Rotherham Biodiversity Action Plan 2012
Introduction

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Executive Summary

Biodiversity is our most precious resource. The Earth's biological resources are vital to humanity's economic and social development. They provide the very systems that support our existence on this planet and are global assets of tremendous value to both present and future generations. We simply cannot live without a planet rich with biodiversity - we must protect it now and in the future.

Rotherham Biodiversity Forum partners published the first Rotherham Biodiversity Action Plan (RBAP) in 2004. Based on the protection and enhancement of habitats and species prioritised both nationally and locally the plan provided a comprehensive assessment of the nature conservation value of the borough. The 2004 RBAP has been successful in enabling delivery of biodiversity action via targeted site management, project development, guiding survey and monitoring effort and also within the planning framework to highlight the need for habitat retention and enhancement. Since 2004 the national priorities for conservation action have been expanded and refined and new legislation and Government information has been published that will guide the next era of biodiversity delivery. It is appropriate to review the RBAP to take stock of successes and constraints encountered to date and in light of the new thinking and increased Government focus.

This 2nd edition of the Rotherham Biodiversity Action Plan builds on all the work of the previous decades to set Rotherham challenging, but necessary, new targets for the protection and restoration of the natural environment. The Rotherham Biodiversity Action Plan identifies the priorities for the conservation and enhancement of Rotherham's biodiversity. It is the result of the work of Rotherham's Biodiversity Forum, a partnership of naturalists, landowners, conservationists and RMBC staff.

The over-riding principles of Rotherham Biodiversity Action Plan delivery are as follows:

1. To maintain, enhance, expand and connect the biodiversity of Rotherham by:
   - protecting the natural populations and distribution of species;
   - conserving natural and semi-natural areas within which species can be maintained, and;
   - identifying opportunities for habitat creation, expansion and connection
2. To involve local people and develop effective partnerships to ensure that programmes for biodiversity conservation are successful and can be sustained in the long-term.
3. To contribute towards the conservation of UK and global biodiversity by monitoring actions and reporting to established systems.
4. To fully integrate biodiversity action as a central principle of the Rotherham Local Plan

A healthy natural environment contains a mosaic of wild and managed spaces; this enables different plants and animals to find all they need to survive. It will also support movement and expansion so that they can react and adapt to changes in climate and from human impacts. Natural habitats are usually more diverse and can support many kinds of wildlife but semi-natural, landscaped and amenity open spaces are valuable and also support wildlife. All our wildlife will benefit from our efforts to keep, expand and connect open spaces.

A healthy natural environment makes human life possible and provides quality of life; it provides food, fuel, clean air and water, medicine and climate regulation. These products are not just from exotic rainforests and remote jungles; Rotherham's woodlands and street trees help to keep our air clean, our agricultural products are pollinated by bees and other insects that need local woodlands, grasslands and wetlands to survive, our country parks and canals are great tourist attractions improving our local economies and employment levels, our urban parks and nature reserves provide free, healthy recreational and spiritual spaces improving our health, fitness and mental well-being.

To conserve and improve Rotherham's natural environment, and all the benefits we get from it, we need to follow the national approach of 'More – Bigger – Better – Joined'; we need to:

1. Improve the quality of current core wildlife sites by better habitat management
2. Increase the amount and size of core wildlife sites
3. Enhance and create connections between wildlife sites, through physical corridors or 'stepping stones'
4. Reduce pressures on wildlife by improving the wider environment, including through buffering wildlife sites.

The Rotherham Biodiversity Action Plan will guide the delivery of these actions.

Rotherham Biodiversity Forum Partners

Rotherham Biodiversity Forum includes representatives from the following organisations as well as members of the public who are interested in the protection of Rotherham's natural environment.

- Rotherham Naturalists' Society
- Sheffield Bird Study Group
- Rotherham District Ornithological Society
- South Yorkshire Badger Group
- South Yorkshire Bat Group
- South Yorkshire Biodiversity Forum
- The Wildlife Trust for Rotherham and Sheffield
- Yorkshire Wildlife Trust
- South Yorkshire Forest Partnership
- Natural England
- Environment Agency
- Rotherham Metropolitan Borough Council
- Rotherham Biological Records Centre
- Wentworth Fitzwilliam Estate
- Sandbeck Estates
- Sorby Natural History Society
- Yorkshire Naturalists' Union

Intended Users

What does the Rotherham Biodiversity Action Plan mean for …

Schools

Schools can use their own grounds and local nature reserves or accessible wildlife sites to support all aspects of the DCSF Sustainable Schools framework. Biodiversity fits well with science and geography curricula, and with a little imagination it can easily link in to all subjects. For example, monitoring and recording biodiversity provides a wealth of data which can be used to support numeracy lessons; looking at the seasons and animal migration can help introduce ideas about changes over time and for centuries, nature has provided inspiration for poetry, art and literature too; with many plants and animals also having great cultural symbolism.

School grounds can include semi-natural habitats such as green roofs, hedgerows and ponds and features including insect hibernation stations, nest boxes and compost heaps. Giving children time each day outdoors is more beneficial than teaching lessons without context. Beyond the immediate school building and grounds, local communities also offer many opportunities for learning about biodiversity, including parks and canals. Further afield, a variety of biodiversity and natural environment organisations offer good quality, safe teaching and learning experiences,

The RBAP contains an introduction to biodiversity and ecosystem services as well as related legislation and best practice, it explains the habitats and species that are locally important and supports the designation of nature reserves and wildlife sites that can be visited for social and educational use.

Further information can be found at:
http://www.keepbritaintidy.org/ecoschools/aboutecoschools
http://www.rspb.org.uk/ourwork/teaching/
http://www.bbc.co.uk/schools/teachers/breathingplaces/

Developers and Planners

New development proposals should identify the presence of any priority habitats and species and should aim to protect them. Development may lead to mitigation and enhancement opportunities and the RBAP can guide the creation of habitats that are most suitable for a particular area. New developments can include areas of open space and landscaping or elements of green roofing or living walls; sustainable drainage systems can also provide opportunities for biodiversity.

BREEAM (BRE Environmental Assessment Method) is the leading and most widely used environmental assessment method for buildings. It sets the standard for best practice in sustainable design and has become the de facto measure used to describe a building's environmental performance. A key element of BREEAM and Code for Sustainable Homes (CfSH) is the calculation of the change in ecological value of a site and measures to enhance its ecology value. The RBAP can support decisions on native planting, species mixes and management regimes that can inform the number of credits achievable under the ecology criteria of each scheme.

The Government, within the 2011 natural environment White Paper 'The Natural Choice: securing the value of nature', promoted the principles of biodiversity offsetting. Biodiversity offsets are conservation activities designed to deliver biodiversity benefits in compensation for losses in a measurable way. Good developments incorporate biodiversity considerations in their design but are still likely to result in some biodiversity loss. One way to compensate for this loss is by offsetting: the developer secures compensatory habitat expansion or restoration elsewhere. Offsets should help to expand and restore the ecological network in England. Used in a strategic way they can help to deliver more, better, bigger and joined up networks of habitat.

The Rotherham Local Plan states that the Council will conserve and enhance Rotherham's natural environment; this includes ensuring that planning decisions safeguard biodiversity. Planners need to know what is of importance on a national and local level to help make planning decisions and to support developers to create attractive and sustainable sites that can contribute to biodiversity action.

Further information can be found at:

http://www.breeam.org/
http://www.thegreenroofcentre.co.uk/
http://www.biodiversityplanningtoolkit.com/default.asp
http://www.defra.gov.uk/environment/natural/biodiversity/uk/offsetting/

Farmers and Land Owners
Non-productive agricultural land often includes woodland or wetlands, which can often be good quality examples of priority habitats. Hedgerows and field margins support bird and insect populations that help maintain soil fertility, pollinate crops and keep down pest species; arable fields are used by ground-nesting and overwintering bird species. The presence and management of these habitats and features can increase the number of resources available to farmers via environmental stewardship schemes. Productive land may not be priority habitat but will be enhancing the landscape and supporting natural drainage and water quality.

Further information can be found at:
http://www.naturalengland.org.uk/information_for/farmers_and_land_managers/default.aspx
http://www.farmingandwildlife.net/index.html

Rangers
Staff at RMBC and other organisations are responsible for the day to day management of our nature reserves, woodlands & community forests, urban parks, country parks and other green open spaces. They undertake much of the management work needed to conserve the biodiversity interest and importance of these sites and, as such, are essential to the delivery of this action plan.

Understanding the local natural environment and habitats can be shared with visitors; knowing what animals use a certain habitat will direct management actions to make sure animals are not harmed or disturbed. Opportunities to create new areas of priority habitat near country parks and nature reserves via planting or changes to management can be identified by Rangers who know these areas very well.

Local Councillors, Parish Councils and Area Assemblies
Our local representatives have an excellent understanding of their local area and of Rotherham. The RBAP can be used to create local schemes and support groups that celebrate what is unique and valuable in communities. Where sites are valuable for wildlife and local communities this plan can provide extra information to support funding bids and site management. Good sites should support community events to encourage outdoor play, wildlife recording and volunteer involvement. Attractive local places can improve local economies and investment.

http://www.opalexplorenature.org/
http://www.transformyourpatch.com/
http://www.biglotteryfund.org.uk/

Naturalists, Conservation Groups and Organisations
The production of the RBAP has been lead by the partner organisations of the Rotherham Biodiversity Forum. For these groups and other naturalists, 'Friends of …' groups, recording groups, conservation organisations and land owners the RBAP will guide delivery of habitat creation and restoration and will support the involvement of other sectors and interested people.. It also demonstrates that their interests and values are understood and shared.

www.wildsheffield.com
www.ywt.org.uk
www.yorkshire.groundwork.org.uk/south-yorkshire.aspx
www.sbsg.org/
www.rdos.350.com/
www.sorby.org.uk/

Introduction

Biodiversity is the variety of all life on Earth. It includes all species of animals and plants – everything that is alive on our planet. Biodiversity is important for its own sake and human survival depends upon it.

Introduction to Biodiversity

Biodiversity is the foundation of life on Earth. It is crucial for the functioning of ecosystems which provide us with products and services without which we couldn't live. Oxygen, food, fresh water, fertile soil, medicines, shelter, protection from storms and floods, stable climate and recreation - all have their source in nature and healthy ecosystems. But biodiversity gives us much more than this. We depend on it for our security and health; it strongly affects our social relations and gives us freedom and choice.

Biodiversity is extremely complex, dynamic and varied like no other feature of the Earth. Its innumerable plants, animals and microbes physically and chemically unite the atmosphere (the mixture of gases around the Earth), geosphere (the solid part of the Earth), and hydrosphere (the Earth's water, ice and water vapour) into one environmental system which makes it possible for millions of species, including people, to exist.

At the same time, no other feature of the Earth has been so dramatically influenced by man's activities. By changing biodiversity, we strongly affect human well-being and the well-being of every other living creature.
(International Union for Conservation of Nature)

Introduction to Rotherham Biodiversity Action Plan 2nd Edition

Rotherham Biodiversity Forum partners published the first Rotherham Biodiversity Action Plan (RBAP) in 2004. Based on the protection and enhancement of habitats and species prioritised both nationally and locally the plan provided a comprehensive assessment of the nature conservation value of the borough. The 2004 RBAP has been successful in enabling delivery of biodiversity action via targeted site management, project development, guiding survey and monitoring effort and also within the planning framework to highlight the need for habitat retention and enhancement. Since 2004 the national priorities for conservation action have been expanded and refined and new legislation and Government information has been published that will guide the next era of biodiversity delivery. It is appropriate to review the RBAP to take stock of successes and constraints encountered to date and in light of the new thinking and increased Government focus. This 2nd edition of the Rotherham Biodiversity Action Plan builds on all the work of the previous decades to set ourselves challenging, but necessary, new targets for the protection and restoration of the natural environment. The RBAP identifies the priorities for the conservation and enhancement of Rotherham's biodiversity. It is the result of the work of Rotherham's Biodiversity Forum, a partnership of naturalists, landowners, conservation organisations and RMBC staff.

