodiversity. Code of practice for planning and development.	Ongoing	LAs
3.6	Promote the use of Green Infrastructure in new and existing developments and encourage sustainable development.	Ongoing	LAs
3.7	Raise awareness of the natural environment and the services it provides us.	Ongoing	LNP

Table 6. Objectives for all outcomes

No.	Objective	Achieve By	Lead Organisation
4.1	Improve data sharing and communication of evidence.	2020	LNP
4.2	Respond to Local Plans and ensure that they have regard for the activities of the LNP and the natural environment within Berkshire, in line with the NPPF.	Ongoing	LNP
4.3	Develop action plans and delivery mechanisms for all objectives.	Ongoing	All
4.4	Ensure that all partners of the Berkshire LNP are working together for the benefit of biodiversity.	Ongoing	LNP

Lead Organisations:

Organisation	Abbreviation
Berks, Bucks & Oxon Wildlife Trust	BBOWT
Campaign for the Farmed Environment	CFE
Environment Agency	EA
Forestry Commission	FC
Local Authorities	LAs
Local Nature Partnership	LNP
Natural England	NE
Public Health Berkshire	PH
Thames Valley Environmental Records Centre	TVERC
The Conservation Volunteers	TVC
University of Reading	UoR

Glossary of Terms

Aggregates	Sand and gravel, crushed rock and other bulk materials used in the construction industry for purposes such as making concrete, mortar, asphalt or road stone, drainage or bulk filling.
Agri-environment schemes	A range of schemes operated by Defra designed to encourage environmentally friendly farming and public enjoyment of the countryside, includes Countryside Stewardship in England and Tir Gofal in Wales.
Area of Outstanding Natural Beauty	Area designated under the National Parks and Access to the Countryside Act 1949, with the primary purpose of designation being to conserve natural beauty.
Biodiversity	The common term for "biological diversity", the variety of life and the natural processes of which living things are a part. The term includes living organisms, the genetic differences between them and the communities in which they occur.
Biodiversity Action Reporting System (BARS)	An online recording system hosted by Defra to enable organisations to view and record biodiversity actions. Available at http://ukbars.Defra.gov.uk/
Biodiversity Opportunity Areas	BOAs identify where the greatest opportunities for habitat creation and restoration lie, enabling the efficient focusing of resources to where they will have the greatest positive conservation impact. This will represent a more efficient way of delivering action on the ground. More information can be found at http://berkshirelnp.org/
Bio-fuels	Currently Methane, Alcohols and Biodiesel, all of which may be made from sustainable agricultural crops, producing valuable by-products.
Climate change	The anticipated impact of modern human activity on the global environment leading to an estimated 3 –8 degree centigrade rise in temperatures in the UK over the next 100 years, with additional environmental consequences.
Common Agricultural Policy (CAP)	European Union wide policy that supports agriculture through price support, market management and measures to improve the agriculture industry. Undergoing a mid-term review, introducing decoupling and more modulation and cross compliance.
Common Standards Monitoring	A simple, quick assessment of a feature of interest (species, habitat, or geological) in a protected site which should be supported by limited, more detailed monitoring.
Countryside and Rights of Way (CROW) Act (2000)	Contains measures to improve public access to the open countryside and registered common land while recognising the legitimate interests of those who own and manage the land concerned; it amends the law relating to rights of way; it amends the law relating to nature conservation by strengthening protection for Sites of Special Scientific Interest including tougher penalties and by providing extra powers for the prosecution of wildlife crime; it provides a basis for the conservation of biological diversity.
Department for Environment, Food and Rural Affairs (Defra)	Central government body with the aim of sustainable development, which means a better quality of life for everyone, now and for generations to come, including: a better environment at home and internationally, and sustainable use of natural resources; economic prosperity through sustainable farming, fishing, food, water and other industries that meet consumers' requirements; thriving economies and communities in rural areas and a countryside for all to enjoy.

English Woodland Grant Schemes (EWGS)	A scheme administered by the Forestry Commission to provide grants to help create new woodlands and to encourage the good management and regeneration of existing woodlands.
Forestry Stewardship Council (FSC)	An independent, non-profit organization that protects forests for future generations.
Fragmentation	The breaking-up of continuous tracts of ecosystems, reducing the size of homogenous areas and creating barriers to the migration or dispersal of organisms.
Geological Diversity	'Geodiversity' is the variety of rocks, minerals, fossils, landforms and soils, together with the natural processes that shape them.
Higher Level Stewardship (HLS)	Agri-environment scheme introduced in 2005 to concentrate on the more complex types of management needed to achieve the objectives of the Environmental Stewardship Scheme.
Infrastructure	Anything, whether buildings, apparatus or services, essential to the development and use of land. Planning permission can be withheld if infrastructure required by a development is not provided, including infrastructure needs arising outside the proposed site.
Joint Nature Conservation Committee (JNCC)	The public body that advises UK Government on UK-wide and international nature conservation. Constituted by the National Environment and Rural Communities (NERC) Act 2006. For more information see http://jncc.defra.gov.uk/default.aspx?page=5287 .
Landscape	An area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors.
Landscape Character Area	Unique individual geographical areas in which landscape types occur, which share generic characteristics with other areas of the same type but have their own particular identity. More information can be found: http://www.naturalengland.org.uk/ourwork/landscape/englands/character/assessment/
Local Nature Partnership (LNP)	Local Nature Partnerships (LNPs) are partnerships of a broad range of local organisations, businesses and people who aim to help bring about improvements in their local natural environment. Established following the Natural Environment White Paper 2011.
Local Nature Reserves (LNR)	Site acquired, declared and managed by local authorities in co-operation with NE in order to protect its wildlife value for the benefit of the local community.
Local Wildlife Sites (LWS)	Areas in Berkshire which include important and rare habitats and species. The 42,000 LWS in England (covering 5% of land) are essential in conserving wildlife in the UK and halting the loss of biodiversity. For more information see http://www.tverc.org/cms/content/local-wildlife-sites .
National Character Areas	National Character Areas (NCAs) divide England into 159 distinct natural areas. Each is defined by a unique combination of landscape, biodiversity, geodiversity and cultural and economic activity. Their boundaries follow natural lines in the landscape rather than administrative boundaries, making them a good decision making framework for the natural environment. For more information see http://www.naturalengland.org.uk/publications/nca/default.aspx
National Biodiversity Climate Change Vulnerability Model	A practical way to identify areas of habitat most at risk from climate change, developed by Natural England. For more information see http://www.naturalengland.org.uk/ourwork/climateandenergy/climatechange/vulnerability/nationalvulnerabilityassessment.aspx
National cycle route	Part of the National Cycle Network; a series of safe, traffic-free lanes and quiet roads that connect to every major city and passes within a mile of 55% of UK homes. For more information see http://www.sustrans.org.uk/ncn/map/national-cycle-network/about