Key Changes in the Rotherham Biodiversity Action Plan 2nd Edition

- The addition of new habitat action plans for Traditional Orchards and Inland Rock & Brownfield Land;
- The expansion of the water based action plan group to include running water;
- The identification of additional local priority habitats associated with each key habitat group;
- The change from Ancient and Species-rich Hedgerows to Hedgerows acknowledging the importance of all hedgerows;
- The identification of locally recorded species with each key habitat group
- The acknowledgement of recent legislation, strategies and other plans that influence biodiversity action;
- The alignment of actions and delivery timescales with regional and national plans and strategies;

Summary of the 2012 RBAP Review Process

The review process to date has involved reassessment of national, regional and local priorities in terms of habitats and consideration of a number of key texts published on the subject. The presence of nationally prioritised habitats in Rotherham has been identified, data has been obtained on which prioritised species have been associated with these habitats and again their presence in Rotherham has been identified.

In this 2nd edition those habitats that were previously identified as priorities have had their action plans reviewed and updated definitions, context, status and objectives have been prepared. A number of newly prioritised habitats have also been included for which new action plans have been prepared. Habitats have been grouped according to a general type and additional local priorities have been identified where appropriate; Table One illustrates the links between the habitat groups and national and local priorities.

The biodiversity forum considered each habitat group, collating and reviewing all relevant information in order to prepare new or revised habitat action plans. Objectives and targets for each have been developed based on the Lawton More – Bigger – Better – Joined principle outlined in the 2010 Government Review '*Making Space for Nature*'. Further work is needed to agree detailed programmes of activity for each habitat plan; this will be the next priority and will lead to coordinated delivery of the plans. In addition species specific action plans may be needed where conservation objectives are beyond the scale of habitat actions.

Plan Period 2012-2020

The Rotherham Biodiversity Action Plan (2012) will support delivery until at least 2020 in line with the England Biodiversity Strategy; objectives, targets and programmes of action will be prepared with this date in mind but it is acknowledged that action will be needed to continue beyond 2020. Individual or group plans may be reviewed and updated as required in the intervening period; the full plan should be reviewed and updated in 2020 at the latest. Monitoring of work programmes and project delivery will allow targets to be revised as necessary throughout the plan period.

Overarching Principles and Actions

The over-riding principles of Rotherham Biodiversity Action Plan delivery are as follows:

1. To maintain, enhance, expand and connect the biodiversity of Rotherham by:
   - protecting the natural populations and distribution of species;
   - conserving natural and semi-natural areas within which species can be maintained, and;
   - identifying opportunities for habitat creation, expansion and connection
2. To involve local people and develop effective partnerships to ensure that programmes for biodiversity conservation raise awareness of the need for biodiversity conservation in the local context and so that actions are maintained in the long-term.
3. To contribute towards the conservation of UK and global biodiversity by monitoring actions and reporting to established systems.
4. To fully integrate biodiversity action as a central principle of the Rotherham Local Plan

Each of the Habitat Action Plans contains specific objectives based on these principles and future targets and action priorities will be agreed and reviewed as necessary.

Generic actions to support plan delivery are as follows:

1. Identify, survey and map locally important habitats and sites as part of a rolling programme of environmental monitoring
2. Halt and reverse habitat fragmentation and species isolation by the identification and protection of important wildlife corridors, buffer zones and 'stepping stones'.
3. Identify and map biodiversity opportunity areas and identify appropriate delivery mechanisms
4. Encourage positive management for biodiversity on designated sites
5. Support the maintenance of genetic variety by using local provenance native species in planting schemes
6. Ensure that the planning authority is aware of the presence of important biodiversity and that good practice is promoted through the planning system
7. Ensure that Codes of Good Agricultural Practice are adopted for the protection of soil, water and air
8. Develop monitoring mechanisms to assess the state of the local environment
9. Monitor habitat restoration and management schemes and make certain that planning conditions and other planning obligations are enforced
10. Raise public awareness of biodiversity and the factors affecting it in Rotherham
11. Forge links with local communities and adjacent authorities to ensure further active local involvement
12. Develop educational opportunities to engage people and community groups in their area's environment
13. Support the enforcement of legislation protecting biodiversity
14. Make certain that the significant contribution that implementation of Rotherham's LBAP will have in achieving aims of the Rotherham Local Plan is acknowledged by key partners.

Key Legislative, Government and Policy Drivers

Links to the full documents summarised below are available via the References section of this document.

The Natural Environment and Rural Communities (NERC) Act 2006

The Natural Environment and Rural Communities (NERC) Act 2006 introduced the 'Biodiversity Duty' (section 40) under which "*Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity*". In demonstrating that it has implemented its Duty to have regard to the conservation of biodiversity, a public authority is required to be able to show that it has:

- Identified and taken opportunities to integrate biodiversity considerations into all relevant service areas and functions, and ensured that biodiversity is protected and enhanced in line with current statutory obligations;
- Raised awareness of staff and managers with regard to biodiversity issues;
- Demonstrated a commitment and contribution to BAPs, where appropriate;
- Demonstrated progress against key biodiversity indicators and targets.

RMBC adoption of the RBAP and its acknowledgement by other public bodies demonstrates a step towards compliance with the Biodiversity Duty; this will be further evidenced by support of and resourcing its delivery.

Within the NERC Act Section 41 replaces and reflects subsections (2) to (5) of section 74 of the Countryside and Rights of Way Act 2000 and places a duty on the Secretary of State to publish, review and revise lists of living organisms and types of habitat in England that are of principal importance for the purpose of conserving biodiversity and to promote the taking of steps to further the conservation of the listed organisms and habitats.

In 2007, the UK Biodiversity Partnership published a new list of priority UK species and habitats. This contains 1149 species and 67 habitats covering terrestrial, freshwater and marine biodiversity. The UK BAP list of priority species and habitats has been used to draw up the species and habitats of principal importance in England, i.e. the England Biodiversity List, in response to S41 of the NERC Act.

Fifty-six habitats of principal importance are included on the S41 list. These are all the habitats in England that have been identified as requiring action in the UK Biodiversity Action Plan (UK BAP). They range from habitats such as upland hay meadows to lowland mixed deciduous woodland and from freshwater habitats such as ponds to marine habitats. There are 938 species of principal importance included on the S41 list, which are the UKBAP species found in England plus the Hen Harrier. Table Two lists the habitats of principal importance in England and highlights which of these are believed to be present in Rotherham.

Making Space for Nature: A review of England's Wildlife Sites and Ecological Network (2010)

Chaired by Professor Sir John Lawton, the review highlights that declines in wildlife are a global problem; the World has failed to meet its commitment to achieve a significant reduction in the rate of global biodiversity loss by 2010; Europe has not met its 2010 target to halt biodiversity loss. The report summarises the losses that have occurred, and continue to occur, in England's wildlife; despite the important contribution designated sites have made, England's wildlife habitats have become increasing fragmented and isolated, leading to declines in the provision of some ecosystem services, and losses to species populations.

The report proposes that Ecological networks are widely recognised as an effective response to conserve wildlife in environments that have become fragmented by human activities. An ecological network comprises a suite of high quality sites which collectively contain the diversity and area of habitat that are needed to support species and which have ecological connections between them that enable species, or at least their genes, to move. To achieve this the overarching aim for England's ecological network should be to deliver a natural environment where: "*Compared to the situation in 2000, biodiversity is enhanced and the diversity, functioning and resilience of ecosystems re-established in a network of spaces for nature that can sustain these levels into the future, even given continuing environmental change and human pressures."*

It is recommended that this aim be underpinned by three objectives:

1. To restore species and habitats appropriate to England's physical and geographical context to levels that are sustainable in a changing climate, and enhanced in comparison with those in 2000
2. To restore and secure the long-term sustainability of the ecological and physical processes that underpin the way ecosystems work, thereby enhancing the capacity of our natural environment to provide ecosystem services such as clean water, climate regulation and crop pollination, as well as providing habitats for wildlife
3. To provide accessible natural environments rich in wildlife for people to enjoy and experience.

The essence of what needs to be done to enhance the resilience and coherence of England's ecological network can be summarised in four words: *more*, *bigger*, *better* and *joined*. There are five key approaches which encompass these, and also take account of the land around the ecological network. We need to:

1. Improve the quality of current sites by better habitat management.
2. Increase the size of current wildlife sites.
3. Enhance connections between, or join up, sites, either through physical corridors, or through 'stepping stones'.
4. Create new sites.
5. Reduce the pressures on wildlife by improving the wider environment, including through buffering wildlife sites.

The Natural Choice: securing the value of nature (2011)

This is the first Government White Paper on the natural environment for 20 years and places the value of nature at the centre of the choices our nation must make to enhance our environment, economic growth and personal wellbeing. The paper sets out how the Government will establish a clear institutional framework to achieve the recovery of nature, including:

1. Establishing Local Nature Partnerships (LNPs) to strengthen local action. LNPs will enable local leadership and may operate across administrative boundaries. They will raise awareness about the services and benefits of a healthy natural environment. They will contribute to the green economy and complement Local Enterprise Partnerships, with which they are encouraged to form strong links.
2. Creating new Nature Improvement Areas (NIAs) to enhance and reconnect nature on a significant scale, where the opportunities and benefits justify such action. Local partnerships will come together to form NIAs. We will set up a competition to identify 12 initial areas and will provide £7.5 million to support this.
3. Reforming the planning system to take a strategic approach to planning for nature within and across local areas. This approach will guide development to the best locations, encourage greener design and enable development to enhance natural networks. We will retain the protection and improvement of the natural environment as core objectives of the planning system. We will establish a new, voluntary approach to biodiversity offsets and test our approach in pilot areas.
4. Achieving a better quality natural environment by taking and promoting concerted action across our farmed land, woodlands and forests, towns and cities, and rivers and water bodies and by pressing ahead with ambitious commitments for the marine environment.

At the time of publication of this document a South Yorkshire LNP has been established and part of Rotherham has been included in the Dearne Valley Green Heart NIA. In addition the Rotherham planning system is under review and the RBAP forms part of the evidence base being used to identify sites that are suitable for future development and those sites where nature conservation should be the primary objective.

Climate Change Adaptation Principles: Conserving Biodiversity in a Changing Climate (2008)

Defra produced this guidance aimed at organisations planning and delivering the England Biodiversity Strategy. Based on observed and modelled changes and trends the following five principles were identified as being fundamental to conserving biodiversity in a time of climate change.

1. Take practical action now
2. Maintain and increase ecological resilience
3. Accommodate change
4. Integrate action across all sectors
5. Develop knowledge and plan strategically

The publication and delivery of the Rotherham BAP will follow these principles.

The Rotherham Local Plan Core Strategy (draft 2012)

The Core Strategy is the scene setting element of the Rotherham Local Plan and includes the following Biodiversity and Geodiversity Core Strategy Policy:

Policy CS20: Biodiversity and Geodiversity

The Council will conserve and enhance Rotherham's natural environment. Biodiversity and geodiversity resources will be protected and measures will be taken to enhance these resources in terms of nationally and locally prioritised sites, habitats and features and protected and priority species. Priority will be given to:

a. Protecting the integrity of European and nationally designated sites for nature conservation, biodiversity and geodiversity, from inappropriate development;
b. Supporting the positive management and protection of nationally, regionally and locally designated sites for nature conservation;
c. Conserving and enhancing populations of protected and identified priority species by protecting them from harm and disturbance and by promoting recovery of such species populations to meet national and local targets;
d. Conserving and enhancing sites and features which have demonstrable biodiversity and geodiversity value, including woodland, important trees, hedgerows, watercourse, caves, crags and structures, but which are not included in designated sites;
e. Supporting the delivery of objectives set out in the Rotherham Biodiversity Action Plan and the Yorkshire and Humber Biodiversity Strategy and Delivery Plan,
f. Supporting the production of further relevant biodiversity and ecological network strategies identified by local partnerships, to deliver the restoration and expansion of priority habitats, including within identified biodiversity opportunity areas;
g. Supporting the delivery of objectives set out in the UK Geodiversity Action Plan, other relevant geodiversity strategies;
h. Encouraging the inclusion of natural environment assets, networks and opportunity areas in Green Infrastructure development;
i. Supporting the maintenance of nature conservation evidence bases to ensure that adequate, up-to-date and relevant evidence on environmental characteristics and prospects is available;
j. Managing land use sympathetically, understanding the naturally functioning processes of habitat succession, flood & water management and climate change adaptation; contributing to landscape-scale and green infrastructure delivery;
k. Protecting soil resources and managing the release of the best and most versatile agricultural land, taking into account it's economic and other benefits and releasing only areas of poorer quality in preference to that of a higher quality;
l. Ensuring that development decisions will safeguard the natural environment and will incorporate best practice including biodiversity gain, green construction, sustainable drainage and contribution to green infrastructure

The Core Strategy will be supplemented by a Sites and Policies document that will guide development in Rotherham up to 2028.

Global – National – Local: Biodiversity Action

The Rotherham Biodiversity Action Plan has considered the aims, objectives and targets made at each of the following levels and will aim to support the delivery of biodiversity action and promotion at a local level. Site, habitat and species based actions will be decided and taken to conserve and enhance our local priorities. By recording actions taken and monitoring outcomes, we will be able to demonstrate how biodiversity action in Rotherham contributes to regional and national targets and achieves wider goals. Links to the full documents summarised below are available via the References section of this document.

UN Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets

At the Nagoya UN Biodiversity Summit in October 2010, 192 countries and the European Union agreed to an ambitious conservation plan to protect global biodiversity. This new 'Strategic Plan for Biodiversity 2011-2020' provides a flexible framework for all 193 Parties to the Convention on Biological Diversity to drive action on biodiversity, covering the period 2011-2020. It established a new global vision for biodiversity – a world of "*living in harmony with nature*" where:

- 'By 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people.'

Parties also agreed a shorter term ambition to take effective and urgent action to halt the loss of biodiversity in order to ensure that by 2020 ecosystems are resilient and continue to provide essential services, thereby securing the planet's variety of life, and contributing to human wellbeing, and poverty eradication. To deliver this ambition, Parties agreed on a set of 5 strategic goals and 20 targets (the 'Aichi' targets) to drive action on biodiversity; these can be found on the Convention on Biological Diversity website.

European Union 2020 Biodiversity Strategy

In March 2010, the EU agreed to an EU vision and 2020 mission for biodiversity:

- By 2050, European Union biodiversity and the ecosystem services it provides – its natural capital – are protected, valued and appropriately restored for biodiversity's intrinsic value and for their essential contribution to human wellbeing and economic prosperity, and so that catastrophic changes caused by the loss of biodiversity are avoided.
- Halt the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, and restore them insofar as is feasible, while stepping up the EU contribution to averting global biodiversity loss.

The European Commission has adopted a new EU Biodiversity strategy to help meet this goal. Endorsed by EU Member States in June 2011, the strategy provides a framework for action over the next decade and covers the following key areas:

1. Conserving and restoring nature
2. Maintaining and enhancing ecosystems and their services
3. Ensuring the sustainability of agriculture, forestry and fisheries
4. Combating invasive alien species
5. Addressing the global biodiversity crisis

The EU Biodiversity Strategy contains the following 6 targets:

1. To fully implement the Birds and Habitats Directives
2. To maintain and enhance ecosystems and their services
3. To increase the contribution of agriculture and forestry to maintaining and enhancing biodiversity
4. To ensure the sustainable use of fisheries resources
5. To control invasive alien species (IAS)
6. To help avert global biodiversity loss

Biodiversity 2020: A strategy for England's wildlife and ecosystem services

'Biodiversity 2020: A strategy for England's wildlife and ecosystem services' is the new biodiversity strategy for England and builds on the Government's Natural Environment White Paper, 'The Natural Choice: securing the value of nature' (2011), to provide a comprehensive picture of how the Government are implementing their international and EU commitments. The strategy contains a mission for 2020 and a further vision for 2050:

- **2020** Mission Our mission is to halt overall biodiversity loss, support healthy well-functioning ecosystems and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people.

- A Vision for England: By **2050** our land and seas will be rich in wildlife, our biodiversity will be valued, conserved, restored, managed sustainably and be more resilient and able to adapt to change, providing essential services and delivering benefits for everyone.

The 2020 England strategy promotes action around four areas broadly aligned to the strategic goals of the Convention on Biological Diversity Strategic Plan 2011-2020:
- a more integrated large-scale approach to conservation on land and at sea
- putting people at the heart of biodiversity policy
- reducing environmental pressures
- improving our knowledge

The England strategy includes a series of 22 priority actions to guide delivery of these four priority areas via Government, its agencies, the wider biodiversity partnership, including local BAP delivery, and others. A summary of the priority actions is provided in Appendix One.

Yorkshire and Humber Biodiversity Strategy and Delivery Plan

The Yorkshire and Humber Biodiversity Forum (YHBF) produced the Yorkshire and Humber Biodiversity Strategy (2009) and the Yorkshire and Humber Biodiversity Delivery Plan (2010). The strategy adopts six key themes that set out the aspirations for the conservation of biodiversity in the region:
- Protecting the best sites for wildlife in the region;
- Focusing conservation action on the region's priority habitats and species;
- Improving functional habitat networks and enhancing the wider environment;
- Developing a robust evidence based for the region;
- Engaging people with the region's biodiversity;
- Helping the region's biodiversity adapt to climate change

The strategy identifies 24 objectives, with associated targets and indicators, around these key themes. The Yorkshire and Humber Biodiversity Delivery Plan details how the YHBF partners will take forward the delivery of the Yorkshire and Humber portion of the England Biodiversity Strategy. With the loss of England's regional structure, it is even more important that these targets are met through local action and new partnership working (e.g. Local Nature Partnerships and NIAs). More information on these targets relevant to Rotherham is included in each Habitat Group Action Plan.

Evidence Base

Biological Recording & Species Richness

RMBC hosts the Rotherham Biological Records Centre which collects wildlife records and holds them in an electronic database; these records can be made available on request to support biodiversity action. Over the years, the efforts of many skilled naturalists have resulted in over 10,000 species, subspecies and hybrid plants and animals being recorded in Rotherham; to date there are 1.5 million individual wildlife records. Most of the computerised records are from the last 25 years, though there are records stretching back into prehistory. The records held are used in many ways, the main uses are assessing local wildlife site status, demonstrating evidence of the effects of climate change on certain species, spatial planning decisions and use by naturalist and conservation groups in the preparation of atlases, reports and education material.

In respect of the Rotherham BAP the dataset has been used to identify which of England's priority species have a recorded presence in Rotherham; this will guide habitat management and species-specific action to protect and enhance our Biodiversity. The dataset will also be used to help identify local species priorities.

Site Designation

There are a range of international, national and local designation systems in place to protect certain species, habitats and sites; a summary of these is provided in Table Three. Within Rotherham there are a wide and varied range of sites and features of nature conservation importance. There are 6 Sites of Special Scientific Interest (SSSI) in RMBC and a further 2 on the boundaries with neighbouring authorities. There are currently 7 Local Nature Reserves, 93 Local Wildlife Sites and 26 Local Geological Sites.

Habitat and Species Associations

The review of the UK BAP priority list in 2007 generated an increase in the number of habitats and species requiring action. New approaches to BAP delivery across the UK are placing greater emphasis on achieving our biodiversity targets through habitat-based delivery. A new approach to species biodiversity was felt to be required for two reasons. Firstly, although successful at recovering the rarest species, the UK Biodiversity Action Plan had been less successful at achieving the recovery of habitats and widespread, but nonetheless threatened BAP species. Secondly, the large increase in the numbers of BAP habitats and species requiring action means a broader, habitat-based approach was necessary to allow effective action under resource constraints.

In 2010 Natural England published research that compiled lists of UK BAP species relevant to each priority habitat. In addition the research analysed the known habitat features required by each species and assessed regional variations. The purpose of the research was to enable each of the nine Biodiversity Integration Groups (BIGs), established based on broad habitat groups, to identify how species requirements could best be integrated into habitat management. Table Four shows the links between biodiversity integration groups, habitats and species numbers.

These datasets have been used in the review of the Rotherham BAP to link habitat action to species benefits; the species lists associated with each of Rotherham's priority habitats have been analysed against the Rotherham Biological Records Centre database to identify which of those species have a recorded presence in Rotherham. This data will allow general habitat management principles and site-specific management actions to be put in place that have direct benefits for priority species. The original BIG habitat group spreadsheets and the Rotherham analysis spreadsheets should be consulted when preparing site management plans so that beneficial features and actions can be incorporated and evidence collated as to how habitat management can demonstrate direct species gain.

It is accepted though that additional action is needed to support those species that are not prioritised at a national level; a review is needed of the species that are locally important to Rotherham. For example, Badger is a Rotherham priority species but is not a national priority so is not referenced in the BIG lists. A local species review should identify non-habitat management based actions that are needed to support national and local priority species; this may result in the production of species action plans.

Integration with Wider Biodiversity Action

How the Rotherham BAP will be used and where it fits in the network of biodiversity action:

Ecosystem Services and Networks

The UK National Ecosystem Assessment (UK NEA) describes how the concept of an ecosystem comes from the underlying principles and interactions of organisms and their environment, including the movement of energy and matter through the system. Whilst the classification and management of habitats is centred on the populations of species of interest, the concept of an ecosystem is centred on the interactions between its components and its properties as a system. The functioning of ecosystems at all scales involves the three core processes of solar energy flow, mineral cycling and water cycling. A fourth intrinsic ecosystem process could be called ecological succession, as the living organisms and their interactions in ecosystems capture and store the Sun's energy and increase in structural complexity, diversity and biomass; an example in the UK is the potential for development over a few decades of woodland on an area of bare soil.

As humans are part of ecosystems we depend on the capture and conversion of the Sun's energy by plants into food, as well as for useful products such as timber, fibres and medicines. We also harvest and manage animals for food and other benefits. In some ways, human activities such as farming, forestry and aquaculture can be seen as alteration of ecosystem structure and functioning to maximise the ecosystem processes of solar energy flow and local mineral and water cycles for desired human benefits.

Ecosystem services are the benefits provided by ecosystems that contribute to making human life both possible and worth living, they are often grouped into Supporting, Regulating, Provisioning and Cultural services. Examples of ecosystem services include products such as food and water, regulation of floods, soil erosion and disease outbreaks, and non-material benefits such as recreational and spiritual benefits in natural areas. The following illustration is from the UK NEA report and shows the links between broad habitat types and ecosystem services available.