National trail	Routes based on Public Rights of Way through the nation's finest and most characteristic countryside, allowing an extensive journey on foot, horseback or by bicycle and capable of attracting tourist use from home and abroad.
Pasture	An area of land dominated by grass, which is used only for grazing, as distinct from a meadow that is mown. Pasture may be enclosed fields or unenclosed common land.
Permissive Path	A route where the landowner has granted permission for public use, usually for foot access but occasionally for horse riders, but which is not dedicated as a public right of way.
Ramsar sites	Wetlands of international importance, designated under the Ramsar Convention. For more information see http://www.naturalengland.org.uk/ourwork/conservation/designations/ramsars/
Red List Criteria	The IUCN Red List of Threatened Species™ is a widely recognised global approach for evaluating the conservation status of plants and animals. For more information see http://www.iucnredlist.org/about/red-list-overview
River Basin Management Plans	(RBMP) sets out measures to improve water in rivers, lakes, estuaries, coasts and in groundwater for the 10 river basin districts in England and Wales. For more information see https://www.gov.uk/government/collections/river-basin-management-plans .
Sites of Special Scientific Interest (SSSI)	The country's very best sites for wildlife and/or geology. They are designated by Natural England under the Wildlife and Countryside Act 1981 (as amended). For more information see http://www.naturalengland.org.uk/ourwork/conservation/designations/sssi/
Special Areas of Conservation (SAC)	Site designated according to the Habitats Directive 93/43/EEC on the conservation of natural habitats and wild fauna and flora. SAC defines a site of Community Importance designated by member states through a statutory, administrative and/or contractual act, where the necessary conservation measures are applied for the maintenance or restoration, at a favourable conservation status, of the natural habitats and/or the populations of the species for which the site is designated. All candidate SACs in UK are SSSIs.
Special Protection Areas (SPA)	An area of land, water or sea which has been identified as being of international importance for the breeding, feeding, wintering or the migration of rare and vulnerable species of birds found within the European Union. They are designated under the European Wild Birds Directive. For more information see http://www.naturalengland.org.uk/ourwork/conservation/designations/spa/
Species	Organisms are named and classified by a system of taxonomy according to similarities in structure, origin and/or genetic make-up. A species is the taxonomic group whose members can interbreed successfully.
Water Framework Directive (WFD)	EU legislation which expands the scope of water protection to all waters and sets out clear objectives that must be achieved by specified dates. For more information see http://jncc.defra.gov.uk/page-1375

Acknowledgements

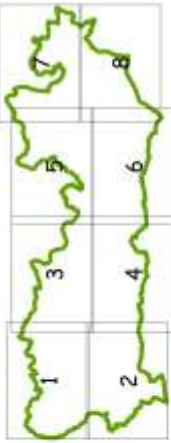
This report was produced by the Berkshire Local Nature Partnership (LNP). The Berkshire LNP was formally recognised by Government in 2012 as one of 48 LNPs. The Berkshire LNP works strategically with a wide range of partners from different sectors of the community to protect and enhance our natural environment and the benefits it provides us. Partners of the Berkshire LNP include:

- Agrii Consultancy Services [ACS]
- Berks, Bucks & Oxon Wildlife Trust [BBOWT]
- Bracknell Forest Council [BFC]
- Butterfly Conservation [BC]
- Earley Town Council [ETC]
- Environment Agency [EA]
- Farming and Countryside Education [FACE]
- Natural England [NE]
- National Farmers Union [NFU]
- North Wessex Downs Area of Outstanding Natural Beauty [NWDAONB]
- Public Health Berkshire [PH]
- Reading Borough Council [RBC]
- Royal Borough of Windsor and Maidenhead [RBWM]
- Slough Borough Council [SBC]
- Thames Valley Environmental Records Centre [TVERC]
- The Conservation Volunteers [TCV]
- University of Reading [UoR]
- West Berkshire Council [WBC]
- West Berkshire Farming and Countryside Project [WBCFP]
- Wokingham Borough Council [WC]
- And many others