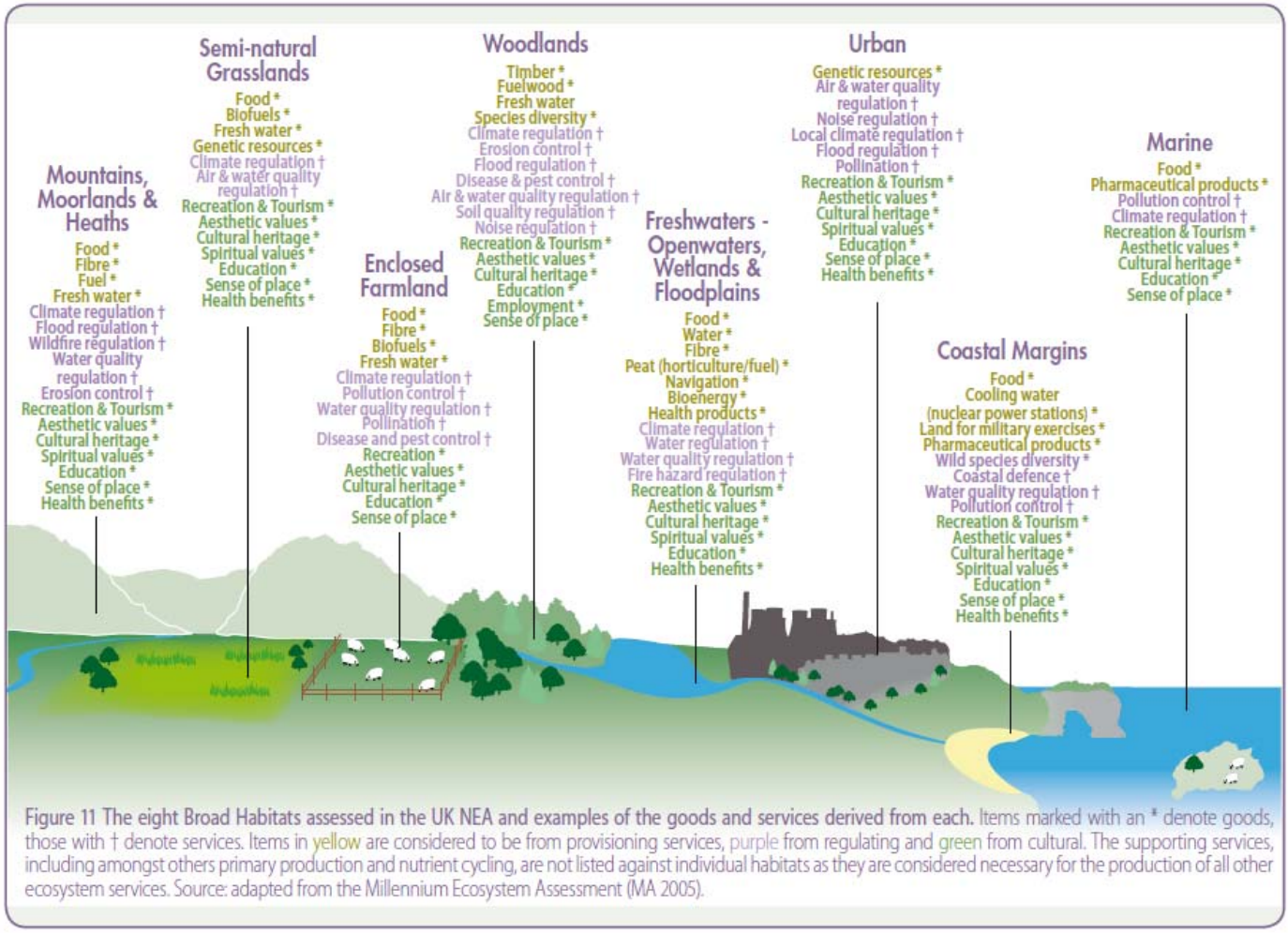


Figure 11 The eight Broad Habitats assessed in the UK NEA and examples of the goods and services derived from each. Items marked with an * denote goods, those with † denote services. Items in yellow are considered to be from provisioning services, purple from regulating and green from cultural. The supporting services, including amongst others primary production and nutrient cycling, are not listed against individual habitats as they are considered necessary for the production of all other ecosystem services. Source: adapted from the Millennium Ecosystem Assessment (MA 2005).

Ecological (or habitat) networks are an approach to conserve and enhance biodiversity across landscapes, where the linkages (or connectivity) between habitat areas are developed. The creation and enhancement of ecological networks allows species to move over larger areas and is considered a key conservation action to assist biodiversity in adapting to climate change.

The England Biodiversity Strategy notes the need to establish more coherent and resilient ecological networks – much of England's (and Rotherham's) wildlife is now restricted to wildlife sites, which consist largely of semi-natural habitats. However, surviving in small, isolated sites is difficult for many species, especially in the longer term and given climate change. We want a large number of high quality sites which contain the range and area of habitats that species require. We also want ecological connections that allow species, or their genes, to move between these sites. An ecological network is this network of high quality sites, protected by buffer zones, and connected by wildlife corridors and smaller, but still wildlife-rich, "stepping-stone" sites. The ecological networks for different species work at varying scales: some species need a large area, others a much smaller area. Ecological networks generally have five components:

- **Core areas of high nature conservation value** which contain rare or important habitats or ecosystem services. They include protected wildlife sites and other semi-natural areas of high ecological quality.
- **Corridors and 'stepping stones'** enabling species to move between core areas. These can be made up of a number of small sites acting as 'stepping stones' or a mosaic of habitats that allows species to move and supports ecosystem functions.
- **Restoration areas** where strategies are put in place to create high value areas (the 'core areas' of the future), restoring ecological functions and wildlife.
- **Buffer zones** that protect core areas, restoration areas, and 'stepping stones' from adverse impacts in the wider environment.
- **Sustainable use areas;** areas of surrounding land that are managed in a sustainable and wildlife friendly way.

A **coherent** ecological network is one that has all the elements necessary to achieve its overall objectives; the components are complementary and mutually reinforcing so that the value of the whole network is greater than the sum of its parts.
A **resilient** ecological network is one that can absorb, resist or recover from disturbances and damage caused by natural influences and human activities (including climate change), while continuing to meet its overall objectives of supporting biodiversity and providing ecosystem services.

The Rotherham BAP includes objectives to expand and connect priority habitats as essential elements of our local ecological network; the emphasis on locally appropriate habitats increases the likelihood of long-term successes and should support the services we need.

Green Infrastructure

Green Infrastructure is the network of multi-functional green spaces and other environmental assets, both rural and urban, which support the natural and ecological processes integral to the health and quality of life of sustainable communities. Green Infrastructure operates at a range of scales, over broad landscapes and administrative boundaries down to local neighbourhoods. Green Infrastructure provision is wide and varied. Green Infrastructure assets can include:

- Managed and natural green spaces (including woodlands, gardens, allotments, recreational space (e.g. playing pitches), formal parks and amenity areas).
- Green corridors and assets (including footpaths, bridleways and cycle paths, disused railway lines, cycle lanes within the road network, greenways, waterways, street trees and other features that enhance links between habitats, places and tourist activities).
- Nature conservation sites, habitat creation schemes, heritage assets and ecosystems.
- Individual or distinctive features of the landscape from green/ brown roofs to ancient woodland.
- Flood risk management measures (such as storage that compensates for loss of flood plain, landscape intervention which slows the flow of water and sustainable urban drainage systems).
- Managed landscapes of trees and associated habitats (which help to regulate temperatures, fix carbon, provide places for recreation close to urban centres, and may enhance landscape character).
- Designated and non designated landscapes

It is recognised that such assets can perform multiple functions including:

- Addressing climate change including the reduction of green house gas emissions, mitigation and adaptation
- Promoting carbon neutral energy such as fuel from managed woodlands in Rotherham
- Addressing flooding risks, drainage and water management
- Making Improvements to the look and quality of where we live by adding to the character of landscape and townscapes
- Promoting social, health and mental well being
- Aiding tourism and recreation
- Increasing land and property values
- Sustaining regeneration, economic growth and investment by creating attractive settings for investment
- Contributing towards a greener economy
- Supporting environmental education
- Improving provision of and access to recreational and leisure opportunities
- Maintain natural ecological processes; conserving and extending networks and habitat connectivity
- Promoting sustainable transport modes
- Increasing accessibility into and out from the urban core to the outlying rural areas

A South Yorkshire Green Infrastructure (SYGI) Strategy has been published (2011) that advocates a vision for the future of South Yorkshire's network of green assets, including proposals for a new, radical programme to support local action, to stimulate investment and to strengthen the image of the area. Twenty initiative areas are proposed in the strategy and these will be driven forward by a Delivery Plan (currently draft); the following initiative areas are wholly or partially in Rotherham:

- Lower Don
- River Rother
- Chesterfield Canal
- Maltby, Thurcroft & Dinnington
- Thrybergh

Biodiversity underpins all green infrastructure planning and functions. Action delivered by the Rotherham BAP will aim to achieve new wildlife corridors to link existing sites, assist in species movement and reverse habitat fragmentation. The BAP will also be used to encourage development to incorporate green infrastructure features and to provide naturalistic landscaping that will be managed with biodiversity conservation as a primary objective.

Climate Change adaptation and mitigation

Defra's climate change adaptation principles report summarises the key direct impacts of climate change on biodiversity as:

- Changes in phenology, the timings of seasonal events, leading to loss of synchrony between species and the availability of food, and other resources upon which they depend;
- Changes in species abundance and distribution (including arrival and loss of species);
- Changes in community composition;
- Changes in ecosystem processes;
- Loss of space, e.g. due to sea level rise.

Managing our biodiversity is important for both 'mitigation' (addressing the causes of climate change by removing greenhouse gases from the atmosphere) and 'adaptation' (helping to reduce the impacts of climate change). The natural environment is inextricably linked with climate change and will play a key role in both adaptation and mitigation. Land management should encompass naturally functioning processes such as natural flood alleviation capacity, natural regeneration of brownfield sites and natural succession of habitats and should employ best practice in terms of land stewardship. Achieving this in an integrated approach over landscape-scale areas will maximise the ability of the natural environment to respond to climate change.

The objectives of the Rotherham BAP are aimed at increasing the extent and quality of Rotherham's natural environment, which will support natural processes and provide connectivity for species movement. Development measures that involve semi-natural responses to climate change, such as sustainable urban drainage, can incorporate biodiversity and these have been noted as locally prioritised habitats.

South Yorkshire Local Nature Partnership

The Government's Natural Environment White Paper 'The Natural Choice: securing the value of nature' (June 2011) proposed the creation of Local Nature Partnerships to:

- provide local leadership on natural environment (biodiversity, geodiversity, landscape);
- raise awareness of value of services and benefits;
- add value to development and local authority plans;
- contribute actively to the green economy;
- form strong links with Local Enterprise Partnerships (LEP)

A South Yorkshire LNP has been formed and adopted by the Government during 2012. The purpose of the SYLNP will be to protect and enhance South Yorkshire's natural environment, promoting the coordinated delivery of connected 'landscape-scale' projects as part of a high-quality green network, helping to create sustainable jobs and growth and contributing to improved social cohesion. Rotherham MBC has confirmed its support for the SYLNP.

Mission of the South Yorkshire Local Nature Partnership: The South Yorkshire Local Nature Partnership would bring together organisations to champion the value of the natural environment and embed its social and economic benefits into decision-making.

Purpose of the South Yorkshire Local Nature Partnership: To protect and enhance South Yorkshire's natural environment, promoting the coordinated delivery of connected 'landscape-scale' projects as part of a high-quality green network, helping to create sustainable jobs and growth and contributing to improved social cohesion.

Rotherham partners will be involved in the SY LNP and the Rotherham BAP will form part of the evidence base that will direct project delivery.

Dearne Valley Green Heart: Nature Improvement Area

Nature Improvement Areas are a further recommendation of the White Paper and are large, discrete areas that will deliver a step change in nature conservation, where a local partnership has a shared vision for their natural environment.

The Dearne Valley Green Heart Nature Improvement Area (DVGH NIA) includes part of the north of Rotherham and extends into Barnsley and Doncaster, shown on Map One; the NIA will help local people deliver their vision to restore the ecological functionality of the Dearne, its floodplain and its link to habitats on surrounding sandstone and limestone hills. The DVGH NIA business plan confirms the following outcomes:

Outcomes

- Restore the ecological functionality of the river (Dearne), its floodplain and it link to habitats on surrounding sandstone and limestone hills.
- Show how people and nature can live together in the same landscape in a sustainable way
- Show how improving the health of the environment supports healthy development of communities and vice versa
- The Dearne Valley has the ambition to become a new type of zero carbon urban area for living, working and relaxing, in which environmental quality, biodiversity and contact with nature underpin the choices people make to move to and invest in the area.

Outputs

- Create 1,300ha core of wetland and woodland habitats (reedbed, fen, wet grassland. Wet woodland, woodlan)
- Enhance biodiversity in 2,690ha buffer around these core wetland and woodland habitats (comprising mix of farmland, amenity grasslands, parklands and reclaimed industrial areas).
- Target 1,700ha of farmland to improve ecological functionality.
- Restore 500ha of semi-natural grasslands, new woodlands and wetlands.
- Create stepping stones along the river corridors where riparian habitat will be enhanced and specific measures put in place for species such as eels, otters and water voles.

- Create stepping stones through the limestone semi-natural grasslands restoring botanically rich grasslands to benefit butterflies such as the dingy skipper and plants such as lady's mantle and marsh and spotted orchids.
- Support nationally important numbers of wintering water birds and breeding farmland birds.

Within the Dearne Valley RBAP delivery will reflect the objectives of the NIA and support the restoration or creation of habitats most appropriate for the area. This will be done by forming locally agreed evidence of the need for relevant biodiversity action, by supporting project planning and funding and by promoting involvement in and understanding of Nature Improvement Area work. DVGH NIA delivery will help the achievement of Rotherham BAP targets and this will need to be monitored and credited.

Living Landscape Project Areas

'Living Landscapes' is a recovery plan for nature championed by The Wildlife Trusts since 2006. It is a way of thinking about how to manage land to do more for wildlife, people and the economy. The Wildlife Trusts operating in Yorkshire have identified priority landscape-scale multi-habitat project areas based on ecosystem network mapping. Landscape scale project delivery will be lead by partnerships created for that purpose; Rotherham is included in three living landscape project areas, the Dearne Valley, the Living Don and the Magnesian Limestone area, see Map One for boundary information. The Rotherham Biodiversity Forum is represented on the three project partnerships via RMBC involvement.

Within Living Landscape project areas the Rotherham Biodiversity Action Plan will support the restoration or creation of habitats appropriate for those areas. This will be done by forming locally agreed evidence of the need for relevant biodiversity action, by supporting project planning and funding and by promoting involvement in and understanding of Living Landscape work. Living Landscape project delivery will help the achievement of Rotherham BAP targets and this will need to be monitored and credited. It is also important for local biodiversity groups to work in areas not covered by the landscape-scale project areas to ensure that activity takes place at all levels.

Rotherham Local Wildlife Site System

Local Wildlife Site is the term given to a non-statutory site of nature conservation value in the Borough of Rotherham. LWS designation enables the most important nature conservation sites in Rotherham, as well as the statutory site designation systems, to be identified and protected. Local Wildlife Site networks provide a comprehensive rather than representative suite of designated sites using selection criteria designed to identify good examples of the habitats prioritised by Rotherham's Biodiversity Action Plan (2004) or that support known populations of protected or priority species. The operation of the Local Wildlife Site system is laid out in the Rotherham Local Wildlife Site documentation. Rotherham Metropolitan Borough Council undertakes the administration of the Local Wildlife Sites system, including data organisation, storage and distribution.

The Rotherham LWS Selection Criteria will need to be reviewed in 2013 to ensure that new priority habitats highlighted by the 2012 BAP are fully incorporated.

There are currently 93 Local Wildlife Sites identified in Rotherham, shown on Map Two; these are considered to be key ecological assets and many of them include good examples of priority habitats. RBAP delivery will focus on Local Wildlife Sites in line with the national principle of ensuring that the quality of sites of known interest is maintained; LWS will also be used as hub sites for the expansion, creation and linking of areas of priority habitat outside designated sites.

National Character Areas

England has been divided into areas with similar landscape character, which are called National Character Areas (NCAs); previously known as Joint Character Areas (JCAs). Landscape character is what makes an area unique. It is defined as "*a distinct, recognisable and consistent pattern of elements, be it natural (soil, landform) and/or human (for example settlement and development) in the landscape that makes one landscape different from another, rather than better or worse*". The NCAs are a widely recognised national spatial framework, used for a range of applications. Examples include the targeting of Natural England's Environmental Stewardship scheme and the Countryside Quality Counts project.

Summarised descriptions, based on the existing profiles, of the two character areas that cover Rotherham are given below; Map One illustrates the area boundaries:

#38 Nottinghamshire, Derbyshire & Yorkshire Coalfield
This is a large landscape area which embraces major industrial towns and cities as well as villages and countryside. The landscape is underpinned by generally low and variable hills, escarpments and broad valleys. It is dominated everywhere by extensive urban influences and industry. There has been constant change and development since the industrial revolution, when there was rapid expansion of housing, workshops and large factories and transport networks. The result is a complex intermingling of rural and urban, of modern commerce with occasional industrial dereliction, the whole creating a mosaic of disparate land uses with fragmented semi-natural habitats dispersed throughout.

The Coal Measures give rise to mainly poor soils which traditionally supported pasture, but now there is a more of a mix. Arable cultivation is more common on the better soils to the north and east, while permanent pasture is more frequent on the higher land to the west with some stretches of relatively unspoilt pastoral landscape to the west of Barnsley and the Moss Valley between Sheffield and Chesterfield. Overall the field size and pattern is very variable, with some areas where the field patterns remain intact, with thick hedges including oak and ash hedgerow trees elsewhere the field pattern has broken down, with more post and wire and rail, fences and few trees.

In urban fringes there are often small fields of degraded pasture, horse grazing and other varied uses. The pressure of fragmentation and degradation in these areas can give an appearance of neglect. Sites that are left undisturbed can provide a refuge for wildlife with areas of bare ground and rubble found on former quarries, industrial sites and railway sidings supporting pioneer plant species and often an abundance of invertebrates.

Semi-natural habitats, including woodland, grassland, important remnant lowland heaths, open water and river valley wetland habitats, tend to be fragmented and scattered; their scarcity giving them greater significance. The mining history of the area has resulted in areas of subsidence where low-lying fields become inundated with water; Ings are common and often support important species due to their unusual water chemistry. The river valleys in rural areas provide corridors for wetland habitat and new creation within them provides important habitats for wading birds and overwintering wetland birds e.g. goosander (*Mergus merganser*).

Restored spoil heaps and open cast areas provide opportunities for creating new areas of habitat, such as heathland and grasslands with tree planting often used to help stabilise sloped sites. Tree cover is variable but generally low and present as small woodlands. In some areas broadleaved woodlands form green, calm backdrops to the visually uncoordinated development. Woodland is most notable on poorer soils on steeper slopes and in areas where concentrated planting has taken place e.g. planting around Barnsley and Sheffield by the South Yorkshire Community Forest Partnership.

Several major rivers cut across the area, including the Aire, Calder, Dearne, Rother, Don and Erewash, but their courses tend to be obscured by the development that has grown up around them. The removal of weirs and introduction of fish passes is helping increase biodiversity in these rivers and reinstate historic passages for a number of fish species e.g. salmon.

#30 Southern Magnesian Limestone
The ridge is formed by the underlying Magnesian Limestone of the Permian era, overlain in the northern area with drift deposits. The underlying Permian Magnesian Limestone forms a distinct but low ridge of land running north south, cut through by rivers following some dramatic gorges. Towards the north the limestone is largely covered by drift deposits, so that the ridge is less obvious, but the whole area is unified through the widespread use of the local limestone as a building material. The well-drained soils and low altitude have given rise to a landscape of rolling landform, fertile farmland and well-wooded estates. The western edge of the limestone locally forms quite a prominent scarp, but elsewhere the land has a rounded, rolling profile, elevated enough to give a long views out over the more industrialised lowlands to the west, and the farmed lowlands to the east.

The soils are free draining and very fertile, giving rise to productive arable cropping. The fields are generally large and geometric, bounded by low, flailed hawthorn hedges, although stone walls do also occur for example as estate boundaries and in villages. Hedgerow trees are infrequent, which adds to the

open character of the farmed landscape, and the hedges often emphasise the rolling landform. This open rolling farmland contrasts with the scattered woodlands.

Woodland cover is reasonably high overall, often due to the trees and woodlands in the grounds of the many large country houses that were established on the ridge. Many are plantation woodlands, but oak, ash and lime typically form the canopy of deciduous woodlands. The few remnants of ancient woodland in this area have a particular abundance of the nationally scarce large-leaved lime. At Sprotborough Gorge the canopy consists of ash and wych-elm and is the largest area of this woodland type in South Yorkshire.

Other semi-natural habitats are limited and fragmented. Of particular note are the small areas of Magnesian limestone (calcareous) grassland, which is characteristic of this landscape. It is a nationally scarce habitat, and has a number of rare specialist species such as Yorkshire Broomrape and the brown argus butterfly associated with it. These grasslands tend to occur on steeper slopes or in the narrow valley bottoms, and some of the most significant stretches can be found around Maltby, west of Sprotbrough, and near Castleford, Micklefield and Bramham. Where they are not actively managed, they are replaced by scrub, which forms a particularly varied mix, with hawthorn, blackthorn, guelder rose and dogwood, providing important habitat for birds and insects.

Many of the national and local priority habitats included in the Rotherham BAP have associations with one of these two National Character Areas; decisions on habitat creation and site management connected to the delivery of the Rotherham BAP will make reference to the NCA profiles.

Ecoscape Principles

Biodiversity action can follow an approach outlined by J. Rodwell et al. in 'Future Landscapes and Biodiversity for the Dearne Valley, Yorkshire' February 2005. The Future Landscapes study was a trial in an innovative landscape-scale approach to assessing actual and potential biodiversity assets for the Dearne Valley; the principles of this study are being used to investigate whether a similar approach can support the delivery of the Rotherham Biodiversity Action Plan and the identification of local biodiversity opportunities.

The study proposes that an 'ecoscape' is "*a mapping unit based on geology, soil and climate for which it is possible to identify the suite of potential vegetation types that could be sustained by particular interventions or none*", i.e. a given set of conditions (e.g. limestone geology with freely draining lime-rich loamy soils) can support a range of semi-natural habitat types (e.g. limestone pasture, lime-rich deciduous woodland) that will be sustained by particular interventions (e.g. cutting or grazing to maintain grassland; little or no intervention to maintain woodland). This approach can help site based decision making as the site conditions and management resources available will point towards an 'ideal' proposal for habitat creation that can be sustained in the long-term. It can also support landscape or ecosystem scale work by identifying site links and corridors, e.g. from aquatic to terrestrial habitats or from intensely managed to open countryside areas, that include a range of connected habitat types.

The basic principles of Ecoscape mapping have been considered for Rotherham; the National Character Area boundaries overlain with more detailed bedrock and superficial geological mapping has identified three key zones or Ecoscapes:

- Coal Measures Ecoscape
- Magnesian Limestone Ecoscape
- Riparian Ecoscape

Local soil, hydrology, landform and land use mapping can be used to refine these zones further either on a borough-wide or a site-by-site basis as time allows. Each of the national and local priority habitats included in the Rotherham BAP will have associations with certain ecoscapes and the principles above will be applied when making decisions about habitat creation and site management.

Biodiversity Opportunity Area Mapping

Biodiversity Opportunity Areas are areas where conservation action is likely to have the greatest benefit for biodiversity. They can be centred on existing areas of biodiversity interest but have a key role as areas which offer wider strategic opportunities for biodiversity enhancement (habitat restoration and expansion) and are expected to contribute towards the UKBAP priority habitat targets. Biodiversity Opportunity Areas will aim to:

- Restore habitat quality on existing sites
- Expand habitat area and reconnect fragmented habitats to increase the extent, function and resilience of ecological networks and counter the effects of climate change.
- Re-create natural systems to support biodiversity and other land management objectives such as the delivery of sustainable farming and the restoration of river features and floodplain systems to alleviate flooding.

Biodiversity opportunity mapping (BOM) combines layers of existing data, such as known assets, soil types and depths, geology, hydrology, aspect, in order to identify opportunity areas and prioritise action. Within Rotherham BOM will be used to support biodiversity enhancement via two key routes:

1. to identify land that has high potential for the creation, expansion and linking of biodiversity assets, which will mostly be delivered by local biodiversity action to achieve BAP targets;
2. to establish actions or schemes for any area of land based on the available conditions, e.g. size, hydrology and underlying geology, which will mostly be delivered via mitigation / enhancement work required within the planning system

There are methodologies being tested at a regional level that will identify and prioritise sites for biodiversity action based on land that has high potential for the creation, expansion and linking of biodiversity assets by virtue of its proximity to them. The most detailed of these is the South Yorkshire Integrated Habitat Network research, see below.

Mitigation and enhancement of biodiversity required within the planning system most commonly involves action on land owned or in the control of the developer to support a planning application. This action may not be in the most beneficial place to link existing assets but it is important to ensure that the action taken is appropriate for the place in which it occurs. This will support the development of biodiversity schemes that survive and that maybe more economical to create, e.g. they would not necessarily require the import of topsoil and elements of natural regeneration could be included.

In order for biodiversity opportunity work to consider land that, currently, has low potential, e.g. where there are no existing assets or where land is prioritised for non-biodiversity uses such as development, an approach has been proposed based on the Ecoscape Principles noted above. The approach consists of mapping, identification of habitats associated with different ecoscapes and a series of principles that support the creation of suitable, sustainable biodiversity enhancement schemes.

Borough-wide biodiversity opportunity mapping refines the National Character Area boundaries using more detailed bedrock and superficial geological mapping to identify three key zones or Ecoscapes, shown on Map Three:

- Coal Measures Ecoscape
- Magnesian Limestone Ecoscape
- Riparian Ecoscape

Each ecoscape will support a different range of habitats from bare ground to mature woodland dependant on conditions and management. The lists below demonstrate the range of habitat types suitable for restoration or creation within each particular area; decisions for specific sites will need to be based on existing conditions, size and long-term management capacity. In addition key national and regional project area boundaries are used to indicate where project-specific habitat creation aims and objectives can be supported.