www.BerkshireLNP.org



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Nature. Health. Economy



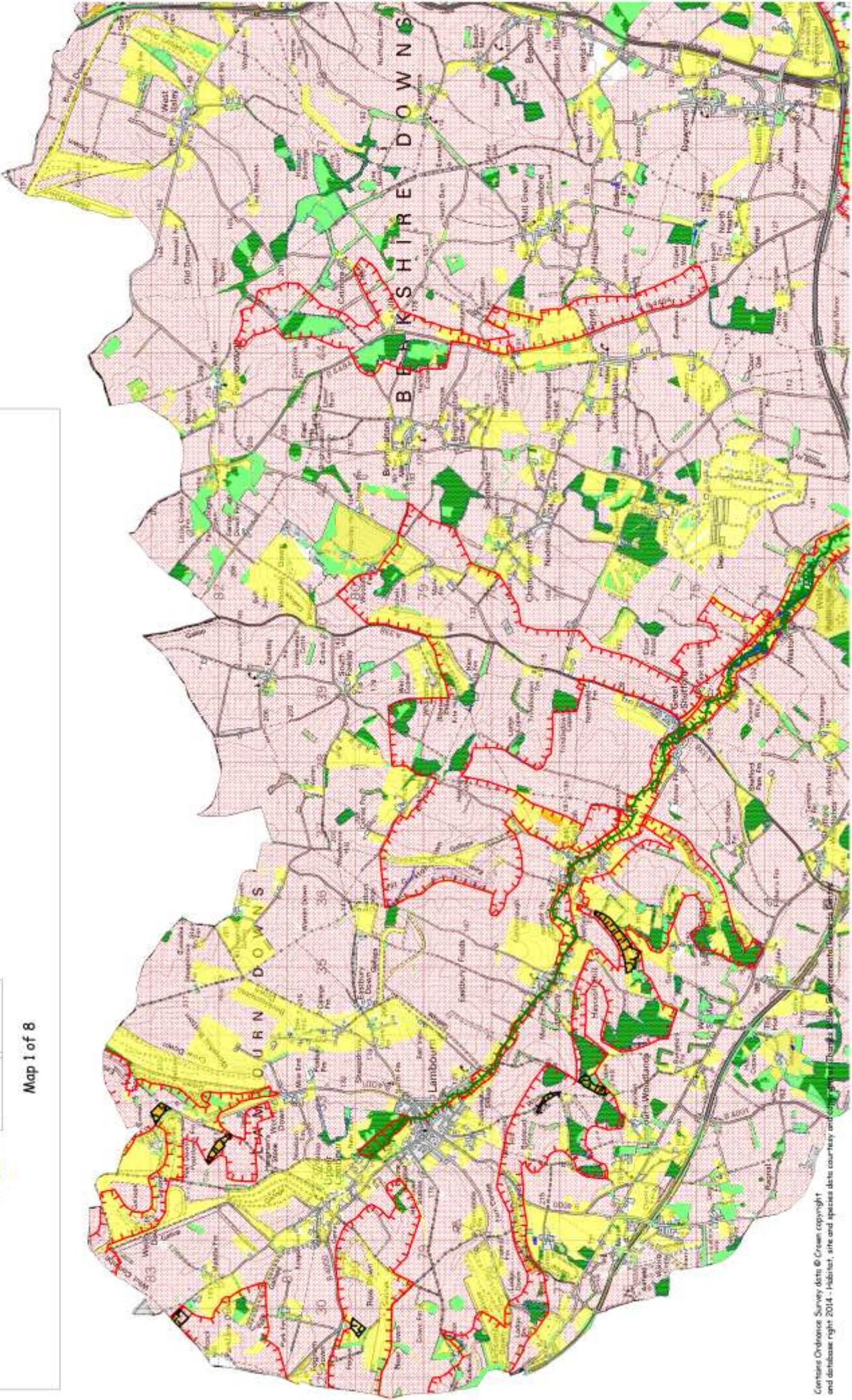
Map 1 of 8

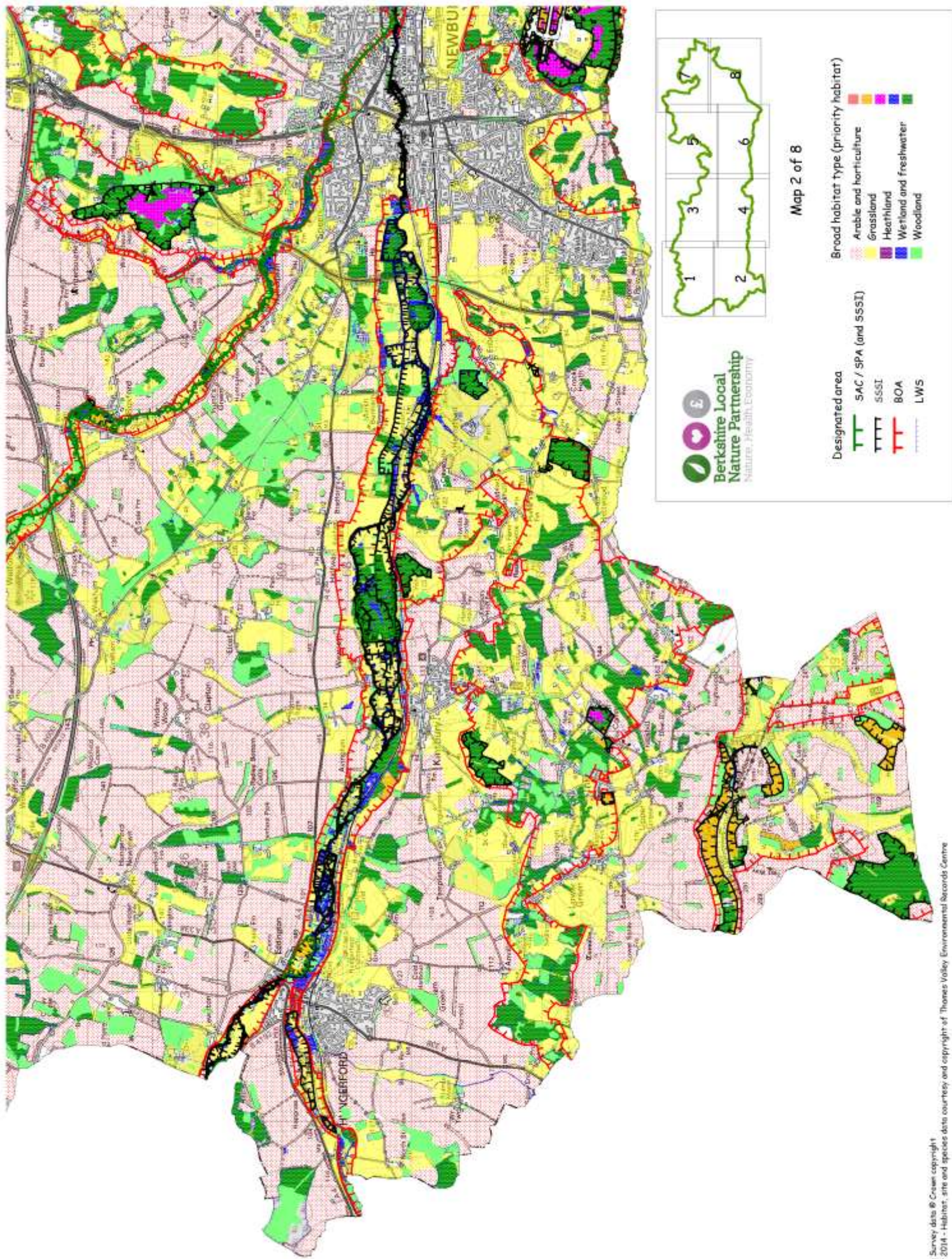
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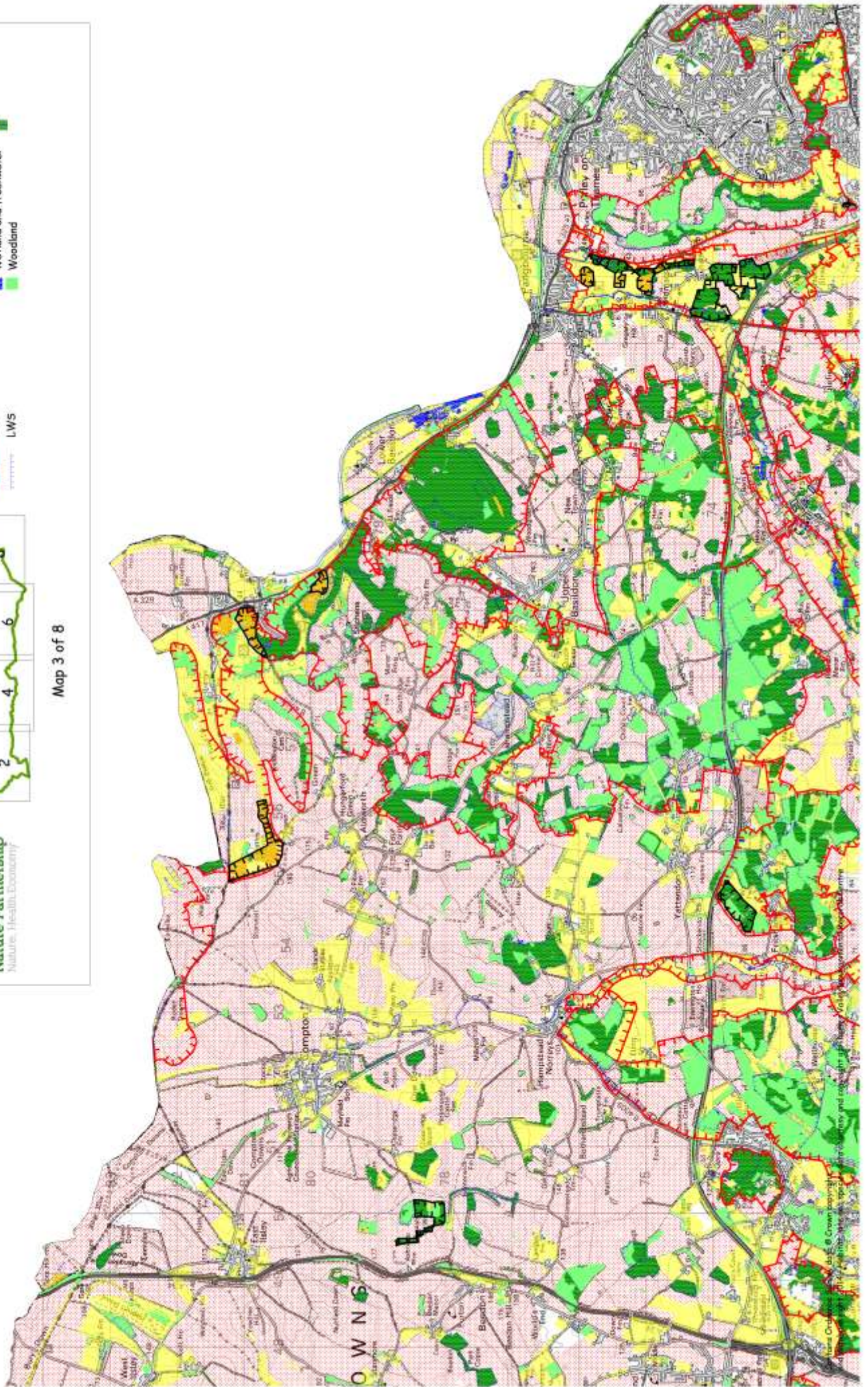
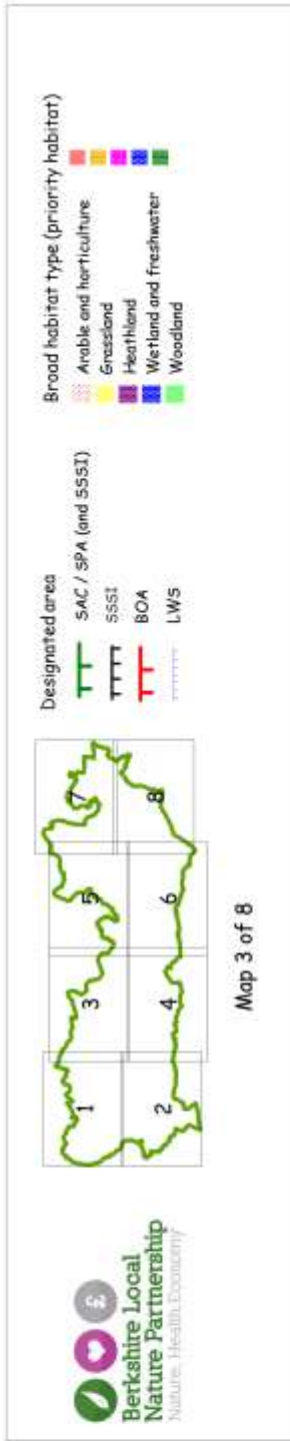
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- SSSI
- BOA
- LWS

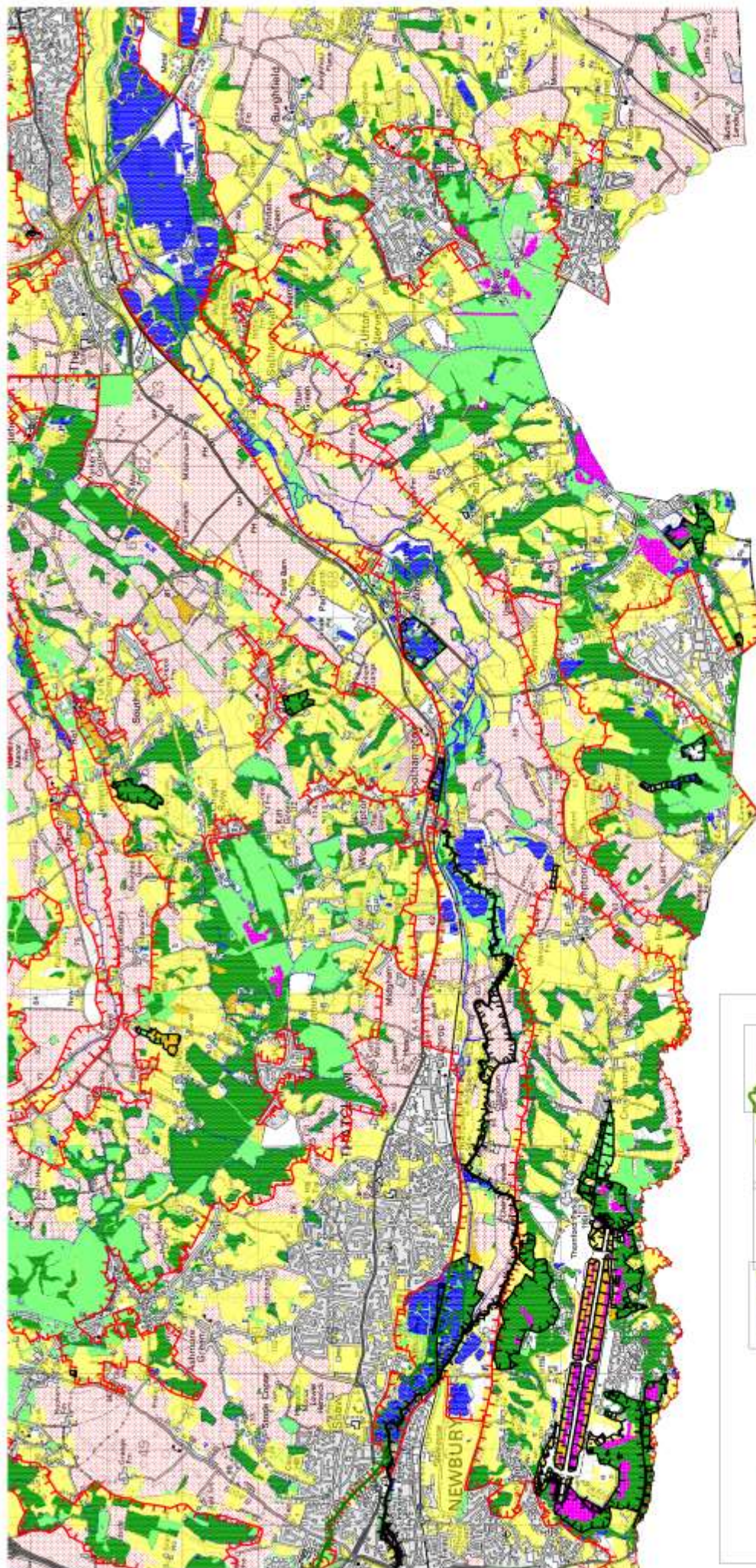
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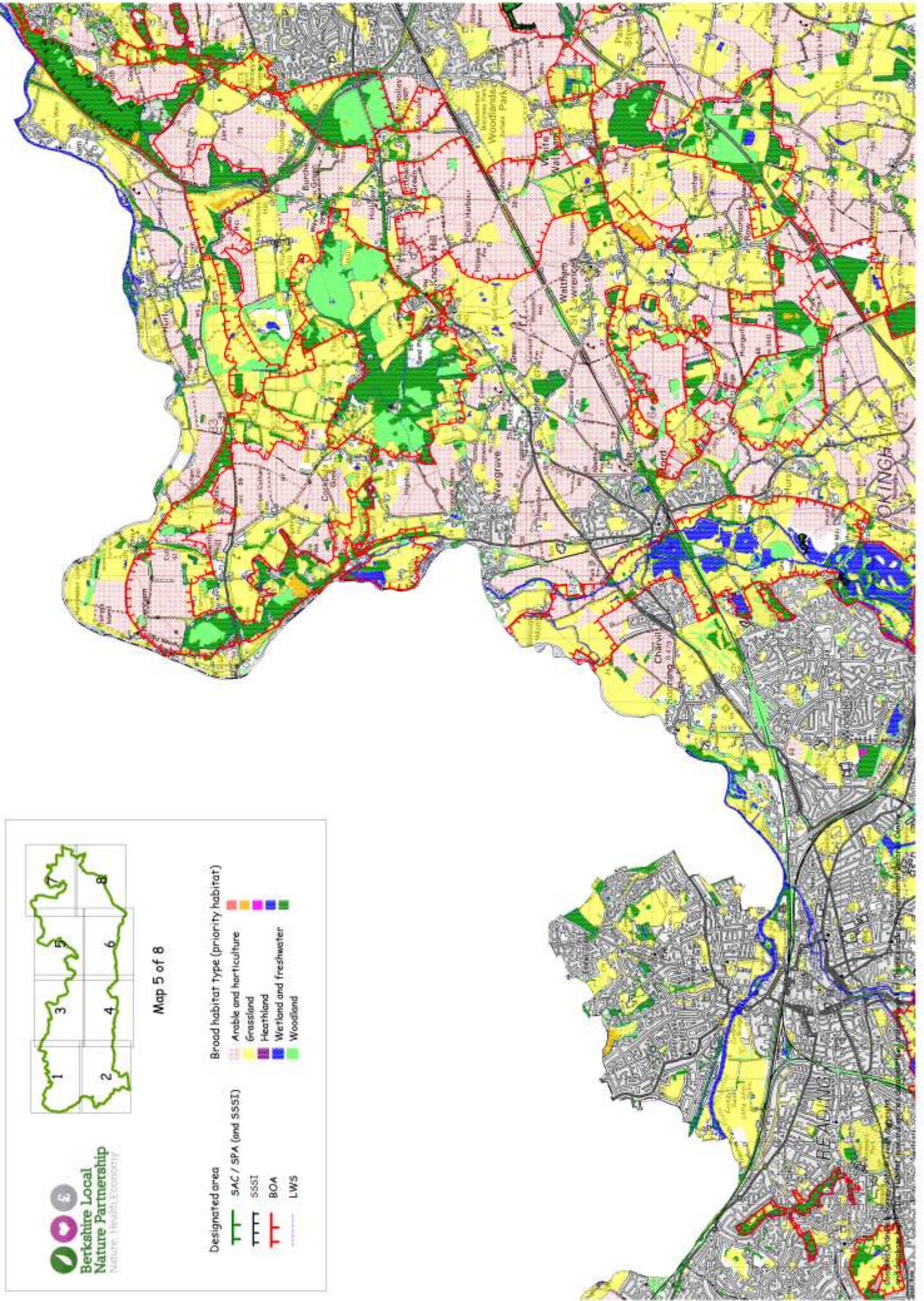
- Arable and horticulture
- Grassland
- Heathland
- Wetland and freshwater
- Woodland