Ecoscape	Key Habitats	Project Priorities
Coal Measures Ecoscape	• Lowland mixed deciduous (Oak – birch) woodland • Wet woodland • Lowland neutral meadows • Dry acid grassland • Lowland heathland • Floodplain grazing marsh • Lowland fen • Reedbeds • Rivers and watercourses	Dearne Valley Green Heart NIA • Lowland mixed deciduous (Oak – birch) woodland • Floodplain grazing marsh • Lowland fen • Reedbeds • Rivers and watercourses • Standing open water

	• Standing open water	
Magnesian Limestone Ecoscape	• Lowland mixed deciduous woodland • Upland mixed ashwoods • Wood pasture and parkland • Lowland calcareous grassland • Lowland neutral meadows • Arable field margins • Lowland fen • Watercourses and ponds	<u>South Yorkshire Magnesian Limestone Ridge</u> • Lowland calcareous grassland
Riparian Ecoscape	• Wet woodland • Floodplain grazing marsh • Lowland fen • Reedbeds • Rivers and watercourses • Standing open water	<u>Living Don</u> • Wet woodland • Floodplain grazing marsh • Reedbeds • Rivers and watercourses • Standing open water

Local soil, hydrology, landform and land use mapping can be used to refine these zones further on a borough-wide basis or to generate an individual site based scheme. The following principles have been developed by RMBC with members of the Rotherham Biodiversity Forum to help direct biodiversity enhancement and the creation of the most suitable habitats or mosaics for any given site:

- Creating habitats appropriate for the relevant character area, i.e. considering the table above;
- Identifying and retaining any (semi) natural habitat present within the site;
- Using only locally available soils; not using peat, artificial soil materials or treated sewage materials;
- Not importing topsoils, i.e. using only subsoils in areas for biodiversity and concentrating the use of existing soils to areas for tree planting;
- Use of tree planting only if the existing soil conditions are sufficient;
- Using mixed native species hedgerows for boundary features and to connect open areas;
- Providing areas of bare ground where habitats can generate and succeed naturally;
- Identifying locally suitable plant species mixes;
- Using locally sourced seed / plant materials;
- Creating basic grassland habitats on the understanding that they can be left to develop naturally into more complex grasslands, scrub and possibly eventually woodland;
- Identifying nearby or adjacent biodiversity assets that can inform schemes or to which new areas can be connected;
- Including ornamental species planting in limited amounts only and selecting non-native species for their nectar / food source or longer flowering period benefits to supplement the native habitats
- Agreeing long-term management plans that have biodiversity enhancement as an overriding objective;

Based on the mapping, identified associated habitats and guiding principles it should be possible for any area of land to deliver biodiversity enhancement and to increase the extent and quality of the habitats prioritised by the Rotherham BAP.

South Yorkshire Integrated Habitat Network (Forest Research 2012)

Fragmentation and isolation of species and their habitats is acknowledged as a major threat to biodiversity, especially in the face of climate change. The development of habitat networks is widely seen as a key mechanism for reversing the effects of fragmentation on biodiversity while delivering a range of other social and environmental benefits, such as enhancement of local landscape character and greater opportunities for public access and recreational use. Habitat networks are particularly important in helping species meta-populations persist across multiple sites in landscapes consisting of fragmented, formerly widespread habitat systems.

Targeted habitat creation is more likely to result in more robust habitat networks than random habitat creation and will benefit a range of species. The IHN study aims to provide a focus for where conservation effort could be undertaken to reduce the deleterious effects of habitat fragmentation and enhance existing

habitats. Within South Yorkshire, the IHN covers neutral and calcareous grassland, fen, marsh & swamp, and broadleaved, mixed & yew woodland habitats.

The resulting mapping highlights where there may be opportunities to improve connectivity of these habitats through the creation of new habitat or by changing land management practices; the mapping prepared during the study includes layers for the following for each habitat group:

- Core networks
- Core habitat, comprising of areas considered 'home' habitat for the focal species
- Non-core networks
- Non-core habitat, comprising of areas considered 'home' habitat for the focal species
- Habitat Enhancement Areas

The extent of core and non-core networks provides an indication of the connectivity of habitat within the area. The Habitat Enhancement Areas aid prioritisation of where concentrations of networks and areas of habitat occur and hence where habitat creation and management may result in increased connectivity. The map layers can be used to consider the following:

- Landscape permeability to identify where habitat management and/or creation could decrease habitat fragmentation and isolation;
- Prioritising action through clusters of networks and habitats (where actions within these areas are more likely to enhance networks);
- Overlaps of different networks (woodland, grassland, wetland and focal species) to determine where actions can provide multiple benefits;
- Cross-boundary interactions.

Network development should be initially guided by Habitat Enhancement Areas and then by the prioritisation of the following management principles (in order of priority):

1. ***Protect*** and ***manage*** high quality habitat
2. ***Restore*** and ***improve*** sites with restoration potential
3. ***Improve*** and ***manage*** other sites
4. ***Improve*** the ***landscape matrix*** by reducing land use intensity
5. ***Create*** new habitat and semi-natural habitat

The Rotherham Biodiversity Forum will use the results of the IHN research to identify sites where the delivery of actions in the Rotherham BAP could have the most robust results. Project delivery in these areas will be reported to ensure habitat network mapping can be kept relevant.

Key Threats and Over-riding Objectives

Each habitat group action plan contains a list of threats felt to be particularly relevant to that group; the following are generic actions that are felt to have, or have had, a negative impact on biodiversity and biodiversity action.

Habitat destruction and loss

Whether due to development, agriculture, natural processes or abuse the reduction in size of semi-natural open space and the fragmentation of larger sites is a significant direct threat to the continued presence of habitats and species, to ecosystem services and to landscape character. Sustainable development is needed supported by spatial planning decisions that allocate future development land where it will have the least negative impact on the natural environment. Alongside this agriculture and other land management should be carried out in an environmentally sensitive way to benefit biodiversity and can be subsidised through Environmental Stewardship and Forestry funding schemes.

Inappropriate management

Over or under management can reduce the quality of habitats meaning they are less able to support the full range or number of species that could be expected to be present. For example, frequent grass-cutting can prevent flowering and seed production that support insect and bird populations; where grass-cuttings are left this increases nutrient levels and, over time, reduces botanical diversity. Grasslands left unmanaged however, will develop scrub and eventually woodland characteristics which, while interesting and valuable in their own right, may be considered detrimental to the wider habitat mosaic. Lack of management can also give the impression of neglect which can reduce local support for and use of sites.

Pollution

Air and water pollution can result in poor quality habitats with reduced ability to support their associated species assemblages. In some circumstances pollution incidents can harm or kill some species to the extent where they are unable to recover and local, or wider, extinction occurs.

Climate change

To date, climate change could be said to have had a relatively small impact on the UK's biodiversity and ecosystems, though it has, for example, affected species ranges, population sizes, timing of biological events such as flowering, and increased sea levels. However, further climate change is unavoidable because of previous emissions and both the direct and indirect impacts are expected to become a more significant and increasing pressure over the coming decades. A possible 2-4°C increase in mean summer temperatures in the longer term, milder winters, changes in rainfall distribution and seasonality, more extremes of weather and sea level rise. The effects of these changes on biodiversity are uncertain and may occur as sudden and unexpected step changes. However, we do know that in the longer term, over a fifth (22%) of priority habitats are at high risk of direct impacts and marine ecosystems are likely to be particularly seriously affected.

The effects of changing climate are not fully understood but evidence suggests that some species ranges are changing and that some systems are becoming disconnected, for example changes in phenology and the effects on species interactions. The principles of ecosystem networks and landscape-scale conservation should facilitate climate change related species movement and expansion.

Communication

Engaging landowners, managers, developers, businesses and communities in biodiversity action is important. Providing locally accessible and interesting open spaces, making communities attractive and healthy and enabling local, relevant environmental education are all key elements of increasing understanding and appreciation of the natural environment. Other aspects of necessary communication include the provision of consistent guidance via the planning process and being able to monitor actions to report to local, regional and national targets.

Tables

Table One: Rotherham BAP Habitat Groups

2012 RBAP Habitat Group	England Priority Habitats	Other Important Habitats / features in Rotherham
Grassland	• Arable field margins • Lowland calcareous grassland • Lowland dry acid grassland • Lowland meadows • Lowland heathland	
Woodland	• Lowland mixed deciduous woodland • Wet woodland • Wood-pasture and parkland	• Broadleaved plantation • Scrub
Orchards	Traditional orchards	
Hedgerows	Hedgerows	
Wetlands	• Eutrophic standing waters • Ponds • Rivers • Coastal and floodplain grazing marsh • Lowland fens • Reedbeds	• Ditch networks • Wader scrapes • Fishing ponds • Subsidence flashes • Sustainable Drainage Systems (SuDS)
Brownfield	• Inland rock outcrop and scree habitats • Open mosaic habitats on previously developed land	

Table Two: National Broad and Priority Habitats showing whether present in Rotherham

(Section 41 NERC Act 2006 - Habitats of Principal Importance in England)

Broad habitat	Habitat name	Rotherham
Arable and horticulture	**Arable field margins**	**Yes**
Arable and horticulture	**Traditional orchards**	**Yes**
Boundary	**Hedgerows**	**Yes**
Coastal	Coastal saltmarsh	No
Coastal	Coastal sand dunes	No
Coastal	Coastal vegetated shingle	No
Coastal	Intertidal mudflats	No
Coastal	Maritime cliff and slopes	No
Coastal	Saline lagoons	No
Freshwater	Aquifer-fed naturally fluctuating water bodies	No
Freshwater	**Eutrophic standing waters**	**Yes**
Freshwater	Mesotrophic lakes	No
Freshwater	Oligotrophic and dystrophic lakes	No
Freshwater	**Ponds**	**Yes**
Freshwater	**Rivers**	**Yes**
Grassland	**Lowland calcareous grassland**	**Yes**
Grassland	**Lowland dry acid grassland**	**Yes**
Grassland	**Lowland meadows**	**Yes**
Grassland	Purple moor-grass and rush pastures	No
Grassland	Upland calcareous grassland	No
Grassland	Upland hay meadows	No
Heathland	**Lowland heathland**	**Yes**
Heathland	Mountain heaths and willow scrub	No
Heathland	Upland heathland	No
Inland rock	Calaminarian grasslands	No
Inland rock	**Inland rock outcrop and scree habitats**	**Yes**
Inland rock	Limestone pavements	No
Inland rock	**Open mosaic habitats on previously developed land**	**Yes**
Marine	Blue mussel beds	No
Marine	Estuarine rocky habitats	No
Marine	Fragile sponge and anthozoan communities (subtidal)	No
Marine	Horse mussel beds	No
Marine	Intertidal boulder communities	No
Marine	Intertidal chalk	No
Marine	Maërl beds	No
Marine	Mud habitats in deep water	No
Marine	Peat and clay exposures	No
Marine	*Sabellaria alveolata* reefs	No
Marine	*Sabellaria spinulosa* reefs	No
Marine	Seagrass beds	No
Marine	Sheltered muddy gravels	No
Marine	Subtidal chalk	No
Marine	Subtidal sands and gravels	No
Marine	Tide-swept channels	No

Wetland	Blanket bog	No
Wetland	**Coastal and floodplain grazing marsh**	**Yes**
Wetland	**Lowland fens**	**Yes**
Wetland	Lowland raised bog	No
Wetland	**Reedbeds**	**Yes**
Wetland	Upland flushes, fens and swamps	No
Woodland	Lowland beech and yew woodland	No
Woodland	**Lowland mixed deciduous woodland**	**Yes**
Woodland	Upland mixed ashwoods	No
Woodland	Upland oakwood	No
Woodland	**Wet woodland**	**Yes**
Woodland	**Wood-pasture and parkland**	**Yes**

Table Three: Site Designations

Site Designation	Explanation	Rotherham
Sites of International Importance		
Ramsar Sites	These sites are also designated as SSSI and are listed under the Convention on Wetlands of International Importance.	0
Special Protection Areas (SPAs)	These sites are also designated as SSSI and SPA under the EC Directive on the Conservation of Wild Birds.	0
Special Areas of Conservation (SACs)	These sites are also designated as SSSI and SAC under the EC Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora.	0
Sites of National Importance		
National Nature Reserves (NNRs)	These sites are designated as SSSI and declared as NNRs under the National Parks and Access to the Countryside Act 1949 or under section 35 of the Wildlife and Countryside Act 1981 as amended.	0
Sites of Special Scientific Interest (SSSIs)	These sites are notified under section 28 of the Wildlife and Countryside Act 1981 as amended; representative examples of nationally important wildlife and geology	6
Sites of Local Importance		
Local Nature Reserves (LNRS)	Sites with nature conservation value of particular importance for social and educational reasons.	7
Local Wildlife Sites (LWS)	Non-statutory areas of local importance for nature conservation that complement nationally and internationally designated geological and wildlife sites. Local Sites are protected within the planning framework and are a material consideration when planning applications are being determined.	93
Local Geological Sites including Regionally Important Geological Sites (LGS)		26