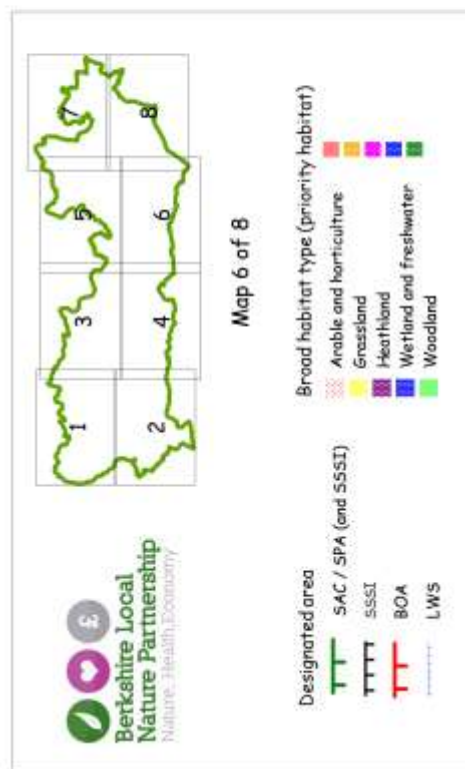
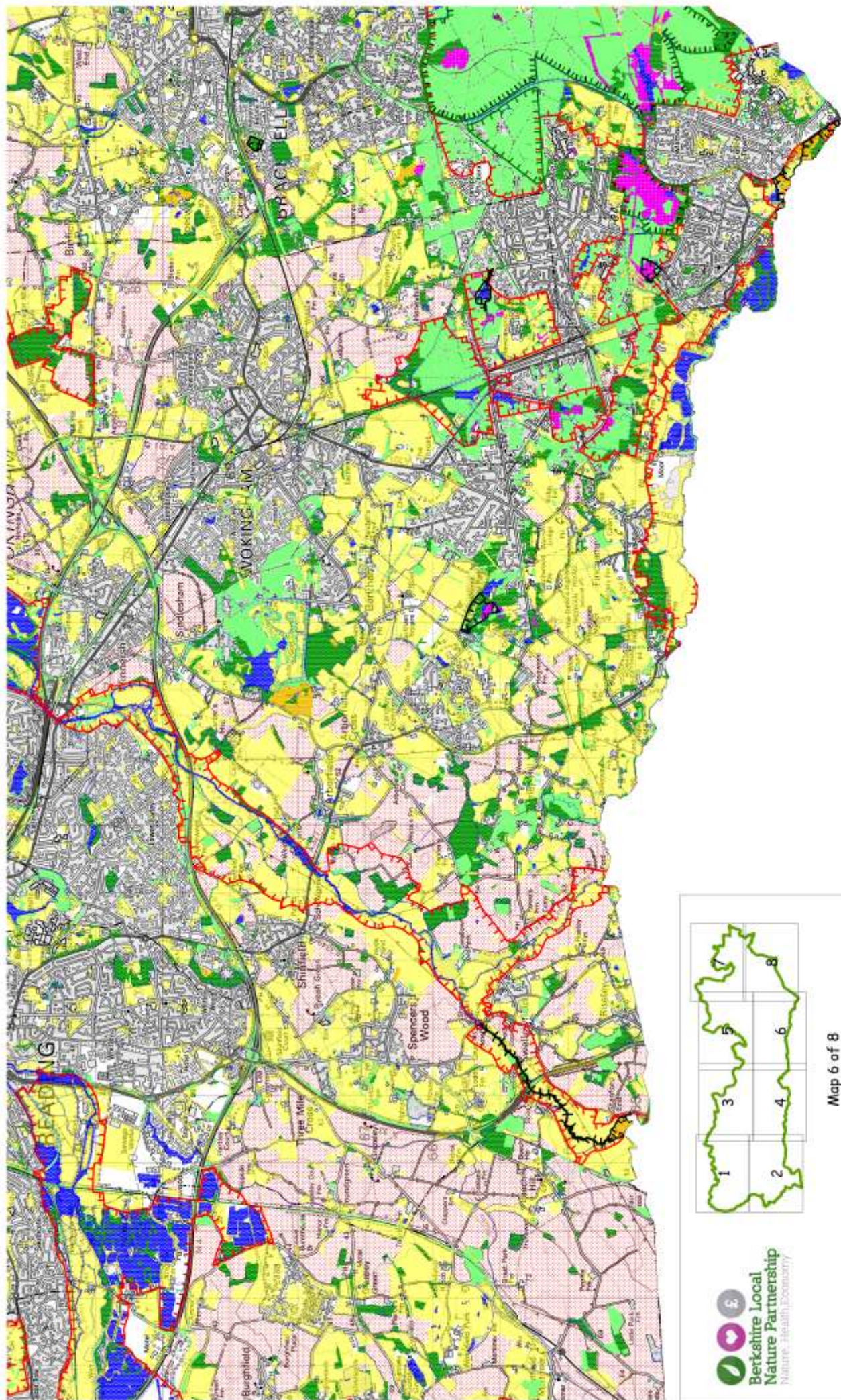




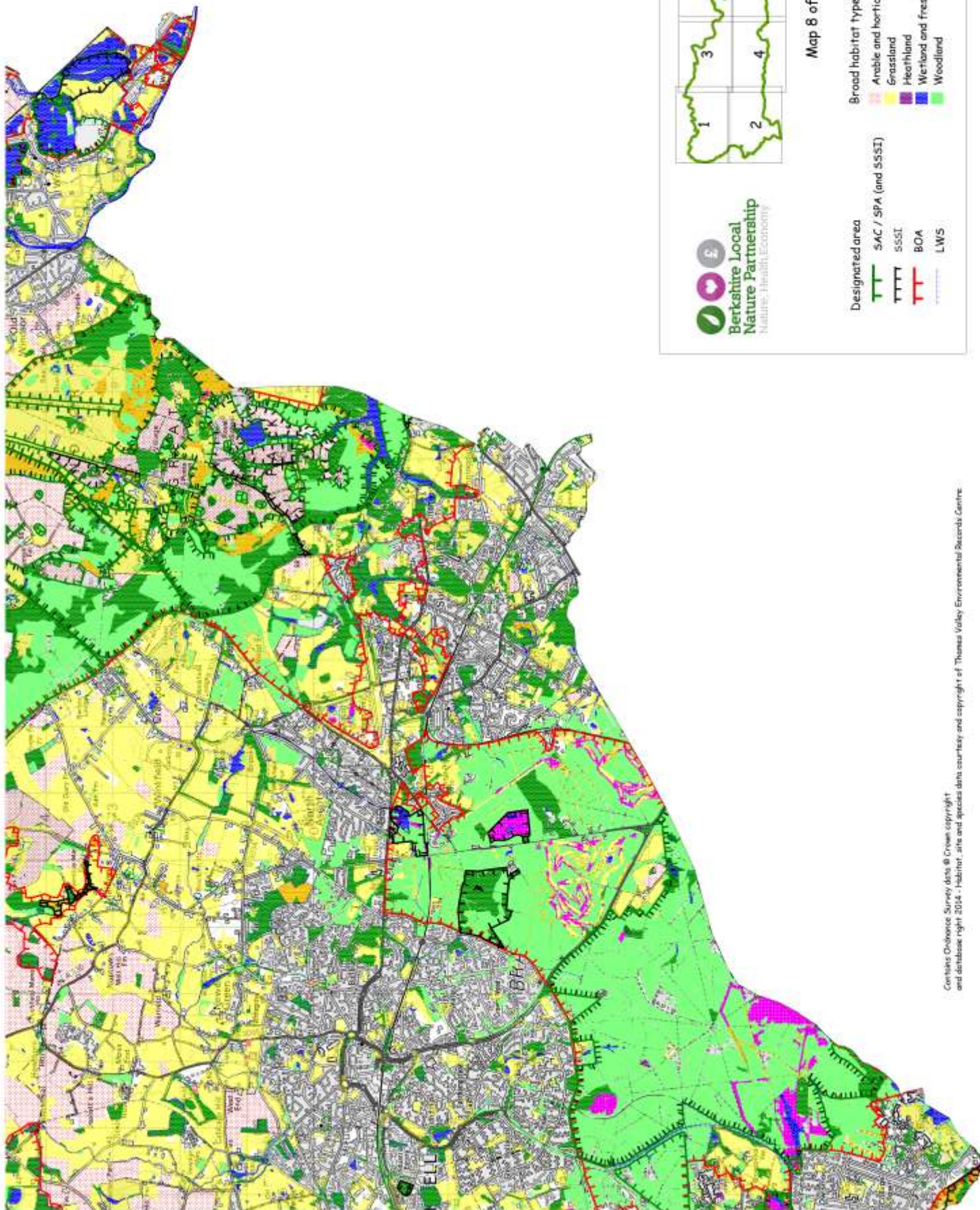








Courtesy Ordnance Survey data © Crown copyright and database right 2014 - Habitat, site and species data courtesy of Thames Valley Environmental Records Centre



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Designated area

- SAC / SPA (and SSSI)
- SSSI
- BOA
- LWS

Broad habitat type (priority habitat)

- Arable and horticulture
- Grassland
- Heathland
- Wetland and freshwater
- Woodland

Map 8 of 8

Appendix 2. Habitat creation targets for Berkshire (ha; except where stated)

	Lowland wood pasture and parkland	Traditional orchards	Hedgerows (km)	Ponds (number)	Arable field margins	Lowland heath	Lowland dry acid grassland	Lowland meadows	Lowland calcareous grassland	Purple moorgrass and rush pastures	Lowland fens	Reedbeds	Floodplain grazing marsh
Slough	8	2	1	0	0	8	4	3	0	0	0	3	8
RBWM	42	9	3	3	47	38	19	13	12	1	1	15	37
Bracknell Forest	14	5	1	1	47	23	13	9	0	2	4	8	26
Wokingham	23	8	2	2	83	35	19	12	4	4	6	12	38
Reading	9	2	1	1	12	7	3	2	4	0	0	3	6
West Berkshire	55	33	8	11	696	74	40	40	203	17	28	16	87
Berkshire Total	151	59	16	18	885	185	98	79	223	24	39	57	202

We will work to help Natural England achieve the above targets for habitat creation set for Berkshire. These targets are here to give an indication as to the level of habitat creation that would be required in Berkshire for England to achieve the target of creating an increase of 200,000ha in the overall extent of priority habitat.

Appendix 3: Priority Habitat in Berkshire as given by Natural England's Single Habitat Dataset.

The values listed here are the ones used in national accounting. However they are not the best available data locally. TVERC holds local data which is more accurate, but due to inconsistencies between local and national data handling, not all local data is able to be used in the national figures.

Habitat Type	Amount (ha) NE data
Freshwater	
Eutrophic standing water	NA
Mesotrophic lakes	NA
Oligotrophic and dystrophic lakes	NA
Ponds	NA
Rivers	NA
<i>Total Freshwater</i>	<i>NA</i>
Wetland	
Reedbeds	32.37
Lowland Fen	112.89
Coastal and floodplain grazing marsh	2100.31
<i>Total wetland</i>	<i>2245.57</i>
Grassland	
Lowland calcareous grassland	315.4
Lowland dry acid grassland	517.41
Lowland meadows	283.97
Purple moor grass and rush pasture	18.37
<i>Total Grassland</i>	<i>1135.15</i>
Woodland	
Lowland beech and yew woodland	NA
Lowland mixed deciduous woodland	13484.21
Wood pasture and parkland	NA
Wet woodland	NA
<i>Total woodland</i>	<i>13484.21</i>
Arable and horticulture	
Traditional orchard	100.75
Heathland	
Lowland heathland	731.01
Inland rock	
Open mosaic habitats on previously developed land	NA
Total	18,168.92

Appendix 4. Priority Species recorded in Berkshire

Common Name	Scientific name	Taxon Group
Sterile Beardless-moss	<i>Weissia sterilis</i>	moss
Velvet Tooth	<i>Hydnellum spongiosipes</i>	fungus
Oak Polypore	<i>Piptoporus quercinus</i>	fungus
Ribbonwort	<i>Pallavicinia lyellii</i>	liverwort
Pillwort	<i>Pilularia globulifera</i>	fern
Tower Mustard	<i>Arabis glabra</i>	flowering plant
Starved Wood-sedge	<i>Carex depauperata</i>	flowering plant
Curved Sedge	<i>Carex maritima</i>	flowering plant
Cornflower	<i>Centaurea cyanus</i>	flowering plant
White Helleborine	<i>Cephalanthera damasonium</i>	flowering plant
Chamomile	<i>Chamaemelum nobile</i>	flowering plant
Basil Thyme	<i>Clinopodium acinos</i>	flowering plant
Brown Galingale	<i>Cyperus fuscus</i>	flowering plant
Frog Orchid	<i>Dactylorhiza viridis</i>	flowering plant
Deptford Pink	<i>Dianthus armeria</i>	flowering plant
Small-flowered Sticky Eyebright	<i>Euphrasia anglica</i>	flowering plant
Copse-bindweed	<i>Fallopia dumetorum</i>	flowering plant
Red-tipped Cudweed	<i>Filago lutescens</i>	flowering plant
Red Hemp-nettle	<i>Galeopsis angustifolia</i>	flowering plant
Wild Candytuft	<i>Iberis amara</i>	flowering plant
Pennyroyal	<i>Mentha pulegium</i>	flowering plant
Yellow Bird's-nest	<i>Monotropa hypopitys</i>	flowering plant
Grape-hyacinth	<i>Muscari neglectum</i>	flowering plant
Tubular Water-dropwort	<i>Oenanthe fistulosa</i>	flowering plant
Fly Orchid	<i>Ophrys insectifera</i>	flowering plant
Greater Butterfly-orchid	<i>Platanthera chlorantha</i>	flowering plant
Corn Buttercup	<i>Ranunculus arvensis</i>	flowering plant
Greater Water-parsnip	<i>Sium latifolium</i>	flowering plant
Marsh Stitchwort	<i>Stellaria palustris</i>	flowering plant
Spreading Hedge-parsley	<i>Torilis arvensis</i>	flowering plant
Pale Dog-violet	<i>Viola lactea</i>	flowering plant
Juniper	<i>Juniperus communis</i>	conifer
Hornet Robberfly	<i>Asilus crabroniformis</i>	insect - true fly (Diptera)
Royal Splinter Crane-fly	<i>Gnophomyia elsneri</i>	insect - true fly (Diptera)
Mottled Bee-fly	<i>Thyridanthrax fenestratus</i>	insect - true fly (Diptera)
Southern Iron Blue	<i>Baetis niger</i>	insect - mayfly (Ephemeroptera)
Brown-banded Carder-bee	<i>Bombus (Thoracobombus) humilis</i>	insect - hymenopteran
Red-shanked Carder-bee	<i>Bombus (Thoracobombus) ruderarius</i>	insect - hymenopteran
Meadow Ant	<i>Formica pratensis</i>	insect - hymenopteran
Red-horned Cardinal Click Beetle	<i>Ampedus rufipennis</i>	insect - beetle (Coleoptera)
Variable Chafer	<i>Gnorimus variabilis</i>	insect - beetle (Coleoptera)
Oak Click Beetle	<i>Lacon querceus</i>	insect - beetle (Coleoptera)
Violet Click Beetle	<i>Limoniscus violaceus</i>	insect - beetle (Coleoptera)
Stag Beetle	<i>Lucanus cervus</i>	insect - beetle (Coleoptera)
Grey Dagger	<i>Acronicta psi</i>	insect - moth
Knot Grass	<i>Acronicta rumicis</i>	insect - moth
Forester	<i>Adscita statices</i>	insect - moth
Flounced Chestnut	<i>Agrochola helvola</i>	insect - moth
Brown-spot Pinion	<i>Agrochola litura</i>	insect - moth
Beaded Chestnut	<i>Agrochola lychnidis</i>	insect - moth
Green-brindled Crescent	<i>Allophyes oxyacanthae</i>	insect - moth
Ear Moth	<i>Amphipoea oculea</i>	insect - moth

Continued

Mouse Moth	<i>Amphipyra tragopoginis</i>	insect - moth
Large Nutmeg	<i>Apamea anceps</i>	insect - moth
Dusky Brocade	<i>Apamea remissa</i>	insect - moth
Deep-brown Dart	<i>Aporophyla lutulenta</i>	insect - moth
Garden Tiger	<i>Arctia caja</i>	insect - moth
Sprawler	<i>Asteroscopus sphinx</i>	insect - moth
Centre-barred Sallow	<i>Atethmia centrugo</i>	insect - moth
Minor Shoulder-knot	<i>Brachylomia viminalis</i>	insect - moth
Mottled Rustic	<i>Caradrina morpheus</i>	insect - moth
Crescent	<i>Celaena leucostigma</i>	insect - moth
Streak	<i>Chesias legatella</i>	insect - moth
Latticed Heath	<i>Chiasmia clathrata</i>	insect - moth
False Mocha	<i>Cyclophora porata</i>	insect - moth
Oak Lutestring	<i>Cymatophorima diluta subsp. hartwiegi</i>	insect - moth
Small Square-spot	<i>Diarsia rubi</i>	insect - moth
Heart Moth	<i>Dicycla oo</i>	insect - moth
Figure of Eight	<i>Diloba caeruleocephala</i>	insect - moth
Small Phoenix	<i>Ecliptopera silaceata</i>	insect - moth
September Thorn	<i>Ennomos erosaria</i>	insect - moth
Dusky Thorn	<i>Ennomos fuscantaria</i>	insect - moth
August Thorn	<i>Ennomos quercinaria</i>	insect - moth
Autumnal Rustic	<i>Eugnorisma glareosa</i>	insect - moth
Autumnal Rustic	<i>Eugnorisma glareosa subsp. glareosa</i>	insect - moth
Spinach	<i>Eulithis mellinata</i>	insect - moth
Double Dart	<i>Graphiphora augur</i>	insect - moth
Small Emerald	<i>Hemistola chrysoprasaria</i>	insect - moth
Ghost Moth	<i>Hepialus humuli</i>	insect - moth
Ghost Moth	<i>Hepialus humuli subsp. humuli</i>	insect - moth
Rustic	<i>Hoplodrina blanda</i>	insect - moth
Rosy Rustic	<i>Hydraecia micacea</i>	insect - moth
Brindled Beauty	<i>Lycia hirtaria</i>	insect - moth
V-moth	<i>Macaria wauaria</i>	insect - moth
Lackey	<i>Malacosoma neustria</i>	insect - moth
Dot Moth	<i>Melanchra persicariae</i>	insect - moth
Broom Moth	<i>Melanchra pisi</i>	insect - moth
Pretty Chalk Carpet	<i>Melanthia procellata</i>	insect - moth
Rosy Minor	<i>Mesoligia literosa</i>	insect - moth
Drab Looper	<i>Minoa murinata</i>	insect - moth
Shoulder-striped Wainscot	<i>Mythimna comma</i>	insect - moth
Oblique Carpet	<i>Orthonama vittata</i>	insect - moth
Powdered Quaker	<i>Orthosia gracilis</i>	insect - moth
Common Fan-foot	<i>Pechipogo strigilata</i>	insect - moth
Dark Spinach	<i>Pelurga comitata</i>	insect - moth
Large Wainscot	<i>Rhizedra lutosa</i>	insect - moth
Mullein Wave	<i>Scopula marginepunctata</i>	insect - moth
Chalk Carpet	<i>Scotopteryx bipunctaria subsp. cretata</i>	insect - moth
Shaded Broad-bar	<i>Scotopteryx chenopodiata</i>	insect - moth
Striped Lychnis	<i>Shargacucullia lychnitis</i>	insect - moth
White Ermine	<i>Spilosoma lubricipeda</i>	insect - moth
Buff Ermine	<i>Spilosoma luteum</i>	insect - moth
Hedge Rustic	<i>Tholera cespitis</i>	insect - moth
Feathered Gothic	<i>Tholera decimalis</i>	insect - moth
Blood-Vein	<i>Timandra comae</i>	insect - moth

Continued

Pale Eggar	<i>Trichiura crataegi</i>	insect - moth
Cinnabar	<i>Tyria jacobaeae</i>	insect - moth
Oak Hook-tip	<i>Watsonalla binaria</i>	insect - moth
Dusky-lemon Sallow	<i>Xanthia gilvago</i>	insect - moth
Sallow	<i>Xanthia ictertia</i>	insect - moth
Dark-barred Twin-spot Carpet	<i>Xanthorhoe ferrugata</i>	insect - moth
Heath Rustic	<i>Xestia agathina</i>	insect - moth
Neglected Rustic	<i>Xestia castanea</i>	insect - moth
Small Heath	<i>Coenonympha pamphilus</i>	insect - butterfly
Small Blue	<i>Cupido minimus</i>	insect - butterfly
Dingy Skipper	<i>Erynnis tages</i>	insect - butterfly
Marsh Fritillary	<i>Euphydryas aurinia</i>	insect - butterfly
Duke of Burgundy	<i>Hamearis lucina</i>	insect - butterfly
Grayling	<i>Hipparchia semele</i>	insect - butterfly
Wall	<i>Lasiommata megera</i>	insect - butterfly
Wood White	<i>Leptidea sinapis</i>	insect - butterfly
White Admiral	<i>Limenitis camilla</i>	insect - butterfly
Silver-studded Blue	<i>Plebejus argus</i>	insect - butterfly
Grizzled Skipper	<i>Pyrgus malvae</i>	insect - butterfly
White-letter Hairstreak	<i>Satyrium w-album</i>	insect - butterfly
Brown Hairstreak	<i>Thecla betulae</i>	insect - butterfly
Thames Ramshorn	<i>Gyraulus (Gyraulus) acronicus</i>	mollusc
Large-mouthed Valve Snail	<i>Valvata (Tropidina) macrostoma</i>	mollusc
Desmoulin's Whorl Snail	<i>Vertigo (Vertigo) moulinsiana</i>	mollusc
Crystal Moss-animal	<i>Lophopus crystallinus</i>	bryozoan
White-clawed Freshwater Crayfish	<i>Austropotamobius pallipes</i>	crustacean
European Eel	<i>Anguilla anguilla</i>	bony fish (Actinopterygii)
Atlantic Salmon	<i>Salmo salar</i>	bony fish (Actinopterygii)
Brown/Sea Trout	<i>Salmo trutta</i>	bony fish (Actinopterygii)
Brown Trout	<i>Salmo trutta subsp. fario</i>	bony fish (Actinopterygii)
Common Toad	<i>Bufo bufo</i>	amphibian
Great Crested Newt	<i>Triturus cristatus</i>	amphibian
Aquatic Warbler	<i>Acrocephalus paludicola</i>	bird
Marsh Warbler	<i>Acrocephalus palustris</i>	bird
Sky Lark	<i>Alauda arvensis</i>	bird
Tree Pipit	<i>Anthus trivialis</i>	bird
Greater Scaup	<i>Aythya marila</i>	bird
Great Bittern	<i>Botaurus stellaris</i>	bird
Stone-curlew	<i>Burhinus oedicephalus</i>	bird
European Nightjar	<i>Caprimulgus europaeus</i>	bird
Lesser Redpoll	<i>Carduelis cabaret</i>	bird
Linnet	<i>Carduelis cannabina</i>	bird
Twite	<i>Carduelis flavirostris</i>	bird
Hen Harrier	<i>Circus cyaneus</i>	bird
Hawfinch	<i>Coccothraustes coccothraustes</i>	bird
Corn Crake	<i>Crex crex</i>	bird
Common Cuckoo	<i>Cuculus canorus</i>	bird
Bewick's Swan	<i>Cygnus columbianus</i>	bird
Lesser Spotted Woodpecker	<i>Dendrocopos minor</i>	bird
Corn Bunting	<i>Emberiza calandra</i>	bird
Yellowhammer	<i>Emberiza citrinella</i>	bird
Reed Bunting	<i>Emberiza schoeniclus</i>	bird
Herring Gull	<i>Larus argentatus</i>	bird

Continued

Black-tailed Godwit	<i>Limosa limosa</i>	bird
Common Grasshopper Warbler	<i>Locustella naevia</i>	bird
Wood Lark	<i>Lullula arborea</i>	bird
Common Scoter	<i>Melanitta nigra</i>	bird
Yellow Wagtail	<i>Motacilla flava subsp. flavissima</i>	bird
Spotted Flycatcher	<i>Muscicapa striata</i>	bird
Eurasian Curlew	<i>Numenius arquata</i>	bird
House Sparrow	<i>Passer domesticus</i>	bird
Eurasian Tree Sparrow	<i>Passer montanus</i>	bird
Grey Partridge	<i>Perdix perdix</i>	bird
Wood Warbler	<i>Phylloscopus sibilatrix</i>	bird
Willow Tit	<i>Poecile montanus</i>	bird
Marsh Tit	<i>Poecile palustris</i>	bird
Dunnock	<i>Prunella modularis</i>	bird
Bullfinch	<i>Pyrrhula pyrrhula</i>	bird
Roseate Tern	<i>Sterna dougallii</i>	bird
European Turtle Dove	<i>Streptopelia turtur</i>	bird
Ring Ouzel	<i>Turdus torquatus</i>	bird
Northern Lapwing	<i>Vanellus vanellus</i>	bird
Slow-worm	<i>Anguis fragilis</i>	reptile
Sand Lizard	<i>Lacerta agilis</i>	reptile
Grass Snake	<i>Natrix natrix</i>	reptile
Adder	<i>Vipera berus</i>	reptile
Common Lizard	<i>Zootoca vivipara</i>	reptile
European Water Vole	<i>Arvicola amphibius</i>	terrestrial mammal
Western Barbastelle	<i>Barbastella barbastellus</i>	terrestrial mammal
West European Hedgehog	<i>Erinaceus europaeus</i>	terrestrial mammal
Brown Hare	<i>Lepus europaeus</i>	terrestrial mammal
European Otter	<i>Lutra lutra</i>	terrestrial mammal
Harvest Mouse	<i>Micromys minutus</i>	terrestrial mammal
Hazel Dormouse	<i>Muscardinus avellanarius</i>	terrestrial mammal
Polecat	<i>Mustela putorius</i>	terrestrial mammal
Bechstein's Bat	<i>Myotis bechsteinii</i>	terrestrial mammal
Noctule Bat	<i>Nyctalus noctula</i>	terrestrial mammal
Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>	terrestrial mammal
Brown Long-eared Bat	<i>Plecotus auritus</i>	terrestrial mammal
Greater Horseshoe Bat	<i>Rhinolophus ferrumequinum</i>	terrestrial mammal
Lesser Horseshoe Bat	<i>Rhinolophus hipposideros</i>	terrestrial mammal

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