Table Four: Biodiversity Integration Group Habitat and Species Connections

BIG Habitat Category	Priority Habitats	Number of Associated UK BAP Species
Lowland farmland	Grasslands – all lowland types	206
	Lowland calcareous grassland	58
	Lowland heathland	133
	Hedgerows	83
	Arable field margins	65
	Traditional orchards	46
Upland	Upland heathland	35
	Montane heaths and willow scrub	6
	Blanket bog	10
	Upland flushes, fens and swamps	23
	Inland rock outcrops and scree	32
	Limestone pavement	7
	Upland calcareous grassland	27
	Upland hay meadows	14
Lakes and ponds	Lakes – all types (grouped)	40
	Ponds	77
Rivers	Rivers – all types (grouped)	76
	Chalk rivers	14
	Active shingle rivers	20
Wetlands	Lowland fens	75
	Reedbeds	22
	Lowland raised bog	23
	Coastal and floodplain grazing marsh	47
Coastal	Saline lagoons	12
	Coastal vegetated shingle	15
	Coastal sand dunes	72
	Maritime cliff and slopes	61
	Intertidal mudflats and Coastal saltmarsh	30
Brownfield / urban	Brownfield	108
Woodland	Woodland – all types (grouped)	169
	Wet woodland	36
	Lowland beech and yew woodland	55
	Wood-pasture and parkland (veteran trees)	105

Appendices

Appendix One: England Biodiversity Strategy Priorities

England Biodiversity Strategy: Summary of priorities and key actions

Theme 1 A more integrated large-scale approach to conservation on land and at sea

- Priority action 1.1: Establish more coherent and resilient ecological networks on land that safeguard ecosystem services for the benefit of wildlife and people
- Priority action 1.2: Establish and effectively manage an ecologically coherent network of marine protected areas which covers in excess of 25% of English waters by the end of 2016, and which contributes to the UK's achievement of Good Environmental Status under the Marine Strategy Framework Directive
- Priority action 1.3: Take targeted action for the recovery of priority species, whose conservation is not delivered through wider habitat-based and ecosystem measures
- Priority action 1.4: Ensure that 'agricultural' genetic diversity is conserved and enhanced wherever appropriate

Theme 2 Putting people at the heart of biodiversity policy

- Priority action 2.1: Work with the biodiversity partnership to engage significantly more people in biodiversity issues, increase awareness of the value of biodiversity and increase the number of people taking positive action
- Priority action 2.2: Promote taking better account of the values of biodiversity in public and private sector decision-making, including by providing tools to help consider a wider range of ecosystem services
- Priority action 2.3: Develop new and innovative financing mechanisms to direct more funding towards the achievement of biodiversity outcomes

Theme 3 Reducing environmental pressures

Integrate consideration of biodiversity within the sectors which have the greatest potential for direct influence, and reduce direct pressures.

Agriculture

- Priority action 3.1: Improve the delivery of environmental outcomes from agricultural land management practices, whilst increasing food production
- Priority action 3.2: Reform the Common Agricultural Policy to achieve greater environmental benefits

Forestry

- Priority action 3.3: Bring a greater proportion of our existing woodlands into sustainable management and expand the area of woodland in England

Planning and development

- Priority action 3.4: Through reforms of the planning system, take a strategic approach to planning for nature within and across local areas. This approach will guide development to the best locations, encourage greener design and enable development to enhance natural networks. We will retain the protection and improvement of the natural environment as core objectives of the planning system
- Priority action 3.5: Establish a new, voluntary approach to biodiversity offsets and test our approach in pilot areas

Water management

- Priority action 3.6: Align measures to protect the water environment with action for biodiversity, including through the river basin planning approach under the EU Water Framework Directive Priority action 3.7: Continue to promote approaches to flood and erosion management which conserve the natural environment and improve biodiversity
- Priority action 3.8: Reform the water abstraction regime. The new regime will provide clearer signals to abstractors to make the necessary investments to meet water needs and protect ecosystem functioning. We will also take steps to tackle the legacy of unsustainable abstraction more efficiently

Management of the marine environment

- Priority action 3.9: Develop 10 Marine Plans which integrate economic, social and environmental considerations, and which will guide decision-makers when making any decision that affects, or might affect, a marine area. This action in England is part of the UK vision for 'clean, healthy, safe, productive and biologically diverse oceans and seas'

Fisheries

- Priority action 3.10: Implement actions and reforms to ensure fisheries management directly supports the achievement of wider environmental objectives, including the achievement of Good Environmental Status under the Marine Strategy Framework Directive

Air pollution

- Priority action 3.11: Reduce air pollution impacts on biodiversity through approaches at national, UK, EU and international levels targeted at the sectors which are the source of the relevant pollutants (nitrogen oxides, ozone, sulphur dioxide, ammonia)

Invasive non-native species

- Priority action 3.12: Continue to implement the Invasive Non-Native Species Framework Strategy for Great Britain

Theme 4 Improving our knowledge

Research and development:

- Priority action 4.1: Work collaboratively across Defra and the relevant agencies to direct research investment within Government to areas of highest priority to deliver the outcomes and priorities set out in this strategy, and in partnership with the Research Councils and other organisations in the UK and Europe to build the evidence base

Monitoring and surveillance

- Priority action 4.2: Put robust, reliable and more co-ordinated arrangements in place, to monitor changes in the state of biodiversity and also the flow of benefits and services it provides us, to ensure that we can assess the outcomes of this strategy

Improved data sharing and clear communication of evidence

- Priority action 4.3: Improve public access to biodiversity data and other environmental information – putting power into the hands of people to act and hold others to account. Also communicate progress towards the outcomes and priorities of this strategy and make available information to support decision-making at a range of scales to help others contribute to the outcomes

Links and References

BRIG – 2010 – UK Biodiversity Action Plan Priority Habitat Descriptions

Cambridge University Press (ed. J. S. Rodwell) – 1991 – British Plant Communities

Convention on Biological Diversity http://www.cbd.int/sp/ (04 February 2013)

Darren Moseley & Jordan Chetcuti – 2012 – South Yorkshire Integrated Habitat Network – Forest Research

Defra – 2006 - Local sites: Guidance on their Identification, selection and management

Defra – 2007 – Hedgerow Survey Handbook

Defra – 2008 – Climate Change Adaptation Principles: Conserving biodiversity in a changing climate

Defra – 2011 – Measuring Progress: 2010 assessment (Biodiversity Strategy for England)

Defra – 2011 - Biodiversity 2020: A strategy for England's wildlife and ecosystem services

Defra & Environment Agency 2009 – River Basin Management plan: Humber River Basin District

HM Government – 2011 – The Natural Choice: securing the value of nature

HM Government – 2006 – Natural Environment and Rural Communities Act 2006

http://jncc.defra.gov.uk/Docs/UKBAP_HabitatTargets-2006.xls (09/02/2012)

J. Rodwell et al. – 2005 – Future Landscapes and Biodiversity for the Dearne Valley, Yorkshire

Natural England – 2010 – Environmental Stewardship Handbook (ELS & HLS)

Natural England – 2012 (2nd Edition) – Bats and Onshore Wind Turbines Technical Information Note

Natural England (2012) National Character Areas

Natural England – 2008 – State of the Natural Environment

Nicky Rivers, South Yorkshire Biodiversity Coordinator on behalf of the Living Don Partnership – 2012 – River Rother Restoration project development work

People's Trust for Endangered Species (PTES) (2009). *Traditional orchards: a guide to wildlife and management.* [online] Last accessed May 2012 at: http://ptes.org/files/712_orchard_guide_edition2.pdf

People's Trust for Endangered Species (PTES) (2011). *The traditional orchards of South Yorkshire: Summary findings of an inventory to support habitat conservation*. [online] Last accessed May 2012 at: http://www.ptes.org/files/1694_traditional_orchard_inventory_county_summary_south_yorkshire_ed_2.pdf

RMBC – 2012 – Rotherham Local Plan: Publication Core Strategy 2013-2028

RMBC – 2010 – Rotherham Local Wildlife Site System (Framework, Selection Criteria and Panel Terms of Reference)

RMBC – 2009 – Rotherham Ancient and Species-rich Hedgerow Project: Updated Project Report

Rotherham Biodiversity Forum – 2004 – Rotherham's Biodiversity Action Plan 2004

Secretary of State, the Department for Environment, Food and Rural Affairs – 2010 – Making Space for Nature: A review of England's Wildlife Sites and Ecological Network (Chaired by Professor Sir John Lawton CBE FRS)

UK National Ecosystem Assessment (2011) – The UK National Ecosystem Assessment: Synthesis of the Key Findings – UNEP-WCMC, Cambridge

UK National Ecosystem Assessment http://uknea.unep-wcmc.org/Home/tabid/38/Default.aspx (22 May 2012)

Webb, J.R., Drewitt, A.L., & Measures, G.H. - 2010 - Managing for species: Integrating the needs of England's priority species into habitat management Part 1 Report. *Natural England Research Reports, Number 024*

YHBF – 2010 - The Yorkshire and Humber Biodiversity Delivery Plan 2010-2015

YHBF – 2009 - Yorkshire & Humber Regional Biodiversity Strategy

Maps

- **Map One**

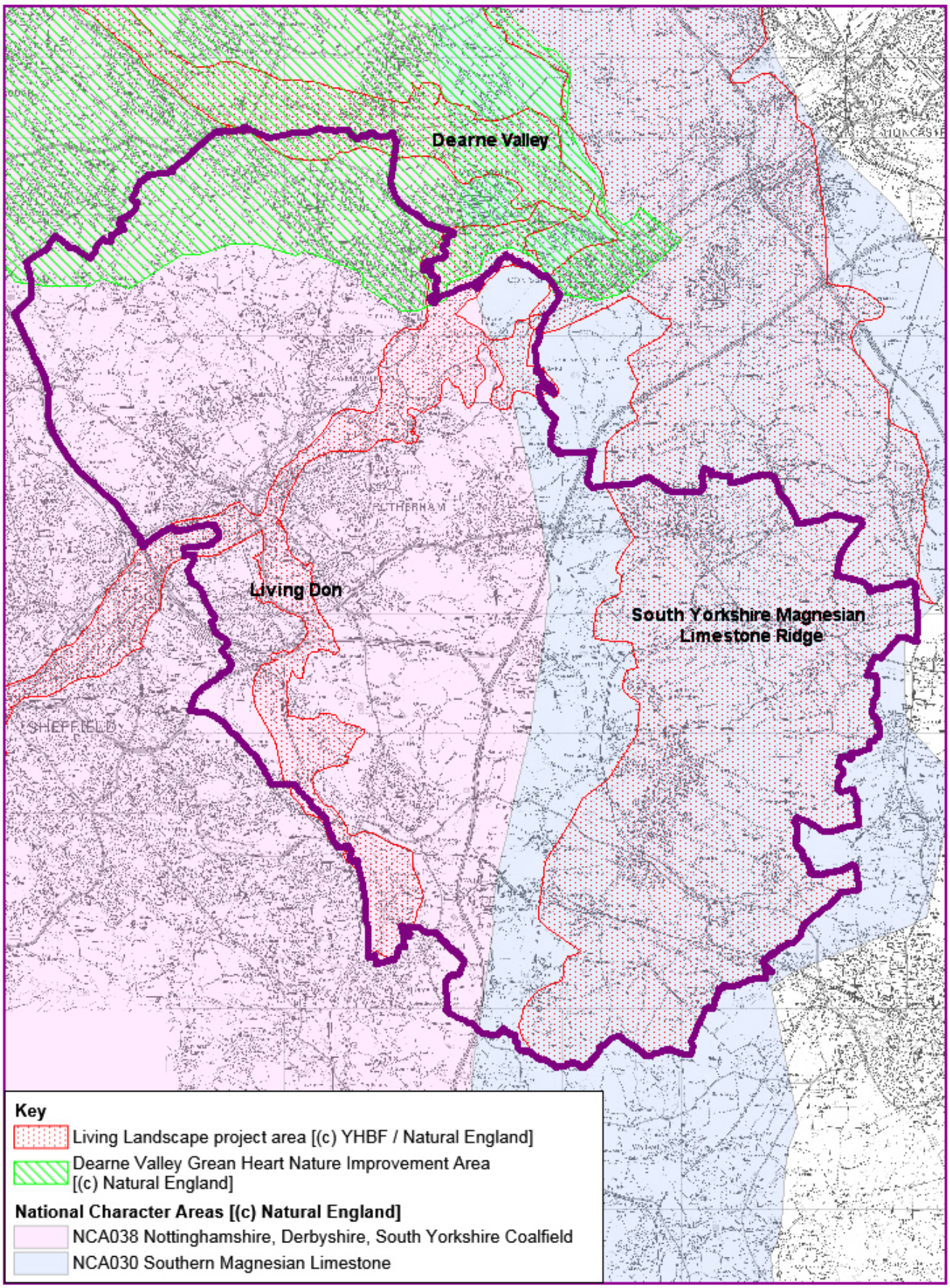
National and Regional Biodiversity Integration

- **Map Two**

Rotherham Local Wildlife Sites 2012

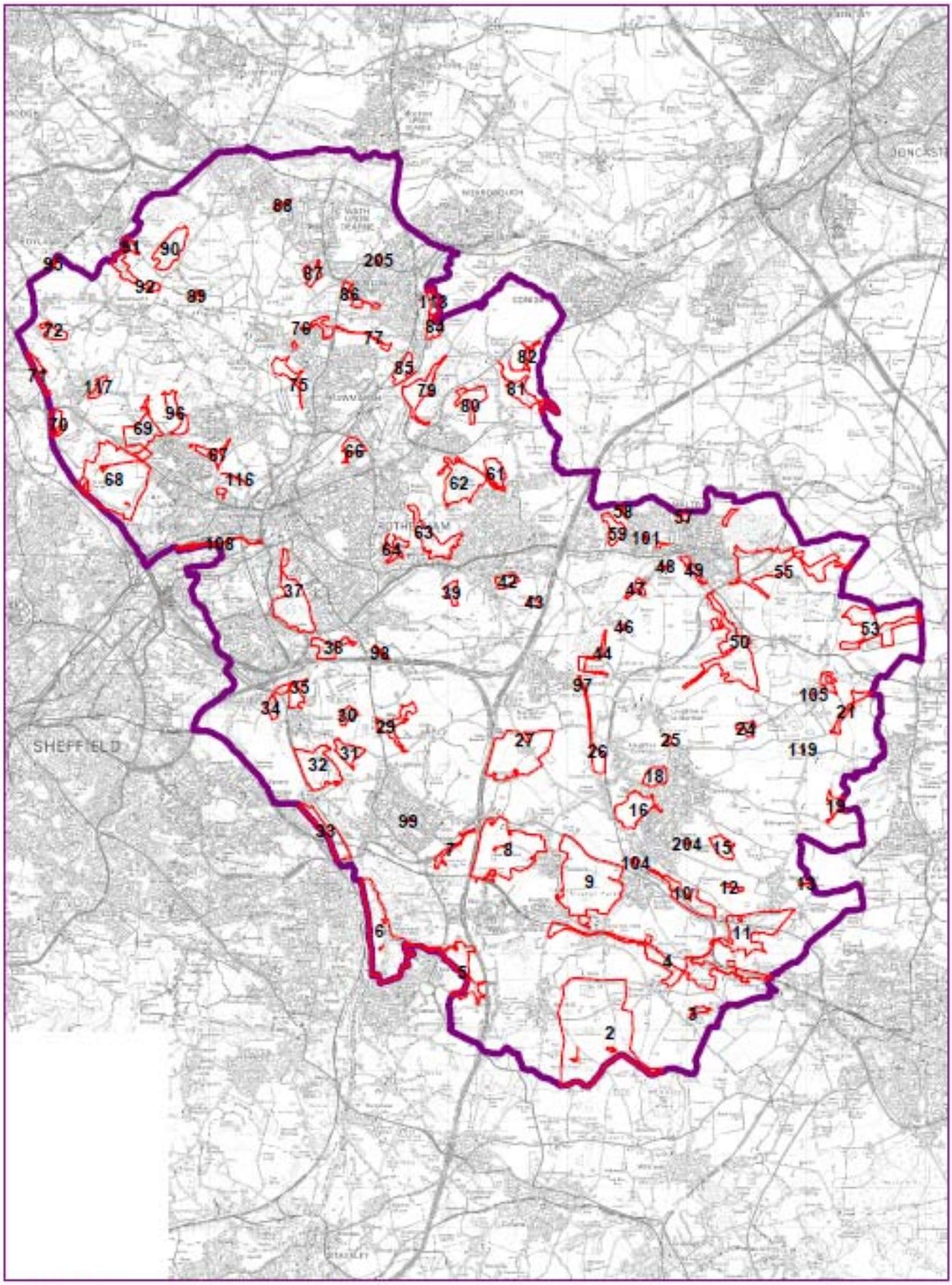
- **Map Three**

Rotherham Biodiversity Opportunity Area Mapping



National and Regional Biodiversity Integration

Rotherham Metropolitan Borough Council



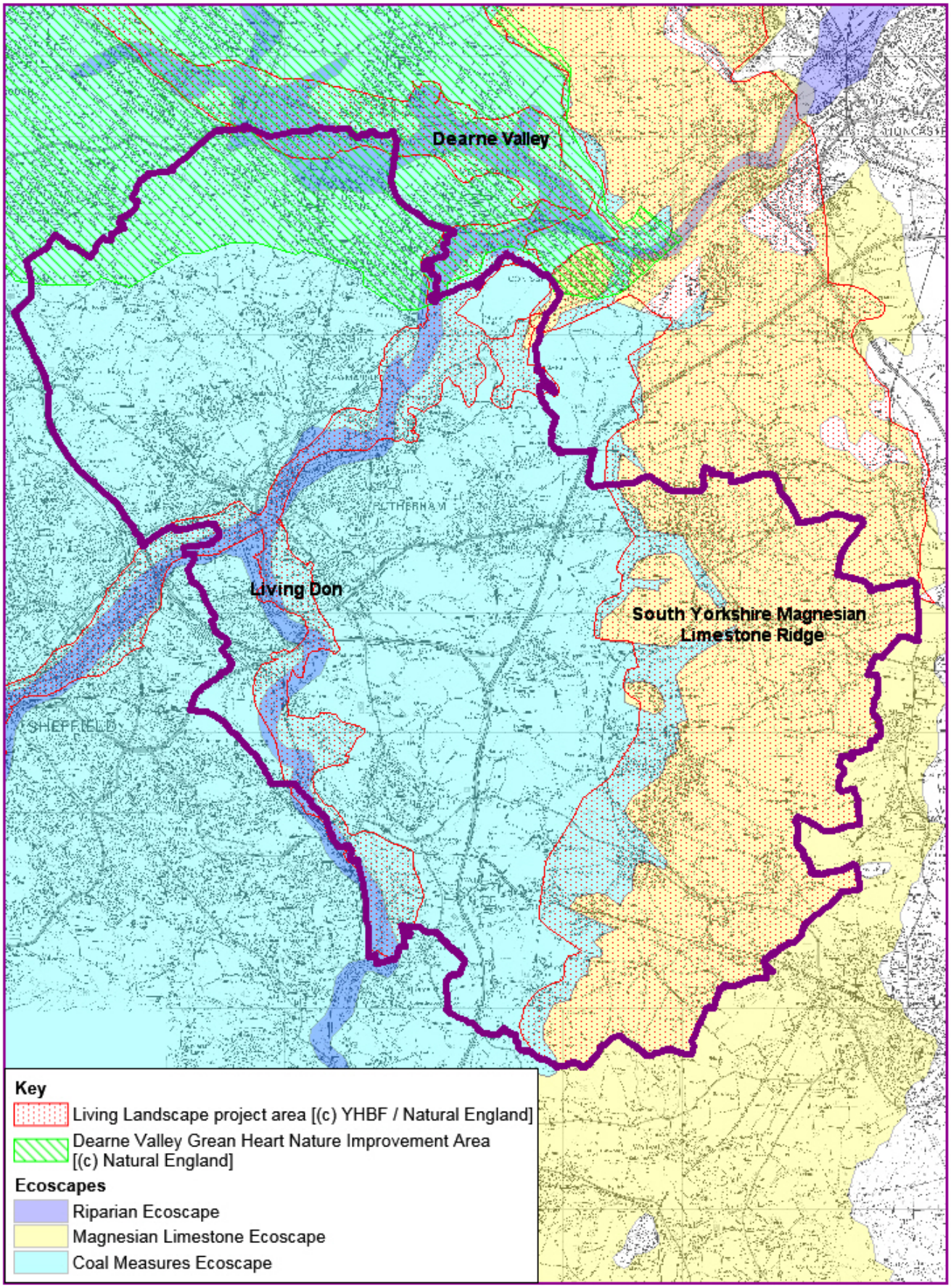
Rotherham Local Wildlife Sites: 2012

Rotherham Metropolitan Borough Council

33

Rotherham Local Wildlife Sites: 2012

Site	Name	Site	Name
2	Loscar Common	63	Listerdale Wood
3	Lob Wells Wood	64	Gibbing Greave & Herringthorpe Wood
4	Chesterfield Canal	66	Aldwarke Sewage Works
5	Nor Wood and Locks	67	Bassingthorpe Spring & Hudson's Rough
6	Rother Valley Country Park	68	Grange Park
7	Nickerwoods & Ponds	69	Keppel's Field LNR
8	Todwick Common	70	Lady Clough & Smithy Wood
9	Axle Lane	71	Hesley Wood
10	Anston Stones Wood	72	Barley Hole Springs
11	Lindrick Common	75	New Stubbin Colliery & Stubbin Incline
12	Dewidales Wood	76	Warren Vale Local Nature Reserve
13	Cross Lane Meadow	77	Collier Brook and Marsh
15	Swinston Hill Woods	79	Thrybergh Tip
16	Dinnington Colliery Tip	80	Thrybergh Country Park
18	Dinnington Open Public Space	81	Ravenfield Park & Firsby Reservoirs
19	Langold Holt	82	Hooton Cliff
21	Ivy Lodge Plantation & Rough Wood	83	Back Lane
22	Firbeck Hall Woodlands	84	Kilnhurst Ings
24	Long and Little Thwaite Woods	85	Kilnhurst Agricultutal Letting
25	Little Moor	86	Creighton & Piccadilly Woods
26	Dinnington Marsh	87	Wath Wood & Boyd Royd Wood
27	Brampton Common	88	Flatts Valley
29	Ulley Country Park	89	Hoober Plantation
30	Burnt Wood	90	Rainborough Park
31	Treeton Wood	91	Simon Wood
32	Treeton Dyke	92	Lee Wood
33	Woodhouse Washlands	93	King's wood
34	Catcliffe Flash LNR	95	Skiers Spring Wood
35	Old Flatts Farm Marsh	96	Rockingham Wood & Shepherd's plantation
36	Whiston Meadows	97	Thurcroft Mineral Trail
37	Canklow Wood	98	Revel Wood
39	Wickersley Gorse	99	Austen Park
42	Wickersley Wood	101	Hazel Road Wood
43	King's Pond Plantation	103	Monk Wood
44	Thurcroft Hall	104	Anston Brook Walk
46	Carr Quarry	105	St Martin's Church, Firbeck
47	Hooton Levitt (SW) woodlands	108	Sheffield & South Yorkshire Navigation
48	Hooton Levitt (N) woodland	113	Kilnhurst Riverside
49	Wood Lee Common	116	Clough Streamside
50	Roche Abbey	117	Thorpe Mine
53	Sandbeck Park	119	St Peters Church Letwell
55	Maltby Commons & Woodlands	121	Bradgate Brickworks
57	Greenland Plantation	122	Treeton Colliery
58	Lilly Hall	123	Larch Plantation
59	Hellaby Bridge Brickworks	204	Tropical Butterfly House
61	Gulling Wood and Silver Wood	205	St Margarets Church, Swinton
62	Silverwood Tip & Odd Hill		



Rotherham Biodiversity Opportunity Area Mapping

Rotherham Metropolitan Borough Council

Notes: