The Doncaster Green Infrastructure Strategy 2014-2028

Creating a Greener, Healthier & more Attractive Borough

Adoption Version
April 2014

Doncaster Council
Service Improvement & Policy (Regeneration & Environment)

Foreword from the Portfolio Holder…

As Portfolio Holder for Environment & Waste at Doncaster Council, I am delighted to introduce the ***Doncaster Green Infrastructure Strategy 2014-2028: Creating a Greener, Healthier & more Attractive Borough.***

As the largest metropolitan Borough in the country, covering over 220 square miles, Doncaster has an extensive green infrastructure (GI) network which includes numerous assets and large areas that are rural in character. As such, our communities enjoy the benefit of excellent access to the countryside, as well as some great parks and open spaces on our doorstep, whilst never being too far away from the hustle and bustle of our town centres and busy urban lifestyles.

However, GI is not just about having access to some great parks and the countryside - it's about far much more than that. Doncaster enjoys being home to 2 Nature Improvement Areas, of which just 12 exist nationally – the Dearne Valley and Humberhead Levels. In these areas conservation activities are being targeted to deliver the greatest gains for biodiversity through collaborative working with our partners.

Potteric Carr Nature Reserve is a fantastic resource which is famed for its wetland birds and lies just to the south-east of the centre of Doncaster. The Don Gorge Project is maximising the potential of the Limestone Valley, which runs through the west of the borough.

Did you know that Doncaster has 65 different woodlands which cover an area in excess of 521 hectares? That's about the equivalent to over 1,000 football pitches. There are 88 different formal open spaces across the borough, which include football, rugby and cricket pitches, greens, courts and athletics tracks. Doncaster is also home to 12 golf courses.

The Trans-Pennine Trail passes through Doncaster and is integral to the extensive footpath and cycle network that link the borough's communities with the countryside, jobs and recreation opportunities. There are so many more features across Doncaster and these are covered within this Strategy document.

Despite this enviable position that communities in Doncaster enjoy, there is always so much more that can be done to make the borough's GI even greater. The Strategy sets out a framework for ensuring maximum investment and funding is being channelled, both by the Council and the vast array of important partners who invest so much time and resources, often voluntarily, into making our GI as good as it can be.

This Strategy will help deliver a better connected network of multi-purpose spaces and provide the opportunity for the coordination and delivery of environmental improvements that will also bring multiple socio-economic benefits to our communities, such as increasing inward investment and improved quality of life.

I encourage you to read on and, just as importantly, explore and experience some of what the Borough's GI has to offer. You will not be disappointed!

Councillor Christine Mills

Portfolio Holder for Environment & Waste, Doncaster Council, April 2014

Executive Summary

This is the ***Doncaster Green Infrastructure Strategy 2014 – 2028, Making Doncaster a Greener, Healthier, more Attractive Borough***. This adoption version of the Strategy has been informed by extensive public consultation to ensure it reflects the key priorities and projects for the Doncaster Borough. A separate Consultation Summary report is published alongside this Strategy setting out further detail of the stages involved in arriving at this adoption version.

Green infrastructure is a network of multi-purpose spaces that provide the opportunity for the co-ordination and delivery of environmental improvements that also offer numerous socio-economic benefits, such as encouraging inward investment and improving quality of life. A successful network helps to create a safe and accessible environment, mitigate climate change, reduce traffic noise and exhaust pollution, provides opportunities for sport and recreation, and protects and enhances our historic and natural environment.

The Strategy sets out our overall approach for delivering an integrated network of high quality green spaces, habitats and landscapes across the borough and has been prepared in partnership with a range of stakeholders. The Strategy runs to 2028 in line with the Local Development Framework Core Strategy, but the Strategy will need to be reviewed frequently to ensure the aims and objectives are being met to help deliver the vision.

The Strategy identifies particular funding and implementation opportunities, which include the vital work of Council partners and voluntary groups who invest significant time and resources into the borough's green infrastructure assets ensuring they can be enjoyed by people across the borough.

The Strategy looks at five green infrastructure themes. It looks at the valuable contribution each theme makes towards green infrastructure as well as the current situation and where we are going in relation to each one, before setting out a number of principles and actions for the future. These are:

- Theme 1 – Biodiversity & Geodiversity:
- Theme 2 – Trees & woodlands;
- Theme 3 – Green space;
- Theme 4 – Green routes; and,
- Theme 5 – Historic environment.

Chapter 4 identifies the borough's green infrastructure corridors, as well as a number of strategic project areas, before making a number of recommendations by Neighbourhood Area which will eventually form a series of delivery and action plans (Chapter 5). These delivery and action plans are currently being worked up into a finer grain of detail, including the identification of key projects which will be informed from the feedback from stakeholders and partners from the various stages of consultation already undertaken on this Strategy.

The Council would like to take this opportunity to thank all the stakeholders and relevant parties that have taken the opportunity to feed into this important Strategy for the Borough. Any comments or further feedback that may be relevant for the rolling five year delivery action plans, and/or future review of this Strategy, are always welcomed and can be made via any of the contact details contained on the Council's Green Infrastructure Strategy homepage, available via:
www.doncaster.gov.uk/greeninfrastructure

Service Improvement & Policy (Regeneration & Environment)
Doncaster Council, April 2014

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Above: View from Conisbrough Viaduct

What is the purpose of this strategy?

1.1 The Doncaster Green Infrastructure Strategy sets out our overall approach for delivering an integrated network of high quality green spaces, habitats and landscapes across the borough and has been prepared in partnership with a range of stakeholders. Specifically, the Green Infrastructure Strategy:

- provides a coordinated approach to the planning and delivery of green infrastructure over the long term;
- highlights the issues, opportunities, threats and priorities relating to different types of green infrastructure where there are gaps or areas of need;
- integrates and combines relevant strategies that cover the green aspects of our environment into one overarching framework;
- sets out our green infrastructure standards in relation to quantity, accessibility, quality and value;
- sets out key principles that will guide the provision of green infrastructure to ensure it is embedded into the design of new development and adds value to the place-making process; and,
- acts as a basis for rolling five-year delivery and action plans.

1.2 The strategy will run to 2028, but will need to be frequently reviewed to ensure the aims and objectives are being delivered.

What is green infrastructure?

1.3 Green infrastructure is a planned network of multi-purpose spaces and routes that provide the opportunity for coordination and delivery of a wide range of environmental improvements that can also deliver multiple socio-economic benefits to an area, such as stimulating investment and improving quality of life. A successful network helps to create a safe and accessible environment, mitigate climate change (e.g. by reducing surface water run-off and providing urban cooling), reduce traffic noise and exhaust pollution, provide opportunities for sport and recreation, and protect and enhance our historic and natural environment.

What is it made up of?

1.4 The various assets which make up the network can be in public or private ownership, and in urban or rural areas. They include:

- elements of the built environment, such as road verges and street trees, private gardens and amenity space, and parts of buildings (e.g. green/brown roofs, bird/bat boxes);
- individual sites, such as heritage, biodiversity and geodiversity, and managed and natural green spaces (e.g. parks, formal and informal open space, allotments and publicly accessible nature conservation sites);
- linear features, such as footpaths, greenways, bridleways and cycle paths, cycle lanes within the road network, disused railway lines, towing paths and waterways; and,
- aspects of the wider landscape and countryside, such as agricultural land, wildlife habitat and flood plains.

1.5 Not all green infrastructure assets will be publicly accessible. For example, there are a large number of privately owned Local Wildlife Sites which contribute towards green infrastructure, but are not open to the public. The Council welcomes and encourages access to publicly owned (and some privately owned) open spaces and countryside sites, but environmental sensitivity is a consideration and some sites may be managed primarily for the benefit of local wildlife (especially protected species) or to alleviate the effects of climate change.

What are the functions?

1.6 The various assets which make up the network of green infrastructure include a wide and diverse variety of functions. For example:

• Open space	• Open spaces such as parks and woodlands
• Biodiversity	• Wildlife and habitats
• Geodiversity	• Geological and geomorphological features
• Landscape	• Landscape features
• Products of the land	• Agriculture
• Mitigating flood risk	• Floodplain and areas at risk from flooding, or areas where green infrastructure could be used to reduce run off in flood risk areas
• Contribution to mitigating climate change	• Areas which are, or could be, managed for non-flooding climate change mitigation through carbon sequestration in areas such as peatlands, managed woodlands or locations for energy crop production
• Health	• Air Quality Management Areas or locations with populations with poor health where green infrastructure can be used to increase outdoor activity or address pollution issues
• Accessibility	• Public rights of way allowing access by foot, cycle or horse riding along the corridor
• Recreation	• Formal and informal outdoor recreational assets such as golf courses, play areas and sports pitches
• Education	• Visitor centre or sites already used for environmental education
• Cultural	• Gardens, cemeteries, historic features or buildings in areas with public access
• Tourism	• Visitor assets which would form part of at least a day trip for people from outside the immediate area
• Poor quality environment	• Poor quality environments which could be improved with investment in green infrastructure
• Land and property values	• Investment in green infrastructure can positively affect local land and property values
• Economic growth	• Where development is proposed and increased green infrastructure is likely to attract further economic investment (e.g. higher value industry).

Why invest in green infrastructure?

1.7 There is an increasing evidence base[1] emerging of the significant socio-economic benefits that can be attributed to investing in an attractive and well-connected network of green infrastructure[2]. For example:

- good access to green infrastructure helps both an individuals' mental and physical health. This in turn leads to greater workforce productivity and retention, whilst also reducing the need for costly healthcare interventions at a cost to the public purse;
- an attractive and well maintained green infrastructure network attracts both visitors and new businesses into an area. Visitors often have a disposable income to spend in the local economy which not only sustains existing businesses, but also provides opportunities for new business ventures, diversification, and growth which in turn also bring more employment opportunities and income for the area; and,
- areas with an extensive green infrastructure network help to regulate environmental processes, for example through a reduction in flood risk, which means less public and private spending on avoiding and reducing environmental risks and cleaning up environmental pollution.

1.8 Doncaster is growing and will need to find sites to accommodate around 18,450 additional homes and around 36,000 new jobs over the next 15 years. The population is also increasing as a result of inward migration and rising life expectancy. This growth needs to be properly planned and managed to ensure that green infrastructure is integral to development proposals from the outset to ensure new developments protect, enhance or contribute to the existing/additional green infrastructure network. Opportunities for ensuring that the multiple socio-economic and environmental benefits that can be achieved from a well-planned and connected network of green infrastructure should be emphasised at all stages of the planning and decision making process, including in the current climate of decreased public sector funding and difficult decisions on competing priorities for funding. Green infrastructure need not be seen as an 'investment choice' over wider sustainability objectives that, on face value, may be seen as contributing more directly to the economy or quality of life for society. The Local Environment & Economic Development (LEED) Toolkit[3] is designed to help Local Enterprise Partnerships and Local Authorities meet their economic growth targets by fully realising the roles the environment can play. The LEED Toolkit has been produced by the Defra network (the Environment Agency, Natural England and the Forestry Commission), working in partnership with several Local Enterprise Partnerships, Local Authorities and Local Nature Partnerships. The Toolkit offers an easy-to-use, technically robust, systematic and proportionate way of making sense of environmental information in relation to economic planning. The aim of the toolkit is to systematically consider the evidence relating to the local economy/environment relationship in order to reveal opportunities and threats and to consider appropriate responses to them. The toolkit produces accessible, non-technical outputs that assist strategic economic decision making.

Green infrastructure Strategy context

1.9 The Green Infrastructure Strategy reflects and helps put into practice numerous other strategies, plans and guidance. A brief summary of some of the key national, sub-regional and local ones is set out below. Web-links to relevant supporting documents and strategies, including many of the ones listed below, can be found at the end of each of the 5 green infrastructure themed sections in Chapter 3.

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[1] *Green Infrastructure's Contribution to Economic Growth: A Review – A Final Report for DEFRA & Natural England* (July 2013) EFTEC & Sheffield Hallam University Centre for Regional Economic & Social Research. Available via: http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=19056

[2] *Microeconomic Evidence for the Benefits of Investment in the Environment – review* (May 2012) Natural England. Available via: http://publications.naturalengland.org.uk/publication/32031?category=49002

[3] *Local Environment & Economic Development Toolkit* – DEFRA. Available via: http://www.naturalengland.org.uk/Images/leed-toolkit-intro_tcm6-36413.pdf

National context

The Natural Choice: Securing the Value of Nature

1.10 The Government's White Paper, **The Natural Choice: Securing the Value of Nature (2011),** stresses the social, economic and environmental benefits of the natural environment. The paper highlights the important role green infrastructure plays in urban areas to provide habitats and complete linkages to the national ecological network. The importance of green infrastructure for managing environmental risks such as flooding and heat waves, thus helping to combat climate change, are also identified.

1.11 The paper is partly based on the **UK National Eco System Assessment** which shows the social and economic benefits provided by the wildlife assets within the natural environment. The assessment identifies a 30% decline in the country's ecosystems functions along with associated reductions in both the quantity and quality of green spaces in urban areas. To help rectify these issues, the paper supports the establishment of green infrastructure partnerships and support for Local Nature Partnerships. The creation of Nature Improvement Areas tasked at reversing the decline and fragmentation of wildlife habitats is also set out in the paper.

Biodiversity 2020: A Strategy for England's Wildlife & Ecosystem Services

1.12 The Government's **Biodiversity 2020: A Strategy for England's Wildlife & Ecosystem Services (2011)** builds on the Natural Environment White Paper and provides a comprehensive picture on how the government is implementing its international and European Union commitments. It sets out the strategic direction for biodiversity policy over the next decade.

Geodiversity Charter for England 2014 & UK Geodiveristy Action Plan

1.13 The **Geodiveristy Charter for England 2014** and **UK Geodiversity Action Plan** provides guidance on protecting, managing, enhancing and creating geodiveristy assets.

Healthy Lives, Healthy People: Our Strategy for Public Health in England

1.14 The Government White Paper, **Healthy Lives, Healthy People: Our Strategy for Public Health in England (2010)** sets out the long term vision for the future of public health in England, including the links between environmental quality and a healthy population. The quality of the environment around us also affects any community. Pollution, air quality, noise, the availability of green and open spaces, transport, housing, access to good-quality food and social isolation all influence the health and wellbeing of the local population. Climate change represents a challenge in terms of long-term health services planning and emergency preparedness. Improving the environment in which people live can make healthy lifestyles easier. When the immediate environment is unattractive, it is difficult to make physical activity and contact with nature part of everyday life. Unsafe or hostile urban areas that lack green spaces and are dominated by traffic can discourage activity. Lower socio-economic groups and those living in the more deprived areas experience the greatest environmental burdens.

National Planning Policy Framework

1.15 The **National Planning Policy Framework** sets out the Government's planning policies for England and how they should be applied. It includes the core land use planning principles that should underpin both plan-making and the development management decisions. National policies require an approach that ensures new development protects, restores, maintains, creates, enhances and extends green infrastructure and improves the connectivity within the network. National policy also expects the natural environment to function as an integrated network of habitats, and seeks to protect and enhance the quality, character and amenity value of the countryside and urban areas as a whole, recognising the limitations of the environment to accept further development without irreversible damage, and encourages sustainable development.

Ecosystems Services

1.16 An ecosystems approach is a way of looking at the natural environment throughout the decision making process. Carrying out economic valuation of the **ecosystem services** involved helps incorporate the value of the natural environment into the decision making process. Ecosystems services, such as tourism, air quality and people's health and mental well-being will all benefit from protection and investment in our natural environment as illustrated below in Figure 1.1.

Figure 1.1: Ecosystems Services – The Economic Value of our Environment.

(Source: Doncaster LDF Core Strategy pg.79)

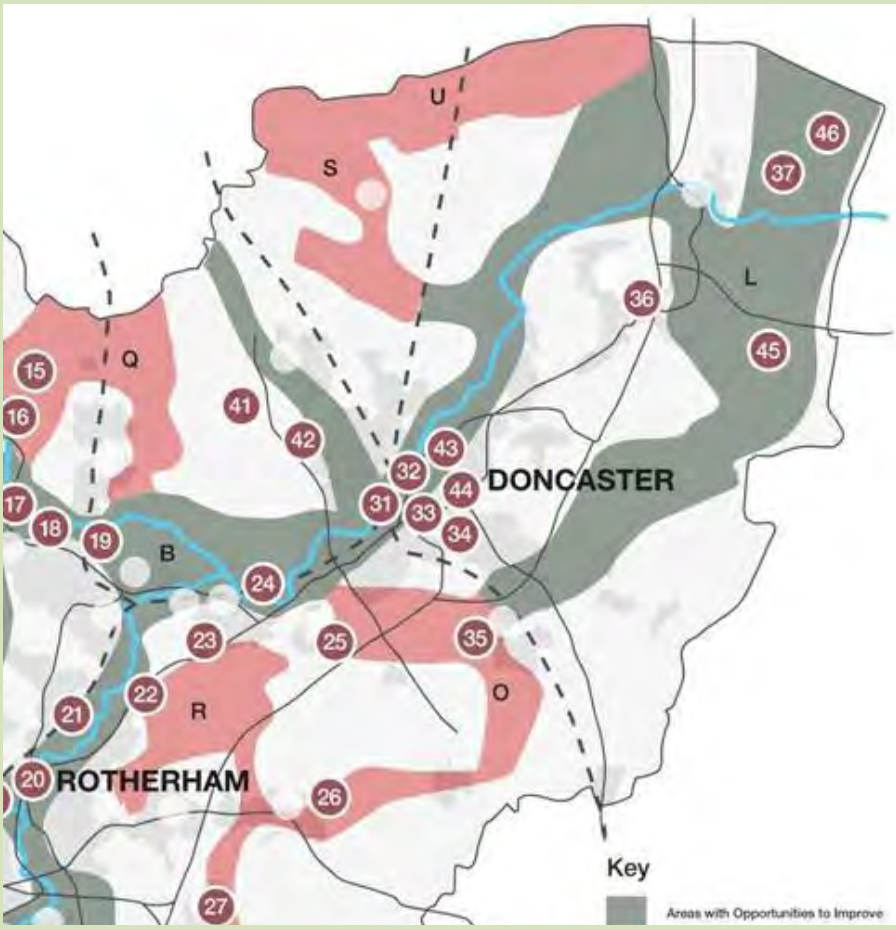
Figure 1.2: Natural Environment & Health White Papers & National Planning Policy Framework.

Sub-regional context

South Yorkshire Green Infrastructure Strategy

1.17 The South Yorkshire Forest Partnership has prepared the ***South Yorkshire Green Infrastructure Strategy – Creating & Improving our Green Network***[4] in 2011 in conjunction with a steering group made up of the four South Yorkshire local authorities, as well as Natural England and Transform South Yorkshire. This Strategy seeks to create a multi-functional green network across South Yorkshire. Phase 1 of the strategy includes a masterplan that shows priority areas with specific locations identified for intervention and actions for delivering the goals of the strategy. This strategy has been prepared to support the evidence base of individual Local Plans, formerly Local Development Frameworks, in the sub-region, including the preparation of more detailed green infrastructure strategies at the local district level. It sets out information on the opportunities, constraints, assets and potential actions in each location, and identifies potential funding and delivery mechanisms to deliver these actions based on partnerships between various organisations. A delivery and action programme has been prepared to link up existing assets and secure enhancements and implement projects in priority areas. The masterplan (see Figure 1.3) identifies the following sixteen opportunities in and around the borough.

Figure 1.3: Extract for Doncaster from South Yorkshire Green Infrastructure Strategy Masterplan



- Ref: 18 – Dearne Eco-vision & Green Heart
- Ref: 23 – Mexborough Gateway
- Ref: 24 – Don Gorge
- Ref: 25 – Magnesian Limestone (Doncaster)
- Ref: 31 – Doncaster Marshalling Yard
- Ref: 32 – Doncaster Minster Gardens
- Ref: 33 – Doncaster Town Centre
- Ref: 34 – Potteric Carr Nature Reserve
- Ref: 35 – Rossington Colliery
- Ref: 36 – Fishlake
- Ref: 37 – Humber Levels Re-wetting
- Ref: 41 – Brodsworth Hall
- Ref: 42 – Cusworth Park
- Ref: 43 – Sandall Beat Wood
- Ref: 44 – Doncaster Racecourse
- Ref: 45 – Hatfield Moors (part of Humberhead Peatlands National Nature Reserve)
- Ref: 46 – Thorne Moors (part of Humberhead Peatlands National Nature Reserve)

- B – Lower Don (Lower reaches of the major river corridor in South Yorkshire (Doncaster- Sheffield)
- L – Thorne & Hatfield (a unique part of the Humberhead Peatlands Area)
- O – Doncaster (former coal mining areas and associated settlements undergoing restoration)
- Q – Grimethorpe & Dearne (Former coal mining area has undergone extensive restoration)
- S – Askern & Adwick (rich biodiversity potential in formal parkland and restored brownfield sites)
- U- River Went (a tidal river catchment area comprising woodland, grassland and intensive farmland offering good access to neighbouring districts via the Trans Pennine Trail)

(Source: South Yorkshire Green Infrastructure Strategy pg.29)

[4] *South Yorkshire Green Infrastructure Strategy* (2011) South Yorkshire Forest. Available via: http://www.syforest.co.uk/projects.php?p=273

1.18 The following table is a direct extract from the **Delivery Plan**[5] which includes further information on the projects identified above in and around the Doncaster Borough.

Project opportunity name	Brief description	Key issues & challenges	Actions (building on potential actions from the SY Green Infrastructure Strategy)	Potential partners	SY Green Infrastructure Strategy Ref.
Dearne Valley Green Heart & Eco-vision	• Nature Improvement Area – a landscape-scale programme in the Dearne Valley extending from Cudworth to Adwick • Key initiatives (Brookfields Park, Houghton Washland and Old Moor wetlands) • Significant delivery opportunity to achieve the goals of the Strategy • Delivery new woodland cover as part of integrated habitat network	• Existing partnerships: how to take forward present activities and follow-on work after current funding ends • Widen community access • Cross boundary implications • Flood risk management	• Restore the river floodplain and create wetland habitats and woodlands to deliver benefits to biodiversity, improve water quality and manage peak flows to reduce pressures on wider catchment	• RSPB • Barnsley, Doncaster and Rotherham councils • Forestry Commission • Environment Agency • Natural England • South Yorkshire Forest Partnership • Heritage Lottery Fund • Groundwork Dearne Valley • Barnsley Bio-diversity Trust • Rotherham Local Access Forum • Woodland Trust • DEFRA • Trans Pennine Trail • Yorkshire Wildlife Trust	16, 17, 18, 19
Lower Don Revival	• This project aims to revive the River Don and its tributaries (e.g. Ea Beck, River Went and the New Junction Canal) from the Don Gorge at Sprotbrough to the River Ouse at Goole.	• Habitat enhancement • Water Framework Directive delivery, • Widen community involvement and river access through green infrastructure improvements for wildlife, water quality and the community, along the Lower Don	• Promote community involvement in environmental initiatives • Improvements to water quality	• Yorkshire Wildlife Trust • Bentley Area Community Partnership • Canal and River Trust • Doncaster Local Access Forum • Doncaster MBC (Biodiversity, Planning, Rights of Way and Neighbourhoods) • Don Catchment Rivers Trust • Don Gorge Community Group • Doncaster Naturalists • Environment Agency (Biodiversity, Water Quality and Flood Risk) • Forestry Commission • Growing a Greater Bentley • Natural England • North Doncaster Development Trust • Network Rail • River Stewardship Company • South Yorkshire Biodiversity Forum • South Yorkshire Forest Partnership • Wakefield MDC • Yorkshire Water • Danvm Drainage Commissioners • Black Drain Drainage Board	23, 24, 25
Magnesian limestone corridor	• This corridor is a distinct strip of magnesian limestone on the eastern edge of the Pennines and includes areas of	• Need to address deprivation in adjacent communities (e.g. Maltby) • Maximise the	• Opportunities to improve access and rights of way (e.g. Trans Pennine Trail),	• Doncaster MBC • Rotherham MBC • Sheffield Area Geology Trust • Yorkshire Wildlife Trust	25, 27, 41, 42

[5] [5] *South Yorkshire Green Infrastructure Delivery Programme (2013)* South Yorkshire Forest. Available via: http://www.syforest.co.uk/projects.php?u=760

	attractiveness and beauty (e.g. Don Gorge) as well as major transport routes. • Limestone landscape local character area in Rotherham and Doncaster with Magnesian limestone habitats fragmented • Dinnington/Anston is a possible broad location for growth in the Rotherham local plan • This is an extension of work already in progress in Doncaster	geodiversity and biodiversity benefits of conservation • Coordinate projects and build on progress in the Doncaster area • Dinnington/Anston as broad location for growth in the Rotherham local plan	landscape/ geodiversity features (e.g. crags, tunnels and caves) and biodiversity assets across the corridor area • Boundary with Nottinghamshire and Derbyshire. Opportunities to complement green infrastructure projects out of the Strategy area e.g. at Cresswell Crags	• Campaign to Protect Rural England	
Doncaster urban centre	• The area is centred around a series of major green assets/visitor attractions between the town centre and open countryside and wildlife sites (e.g. Sandall Beat Wood, Doncaster racecourse, Cantley Wood. Doncaster Lakeside and Potteric Carr Nature Reserve).	• Encourage greenspace use (events and walks) • Integrated approach to green infrastructure planning	• Improve links between town centre and other attractions within the green corridor (e.g. Lakeside and Doncaster town centre)	• Doncaster MBC • Yorkshire Wildlife Trust • Don Catchment Rivers Trust • Groundwork Dearne Valley	31, 32, 33, 34, 44
Humberhead Levels	• The Humberhead Levels is a flat, low-lying agricultural landscape to the east of Doncaster and includes the Thorne and Hatfield Moors. • Nature Improvement Area: the aim of the project is to create an internationally renowned, unique wetland landscape to support thriving communities, ecosystem services and wildlife. • UK's largest lowland raised peat bog	• Restoration of wetland and flower-rich habitat • Land management and access • Promote green tourism • Opportunities within an urban area to experience nature and encourage active recreation • Maintain an integrated approach to green infrastructure planning	• Better access the moors (e.g. car parking and visitor facilities etc)	• Yorkshire Wildlife Trust • Natural England • Doncaster MBC • Humberhead Levels Partnership • DEFRA - NIA funding	35, 37, 45, 46

Local context

Borough Strategy

1.19 The current Borough Strategy is under review, but the purpose of **A Plan for Doncaster Borough Strategy 2010-2015** is to improve the quality of life for everybody in the Borough. The Borough Strategy acknowledges that many different factors contribute to an individual's quality of life, including employment opportunities, crime levels, the natural environment and the quality of housing, schools and hospitals. At present, people's quality of life varies considerably across Doncaster and there are above national average issues and challenges around health and life expectancy, education and qualifications, high unemployment, and crime and disorder. The Borough Strategy is based on seven themes that will deliver the vision of an improved quality of life for the people of Doncaster over the next five years. The key challenge is to develop a strong local economy. At the heart of the Strategy therefore is the objective of increasing the economic engagement of residents and businesses. The most relevant is theme 7 that focuses on a 'cleaner and better environment' through protecting and enhancing Doncaster's environment and improving quality of life today and for future generations. In particular, a difference will have been made if:

- Doncaster's countryside, green belt, landscape and designated areas are protected and where possible improved; and if;
- People have access to a choice of quality recreational opportunities, including informal and formal open space, access to the natural environment and the borough's key cultural assets.

Doncaster's Economic Growth Plan

1.20 The **Doncaster's Economic Growth Plan (2013-2018),** and associated annual delivery plan, was adopted by Cabinet in 2013. The Council has a responsibility at a local level to broker & lead effective approaches and collaboration to support growth. Ultimately, this means not pursuing Gross Value Added growth at all costs but pursuing a more rounded approach to promote an inclusive and resilient economy that grows sustainably. To create an environment for both our businesses and communities to thrive, this Growth Plan has three priority themes:

- **Theme 1 – Business Growth** - One of our key priorities must be to support our local businesses to become more productive and resilient to support long-term economic growth;
- **Theme 2 – Place** - As a town on the edge of a number of large urban centres, we need to work hard to compete for and deliver economic growth. We will do this by creating a positive environment for business to grow and thrive, harnessing and promoting the Borough's existing unique assets; and,
- **Theme 3 – Skills** - The Borough's low skills profile is an issue that this Plan must address as it remains a barrier to economic growth.

Environment Strategy

1.21 The council adopted its first **Environment Strategy** in December 2012. The Strategy helps us to protect and enhance our environment and improve quality of life for present and future generations. For Doncaster's residents this strategy helps us to create opportunities to enjoy access to a safe, attractive, and well managed environment. The strategy has three main environmental themes under which there are eight priority actions as set out below in Figure 1.4.

Figure 1.4: Environment Strategy Themes & Priorities

T1. Managing our environmental resources and services	
P1. Waste minimisation	Minimise the creation of waste in the borough and reduce the amount of waste that is going to landfill
P2. Deliver more energy efficient housing	Improve the energy efficiency of social and private rented households and ensure the efficiency of new developments
P3. Effective flood mitigation	Promote flood mitigation and further develop local residents' knowledge of flood risks in order to increase personal flood resilience
T2. Ensuring a quality environment	
P4. Protect our air and water quality and address contaminated land issues	Effective monitoring of air and water quality and sites with contaminated land, taking remedial action when required
P5. Create a more attractive street-scene	Improve the look and attractiveness of the borough's street scene to support inward investment and to create places that people can be really proud of
T3. Valuing our environmental assets	
P6. Protect and promote our historic environment	Increase public understanding of the value of our environment by promoting their social, cultural and economic benefits, whilst protecting its intrinsic value
P7. Protect and promote our natural environment	Raising the awareness of the borough's natural environment assets, including management of the ecological network
P8. Ensure access to high quality green spaces and the countryside	Effective management of our public parks and woodlands and improve access to our public right of way network

1.22 The Strategy identifies the development of a Green Infrastructure Strategy as a key mechanism to deliver a number of the actions under Priority 7and Priority 8. Action P8.1 states the Council will 'produce and implement a Green Infrastructure Strategy to promote and optimise key assets and replace the need for separate strategies on playing pitches, green space and trees and to be informed by strategies on heritage, biodiversity and rights of way'. The Environment Strategy commits the Council to have a Green Infrastructure Strategy adopted by Cabinet by May 2014.

Local Development Framework

1.23 The **Local Development Framework** (LDF) is a suite of documents that form part of the statutory development plan for Doncaster and will be used to determine planning applications. Adopted by the Council in May 2012, the **Core Strategy (2011 – 2028)** is the first part of the LDF, providing a planning framework to deliver the vision and aspirations of the Borough Strategy. It is the principal document in the LDF providing the spatial vision for the area alongside the strategic objectives and policies to guide development in the Borough over the plan period 2011 – 2028. Of particular relevance are:

- **Objective 5** – to ensure that all our residents, visitors and workers have the very best life opportunities, benefiting from easy access to high quality health, education, employment, shopping, recreation facilities, heritage, culture and tourism;
- **Objective 8** – to ensure that all our towns, villages and countryside are of the highest quality (displaying excellence in architecture) with the built and natural environment conserved and enhanced for the enjoyment of all…

- **Policy CS17**: **Providing Green Infrastructure** – this policy sets out the approach for protecting, maintaining, enhancing and extending the Borough's green infrastructure network, including connectivity of corridors. A hierarchy of Green Infrastructure corridors have been identified (see Chapter 4 of this document for more information). In addition, to compliment the corridors, the indicative location of 6 key green wedges across the Borough, where any development allocations will need to be sensitive to strategic rural gaps between settlements to avoid coalescence, are set out. They will function as a type of green infrastructure corridor with a particular focus on landscape and amenity enhancement.
- **Infrastructure Delivery Schedule** – the Implementation chapter of the Core Strategy includes a schedule of the critical, social, and environmental infrastructure necessary to be delivered in order to support the growth and distribution of development being proposed. Protecting and enhancing green infrastructure is identified as being a borough wide priority through both investing in key sites and improving smaller assets as well as linkages between networks.

1.24 The Council Submitted the **Sites and Policies Development Plan Document** to central government late 2013, and is timetabled to be adopted late Spring 2014. This plan, amongst other things, includes the identification of sites for future housing and employment land in order to meet the growth and distribution requirements of the Core Strategy. The plan also includes a number of detailed planning policies. A separate interactive **Proposals Map** has also been prepared to assist with the Development Management process. Some of the detailed policies with most relevance for the Green Infrastructure Strategy are:

- **SP22: Residential Design** – This policy sets out how developers will be expected to contribute towards the delivery of green infrastructure provision and sets out what information is required as part of a planning application involving major development. This information will include an audit of existing assets and linkages to the wider network, details of where green infrastructure will be provided to address deficiencies or future needs and details of future maintenance, management and finance.
- **SP33: Local Wildlife and Geological Sites** - This policy describes how Local Sites will be designated on the Proposals Map and how applications affecting these sites will be assessed against Core Strategy Policy CS16.
- **SP34: Maintaining & Enhancing the Ecological Network** - This policy will help guide planning applications within Biodiversity Opportunity Areas in terms of directing the types of habitats that would be expected in instances when compensation is required.
- **SP35: Key Green Wedges** - The Policy identifies seven green wedges on the edge of existing built-up-areas where development needs to be sensitive to the openness of the gap between existing settlements and the amenity of the landscape and sets out in circumstances in which development proposals within or adjoining these green wedges would be supported.
- **SP36: Open Space Policy Areas** - The policy covers the protection of public open spaces.
- **SP48: Developer Contributions** – The policy ensures appropriate contributions from new developments can be secured to ensure impacts from development are mitigated and any supporting infrastructure requirements delivered.

1.25 The Proposals Map also includes a number of designations and allocations. Figure 1.5 below sets out the most relevant ones for the green infrastructure strategy.

Figure 1.5: Relevant LDF Designations

Relevant Chapter/Theme Of the LDF	Designations
Overall Approach	Countryside Protection Policy Area Green Belt
	Flood Zones Functional Flood Plain Bentley Flood Corridor
Attractive, Safe and Healthy Places	Key Views and Gateways into Doncaster
	Scheduled Monuments, Conservation Areas and National Parks and Gardens
	Local Parks and Gardens
	Internationally and Nationally Important Nature Conservation Sites
	Biodiversity Opportunity Areas
	Local Wildlife and Geological Sites
	Green Wedges
	Existing Public Open Space
Efficient Use of Resources	Air Quality Management Areas
	Groundwater Source Protection Zones

Local Investment Plan

1.26 The **Local Investment Plan (2011-2014)** sets out the priorities and principles of investment to deliver the vision of creating a prosperous borough for its residents. It draws together the ambitions set out in a range of other local plans such as the Borough Strategy, as well as other documents that underpin the Borough Strategy, such as the Economic and Housing Strategies. It also acts to maximise both public and private investment delivering more jobs and investment for areas. The plan is structured to include all of the seven themes contained in the Borough Strategy and is split into five geographical areas. As per the Borough Strategy therefore, theme seven covers creating a cleaner and better environment. In terms of Doncaster's environment today:

- The borough contains a large amount of green open space and many woodland sites. Our environment needs to support a healthy lifestyle, through having attractive and safe communities to make walking more pleasant and providing access to sport and recreation. Access to natural environment can reduce stress and improve mental and physical well-being. A quality environment can have a positive impact on perceptions of crime.
- There is pressure for new development to support growth across the borough and it will be important to ensure that the countryside, green belt and key environmental assets are protected and where practicable enhanced. Only 60% of residents are satisfied with our parks and open space and the remainder feel the quality has to improve.
- The Council and its partners cannot create and maintain a cleaner and better environment alone. This requires a huge amount of participation from the voluntary and community sectors. The Council has dedicated a significant amount of staff to engaging with communities and community leaders to encourage greater involvement in the democratic process and the upkeep of assets within communities. This participation will become more vital in the coming years as we head towards the 'Big Society' concept.

1.27 In terms of our environmental investment priorities, the following are most relevant for the Green Infrastructure Strategy:

- The challenges presented by Doncaster's climate – we must ensure that resources are planned effectively to deal with additional strain that will be placed on the Council as a result of the changing climate. This includes the lengthened growing season for our highway verges, parks and tree stock that must be managed and the potential strain placed on our drainage network as a result of increased rainfall and localised flooding events.

- Protecting our environmental assets – it will be important that other investment priorities align with our environmental priorities to ensure environmental assets are strengthened and not compromised.
- Keeping streets clean – our aim is to move towards an intelligence-led approach to improving environmental quality…this will involve a restructuring of the street scene services so resources are allocated where and when they are most needed. It is also important that we have good intelligence on the 'hotspot' areas and any seasonal trends.
- Encouraging pride in the environment – the creation of improved links with the voluntary sector is vital to create a culture of social responsibility in our communities. We will strive to create partnerships that maintain and protect the environmental assets across the borough. This will range from established sites such as local parks and country parks to less formal settings such as our Public Right of Way network and Woodlands.

Doncaster Local Biodiversity and Geodiversity Action Plan

1.28 The **Doncaster Local Biodiversity Action Plan (2007)** outlines wildlife conservation priorities and provides guidance on how we can protect and enhance biodiversity. The Action Plan consists of a series of documents, including a Species Audit and Habitat Action Plan which are subject to continual review. The **Doncaster Local Geodiversity Action Plan** outlines geological conservation priorities and provides guidance on how we can protect and enhance geodiversity.

1.29 The borough boasts a variety of Statutory Nature Conservation sites. At the highest level, Special Areas of Conservation and Special Protection Areas are designated to provide a network of protected sites, holding important wildlife and geological features that are threatened or rare in a European context. Within Doncaster Borough a large proportion of Thorne Moors is designated as a Special Area of Conservation, due to its existing and regenerating lowland raised mire habitat, and both Thorne and Hatfield Moors are designated Special Protection Areas, as they support a significant proportion of the UK Nightjar population. Similarly, at a national level, Sites of Special Scientific Interest represent Britain's finest sites for fauna, flora, geology and physiographical features. There are 15 Sites of Special Scientific Interest within the borough, each supporting what is considered to be one of the finest examples of their respective habitats and geological features. In addition, there are 306 Sites of Scientific Interest including Local Nature Reserves, Local Wildlife Sites and Local Geological Sites which are regionally and locally important nature conservation sites designated through the forward planning process.

Rights of Way Improvement Plan

1.30 The Public Rights of Way Service within the Council is legally responsible for the maintenance and development of the rights of way network within the Borough. At present there are over 500 km of Public Footpaths, Bridleways and Byways on 560 separate routes, ranging in length from a few meters to over three km and range in character from completely urban to entirely rural. The **Rights of Way Improvement Plan** was adopted in 2008. It identifies and evaluates the needs and requirements of various users, the use and demand placed on the network, and assess the current access provision including access beyond the rights of way network. The key issues identified include:

- There is potential to improve the network for all users.
- The network available to horse riders is very limited and not well connected.
- Physical barriers prevent legitimate users accessing the network.
- The wider network is generally unsuitable for users with mobility problems and most is inaccessible to wheelchair users.
- There is a significant area of access land at Thorne Moors, but potential for use is limited by the isolated and sensitive nature of the site.
- There is a lack of information on promoted routes and information on where to go and what to do.
- There are some anomalies and inconsistencies between the definitive map and the routes used on the ground.

Local Flood Risk Management Strategy

1.31 The Flood and Water Management Act (2010) gives local authorities a new role to manage local flood risk in their area. All local authorities have been designated as 'Lead Local Flood Authorities' and are required to develop a **Local Flood Risk Management Strategy (2014)** for their area in line with the national strategy. The focus of the strategy is on local flooding – by that we mean flooding from surface water, groundwater, streams and ditches. This type of flooding is becoming increasingly common, but until recently no single organisation has had direct responsibility for it. The purpose of the Local Flood Risk Management Strategy is to set out a clear plan for future flood risk management in Doncaster, ensuring people, businesses, communities and other risk management authorities have an active role in how flood risk is managed.

Doncaster Health & Wellbeing Strategy

1.32 The **Doncaster Health & Wellbeing Strategy (2013 – 2016**) was published in December 2012, but is about to be refreshed. The Strategy was led by the Doncaster shadow Health & Wellbeing Board. The strategy has three aims which cumulatively form the initial work plan of the statutory Health & Wellbeing Board which was established in April 2013. The aims of the strategy are to:

- Present a high level vision for the health and wellbeing in Doncaster and describe the locally adopted model for health and wellbeing;
- Outline the roles and ways of working for key partners to play in securing a 'safety-net' of health and social care services and interventions for Doncaster people; and,
- Indicate five areas of focus where the partners believe real progress will only be made by all the partners working together. These areas of focus are: alcohol; mental health and dementia; obesity; family; and, personal responsibility.

1.33 Health and wellbeing is improving in Doncaster for both genders, but it is not improving as fast as the rest of the country. Heart disease, strokes, cancer and alcohol are still the major killers. In fact the death rate from alcohol in Doncaster is twice the national average. In general, lifestyles including smoking, physical activity and nutrition are less healthy than the rest of the country. This is true for children as well as adults. There are increasing numbers of older people in the borough, many live alone and require help and support to maintain their independence. The numbers of people living with dementia are increasing. Where people live, as well as education, housing, work, crime and the environment all contribute to health and wellbeing.

Draft Physical Activity & Sport Strategy

1.34 The draft **Physical Activity & Sport Strategy** recognises that physical activity brings numerous benefits to health and well-being. The effective promotion and facilitation of physical activity & sport opportunities for the borough's residents is a key cornerstone for healthier, more vibrant communities and in improving satisfaction with Doncaster as a place to live. Working in partnership, the Doncaster Active Partnership's previous strategy (One Commitment to Sport & Physical Activity) has delivered a number of successes since it was adopted in 2006:

- Huge improvements have been made in the number of people taking part in 30 minutes of continuous exercise at least three times a week, as measured by Sport England's Active People Survey; while 17.1% of residents conformed to this definition in 2006, 19.8% conformed to it in 2012 - a statistically significant increase.
- With Doncaster previously the 'least active' local authority area in Yorkshire & the Humber in 2006, it is now mid-table, with only 3 other local authorities recording improvements greater than Doncaster's.
- The gap between Doncaster and the national average has also shortened, due in no small part to partnership programmes such as Free Swimming for under 16s and over 60s, improvements to some of our leisure centres and open spaces and a wide range of programmes sponsored by the

Partnership. This has also been supported by the Partnership attracting significant amounts of external funding in the past.

1.35 However, local health outcomes remain poorer than the national average and more needs to be done. The Partnership has recognised the need to revitalise the priorities it worked towards in 2012/13. These will aim to deliver improvements in access and the quality of sport and physical activity opportunities across the Borough:

- **Priority 1 – Active learning**. This priority involves increasing the awareness of and promoting the benefits of daily physical activity (e.g. shopping, housework, gardening, DIY and so on) that could have material health benefits to our residents. This also includes the promotion of and increasing accessibility to a range of activities that increase heart rate and breathing whilst travelling, for example Walking, Cycling and even taking the stairs instead of a lift or escalator. Extensive promotion has taken place over the past five years, which will need to continue into 2012/13.
- **Priority 2 – Active Regeneration**. This priority aims to increase the number of our residents participating in regular recreational activity by providing high quality opportunities and infrastructure. This includes appropriate resources through community facilitators, voluntary support and training programmes to further support residents to get active. Partnership work in this area has been strong over the past five years, with the development of Multi-Use Game Areas (MUGAs), the development of Leisure Centres, promotion of the use of green space and a consistent promotion of leisure activities using a variety of local media.
- **Priority 3 – Active Sport.** This priority covers participation, through casual, leisure or organised activity that allows social interaction and cohesion and obtaining results in relaxed or formal competitions. In its simplest form, the Partnership needs to support local sport clubs whilst ensuring effective access to its facilities and programmes as appropriate. Effective promotion of and access to these activities is critical to the success of this strategy.

Doncaster Cycling Strategy

1.36 The **Doncaster Cycling Strategy** (2013) has recently been published and has four core objectives. Of perhaps most relevance for the Green Infrastructure Strategy is Objective 1 however.

- **Objective 1 - increase the number of people cycling and the number of journeys by cycle.** Some of the aims of this objective are to implement a programme of off-carriageway cycle routes (or greenways); carry out an audit of existing routes; as well as making new developments and transport projects cycle friendly.
- **Objective 2 - improve health and reduce health inequalities by introducing cycling into everyday life;**
- **Objective 3 - improve cyclists safety and feeling of safety; and,**
- **Objective 4 - reduce cycle thefts and improve cycle parking.**

Landscape context

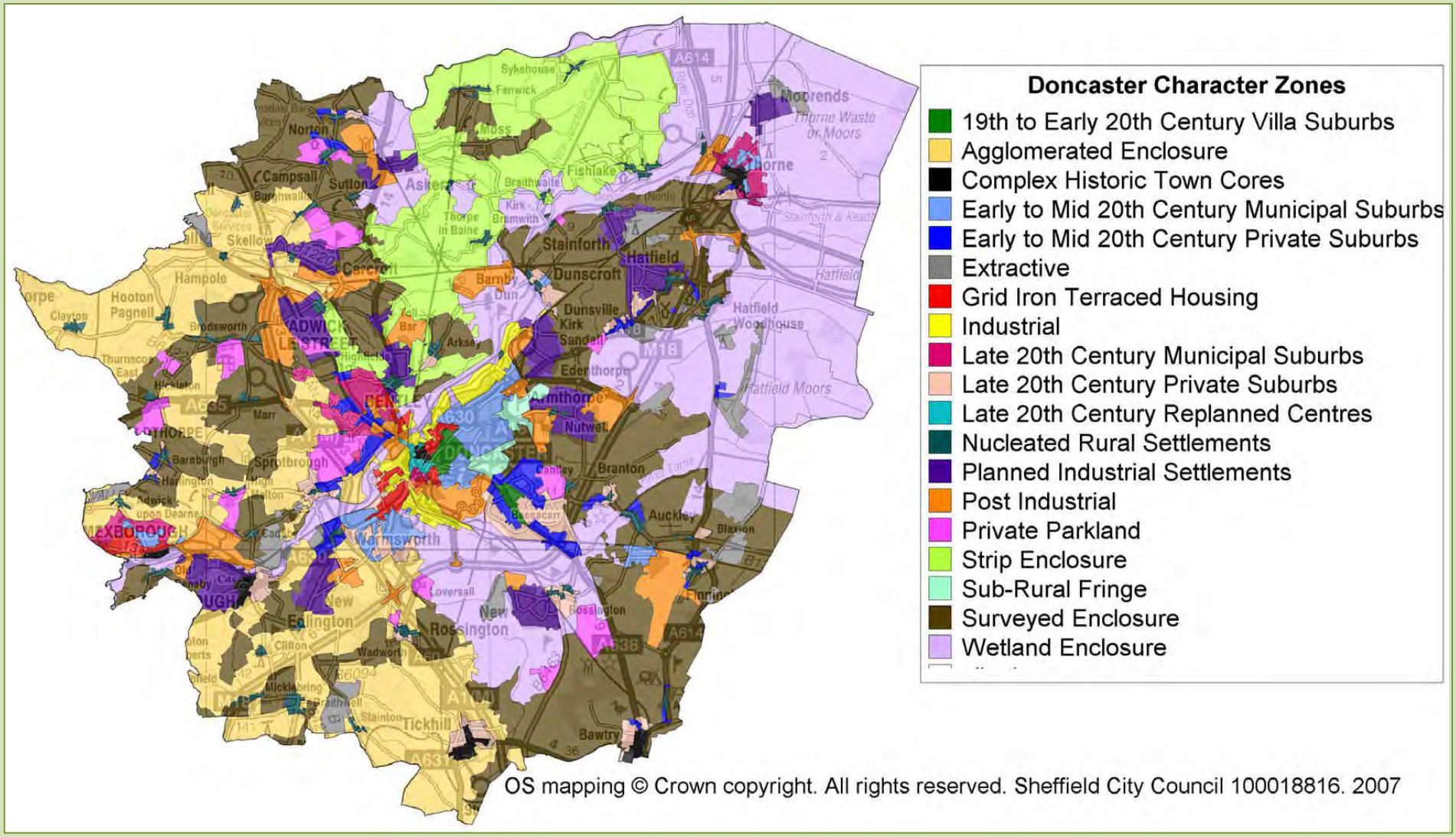
South Yorkshire Historic Environment Characterisation

1.37 The **South Yorkshire Historic Environment Characterisation** project (2007) starts by describing the uses of today's landscape. Maps, historical records and archaeological evidence are then used to establish the age of a place's characteristic features. The different histories are what have made the place where we live distinctive and different from those around it. Characterisation uses research into these historic processes to describe and understand what makes places unique. The project has shown that changes to the landscape now happen on a scale and at a speed which appears more dramatic than at any point in the past 1,000 years.

1.38 The project divided South Yorkshire into 26 different Character Zones, focussing on the key historic developments that have left their mark on our surroundings. Some of these zones can be found across the whole of the sub-region, while others are specific to individual districts. As well as looking at the big picture of landscape development within South Yorkshire, the project looked at the historic development of individual towns and villages.

1.39 Doncaster has been grouped into 19 different Character Zones (see Figure 1.4 below), focussing on the key historic developments that have left their mark on the area. Some of these zones can be seen within the other districts of South Yorkshire, whilst others show patterns of historical development specific to Doncaster.

Figure 1.4: Historic Environment Characterisation Zones for Doncaster.



(Source: South Yorkshire Historic Landscape Characterisation Project, 2007, accessed 2013)

Landscape Character & Capacity Assessment of Doncaster Borough

1.40 The **Landscape Character & Capacity Assessment (2007)** details landscape character areas within rural parts of Doncaster, assesses landscape value, quality and sensitivity and provides and an assessment of the capacity of landscape character areas to accommodate various types of development without adverse effects. It provides a robust evidence base guiding decisions within the Local Development Framework and used to assess proposed development and planning applications in respect to their impact on the landscape.

1.41 Landscape character types were subdivided into landscape character areas and an additional landscape character type was identified in order to highlight the character of river valleys more prominently. The capacity of each landscape character area to accommodate development without adverse effects was assessed for each of the following eight types of development: strategic employment; housing; large-scale forestry; willow biomass; compost facilities; land raising; wind power; and minerals working. A number of detailed area studies were carried out as well as the assessment of the capacity of settlement edges to accommodate new housing; pressures for change in landscape were also identified.

Landscape Character & Capacity Assessment: Further Investigations – Employment & Housing Sites

1.42 At the broad landscape character area level, the 2007 study identified the landscape capacity for strategic employment in the borough as generally low due to the large proportion of fairly intact farmland found across the region. Similar conclusions were also found for potential housing development. This was found to be of limited value therefore when identifying actual development sites through the Local Development Framework. In accordance with recommendations within the 2007 study a further assessment was carried out, the **Landscape Character & Capacity Assessment: Further Investigations – Employment & Housing Sites (2010),** to identify areas which are more diverse or disturbed in character that have potential for development. The study examines a number of localised areas where there is development pressure for housing or strategic employment development. It comprises the following stages:

- **Stage 1 - Define Scope** – The scope of the study was agreed including the location and boundaries of the study areas for 11 potential strategic employment sites and 12 potential housing sites put forward as representations within the Local Development Framework.

- **Stage 2 - Desk study** – A review of the landscape character areas identified in 2007 study was carried out. The individual study areas were assessed in respect of their landscape character and visual envelope. Baseline characteristics for each site were identified and compared against the existing study and reviewed following the field survey stage.

- **Stage 3 - Site survey** - Key survey points for each site were identified during the desk study stage. From these representative view- points important characteristics of the sites were assessed and recorded using field survey sheets. A photographic record was used to highlight key views of each site and illustrate the characteristics of the site and surrounding are. The sensitivity of each study area to the type of development proposed for the site was assessed in relation to the wider landscape character. Key views and visual sensitivities were recorded and key landscape features noted that would be worthy of conservation or characteristic of the area.

- **Stage 4 - Forming Judgements – classification and description** – Information obtained from the desk study and site survey was mapped, described and the key characteristics of each site identified. A landscape analysis plan of each site at 1:10,000 scale was produced. Landscape and visual sensitivity and landscape value were assessed. Based on the combination landscape sensitivity and landscape value the capacity of the landscape to accommodate either housing or strategic employment was assessed. The study Identified mitigation measures which may prevent, minimise or reduce the significant environmental impacts and recommendations provided.

SWOT Analysis for Green Infrastructure in Doncaster

1.43 This section has set out what green infrastructure actually is and the reasons for why it is so important to invest in it. Numerous strategies are in place, at all spatial scales, which reinforce the need for a high quality network of green infrastructure in order to capitalise on not just the environmental and social benefits, but also the increasing recognition of green infrastructure's role in delivering economic benefits to an area. The following SWOT analysis attempts to draw together all of the above into a simple summary position of what the key issues and potential are for green infrastructure in the borough in order to inform the focus for the remainder of this strategy.

STRENGTHS:	**WEAKNESSES:**
• Strong policy framework in place at all spatial scales for ensuring green infrastructure network is improved, enhanced and expanded through all stages of the planning system; • A well evidenced hierarchy of green infrastructure corridors throughout the borough identified with numerous key nodes, assets and project areas; • Various well established partnerships and groups exist with diverse interests and roles in relation to promotion, maintenance and investment in the borough's green infrastructure; • On-going collaboration between public, private and voluntary sectors;	• Levels of health and well-being still below national average with low levels of physical activity for both children and adults; • Health inequalities between affluent and deprived areas; • Activities and operations are not always coordinated and informed by clear strategic direction; • Green infrastructure provision across the borough varies in both quantity and type/function meaning many areas are deficient; • The council lacks information on quality for many types/functions of green infrastructure; • Our public rights of way network is fragmented in places with issues around access for all and ease of access by different users; • Many of our key green infrastructure assets are poorly sign-posted and lack information, interpretation, and promotion, making use (where appropriate) difficult and a real missed opportunity.
OPPORTUNITIES:	**THREATS:**
• In a climate of reduced public sector funding, significant resources have been identified through Section 106 funding (and potentially CIL in the future) that can be used towards green infrastructure in the borough, including its maintenance; • Potential for green infrastructure functions to deliver multiple benefits, for example much needed flood risk mitigation in some parts of the borough, such as natural flood storage areas, will also bring bio-diversity enhancements compared to more 'physical engineered' defences; • The economic benefits that can be ascertained through investing in green infrastructure are increasingly being recognised by many.	• Further anticipated cuts to public sector funding may lead to increasing competition between priorities with less money available for green infrastructure maintenance and investment; • Development viability in some areas of the borough has been an issue, and is likely to remain so for the foreseeable future, with green infrastructure contributions having to compete with other policy development requirements, such as affordable housing and highways.

Chapter 2:

Our Overall Approach to Green Infrastructure

- Vision & aims
- Implementation
- Monitoring

Above: View Across Thorne Moors

Vision & aims

2.1 This chapter sets out our vision and aims for achieving a greener, healthier and more attractive borough. This strategy runs to 2028 in accordance with the Local Development Framework plan period but the Strategy will need to be frequently reviewed to assess its progress towards meeting the vision and aims below. This Green Infrastructure Strategy will have been successful if:

By 2028, Doncaster will have developed an integrated and multifunctional network of high quality green corridors and spaces across the borough, which is well-managed, well-maintained, and well-connected to the wider network.

2.2 The environment is important in its own right, but it is imperative to also recognise, re-enforce, and acknowledge that the environment offers many opportunities to support sustainable economic growth, as well as bringing numerous other socio-economic benefits to an area. The five main aims of the Green Infrastructure Strategy are set out below.

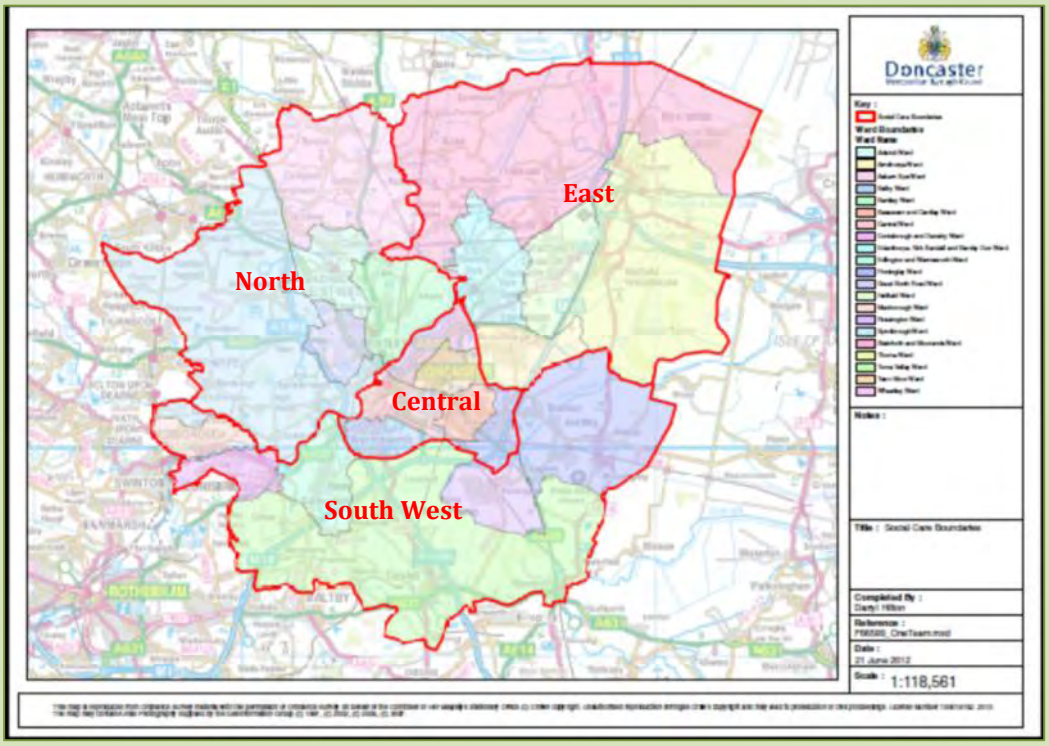
- **Aim1: Provide an attractive setting for investment and a place where the workforce wants to live;**
- **Aim 2: Improving the workforce's health & wellbeing (provide opportunities for physical activity, outdoor learning and contact with the natural environment to combat stress and lifestyle related illness);**
- **Aim 3: Provide opportunities to diversify the economy and develop jobs in conservation, green industries (e.g. Low Carbon Industries), leisure/tourism and the third sector, with associated opportunities for training and volunteering (which can increase young people's self-respect and aspirations);**
- **Aim 4: Contribute to halting and reversing the decline of the country's biodiversity and geodiversity; and,**
- **Aim 5: Improve resilience to the impacts of climate change (e.g. providing urban cooling and reducing flood risk).**

Implementation

2.3 This Green Infrastructure Strategy needs to be both 'inward' and 'outward' looking. The strategy will help inform important decisions about the Council's day-to-day operational role in managing green infrastructure assets across the borough. It will also help inform decisions about investment in both existing and new sites, based on the priorities that are identified. Just as importantly, numerous partnerships and stakeholders exist across the borough who invest significant time and resources into Doncaster's green infrastructure assets, many doing so on a voluntary basis such as 'Friends of Groups'. It is important this strategy recognises the pivotal role of all partnerships and stakeholders and captures the valuable work, contributions, projects and priorities to help ensure all organisations with an interest in green infrastructure are working together with a common goal whenever possible. This is particularly important in the current economic climate of decreased public sector funding and resources.

2.4 The Borough of Doncaster is divided into four service areas: North; East; South-West; and Central (see Figure 2.1 below). Each of the four areas has an Area Team, led by an Area Manager, who is responsible for coordinating the delivery of services, including working in partnership with a range of agencies to deliver a joined up approach that addresses needs identified within areas. The Area Teams come under the 'Adults and Communities' directorate at Doncaster Council.

Figure 2.1: Doncaster Council's 4 Community Team Areas.



North Area	East Area	Central Area	South-West Area
Adwick, Askern, Bentley, Great North Road, Sprotbrough	Armthorpe, Edenthorpe, Kirk Sandall & Barnby Dun, Hatfield, Stainforth and Moorends, Thorne	Balby, Bessacarr & Cantley, Central, Town Moor, Wheatley, part of Finningley	Conisbrough and Denaby, Edlington and Warmsworth, Mexborough, Rossington, Torne Valley, part of Finningley

2.5 The Council's Street Scene Team provide operational services such as street cleansing, grounds maintenance, FLAG and play equipment, trees and woodlands, and countryside services for the borough. This team comes under the 'Regeneration & Environment' directorate at Doncaster Council. Green infrastructure protection and enhancement is also very reliant on the Planning system, both through the formulation of planning policy in the development plan, and the determination of planning applications as part of the Development Management process. Both functions again fall within the Council's Regeneration & Environment directorate – see previous 'Local Development Framework' context section for further detail.

2.6 We will work with our partners to coordinate and promote green infrastructure initiatives in consultation with local communities to ensure priorities and projects are appropriate, implemented efficiently, and investment opportunities maximised. The South Yorkshire Green Infrastructure Strategy (led by **The South Yorkshire Forest Partnership**) includes a number of strategic aims which will help be delivered by this Strategy. There are other key partnerships which seek to improve the quality of the environment and also encourage local people to make the most of the opportunities for active recreation within their local area.

2.7 For example, the **Humber Head Levels Partnership** to the East and the **Dearne Valley Green Heart Partnership** to the West both have a track record of delivery. Both are **Nature Improvement Areas** (2 of 12 within England approved and funded by DEFRA) and are progressing Heritage Lottery Fund bids. The **Don REVIVAL Partnership**, focusing on the river and surrounding areas has successfully used Water Framework Directive Funding to implement projects. The **Don Catchment Rivers Trust** has been established to help protect and restore the rivers in the River Don catchment area; this includes not

just the River Don but the River Dearne and Ea Beck in the borough also. The Yorkshire Wildlife Trust's **Loving Your Local Limestone** project aims to improve and restore 10 local limestone grassland sites through a long term programme of conservation grazing and scrub control. In the future, additional partnerships are likely to help deliver green infrastructure benefits in other parts of the borough not currently covered by the existing partnerships.

Funding

2.8 The council will work closely with a range of public, private and voluntary organisations to help procure innovative green infrastructure projects and solutions using a variety of funding mechanisms, for example:

- Section 106 Agreements and/or Community Infrastructure Levy for both direct on site provision or commuted sums for off-site green infrastructure provision, including ongoing maintenance (see below for more information);
- Landfill tax schemes;
- Lottery funding;
- European funding (URBACT, VALUE and ERDF);
- Woodland Grant Schemes;
- Environmental stewardship schemes (where it is possible to negotiate access agreements);
- Private sector funding;
- Sheffield City Region Local Enterprise Partnership (Regional Growth Fund);
- Multi-agency public sector funding (Natural England funding is currently available to support green infrastructure delivery projects);
- Government initiatives (e.g. Green Investment Bank);
- Habitat banking (e.g. Leeds City Region);
- Voluntary and third sector led partnerships, including those within the South Yorkshire Local Nature Partnership; and,
- Private trusts.

2.9 Often, Public Open Space projects are implemented through direct provision by developers, or in-directly by the Council following receipt of a commuted sum (known as a S106 Agreement). The following brief case studies focus on two projects that have been delivered using S106 Public Open Space funding. More information, including other case study examples, are available in the Council's Section 106 Annual Monitoring Reports.

Jubilee Fields Children's Play Area, Hatfield

Jubilee Fields is owned by Hatfield Town Council and is a popular destination which attracts young people from Hatfield and across the Borough. Previously Doncaster Council contributed to a Hatfield Town Council project to develop a skate park on the site which has proved very popular. As such, given the popularity of the site combined with the fact that there was very little in the way of recreational facilities in Hatfield and supporting feedback via consultation, it was agreed to further enhance the facilities to provide a wider range of apparatus for young people to enjoy. A commuted sum of £90,000 to fund the works was approved in the summer of 2011 which came from a housing development on Old Thorne Road, Hatfield. In the spirit of good partnership working Hatfield Town Council agreed to take on the future maintenance and energy costs of both play equipment and new lighting, which will help to support the future sustainability of the scheme. Improvements have included a range of new play equipment, natural features such as rocks to encourage natural play and lighting to maximise the use of the facilities, particularly over the winter period.

Improvements to Askern Boating Lake, Askern

The project included the reinstatement of a Victorian style footbridge and street lighting and has been delivered solely by the use of Section 106 monies. Since the completion of the works the area has seen a significant reduction in Anti-Social Behaviour, as well as greater visitor numbers both locally and sub-regionally. With the location hosting many local community events, like the Askern Gala, a very successful fireworks display, and the return of the regular Tuesday Askern Market. Feedback from the local community is positive about the quality and the value of the investment, which in turn is further generating interest in the site for future community projects and initiatives.

(Source: Doncaster Section 106 Annual Monitoring Reports)

2.10 The Regulations for the Community Infrastructure Levy have implications for the legal use of Section 106 Agreements, regardless of whether the Local Authority chooses to implement the Levy or not. In particular, they limit the number of planning obligations that may be pooled towards an infrastructure type or project to a maximum of five (noting that a Section 106 Agreement may have more than one planning obligation included within it, and the limit on pooling dates back to April 2010).

2.11 This Green Infrastructure Strategy, and the subsequent 5-year rolling Action Plans, provide an opportunity and mechanism to, amongst other things:

- quickly and clearly identify sites and projects that are a priority for investment;
- clarify what existing Section 106 money is allocated to what particular project/scheme; and,
- identify any particular funding gaps which we may be looking for Section 106 to plug in the future.

2.12 Doncaster has been chosen by Defra as one of six pilot areas that will test biodiversity offsetting during a 2 year project that started in April 2012. Biodiversity offsets are conservation activities designed to deliver biodiversity benefits, in compensation for losses, in a measurable way. It therefore removes the uncertainty faced by developers regarding what is going to be required to satisfy planning.

Monitoring

2.13 The Environment Strategy, as discussed in Chapter 1, includes a number of priorities and actions which directly link to this Green Infrastructure Strategy. The table below (Table 2.1) identifies the links between the Environment Strategy and the five themes within this Green Infrastructure Strategy. The five green infrastructure themes are set out in Chapter 3 but, for the purposes of the table below, the following abbreviations have been used:

- T1 – Biodiversity & geodiversity;
- T2 – Trees & woodlands;
- T3 – Green spaces;
- T4 – Green routes; and,
- T5 - Historic environment.

Table 2.1: Links Between the Environment Strategy Priorities, Objectives & Actions & the Green Infrastructure Strategy Themes.

Environment Strategy Priority	Environment Strategy Objective	Environment Strategy Action Code	Green Infrastructure Strategy Relevant Theme(s)				
			T1	T2	T3	T4	T5
Priority 6: Protect & Promote our Historic Environment	Protect and enhance heritage assets in Doncaster	P6.1 – P6.5					
	Attract external investment for Doncaster's Heritage Assets	P6.7					X
	Continue to promote and develop the tourism value of Doncaster's historic environment	P6.8 – P6.10					
	Increase awareness and understanding of Doncaster's historic environment	P6.11 – P6.13					
Priority 7: Protect & Promote our Natural Environment	Raise awareness of the many valuable benefits provided by the natural environment	P7.1 – P7.4	X	X	X	X	
	Take action to create, improve and maintain a coherent and resilient ecological network	P7.5 – P7.12	X	X	X	X	
	Maximise the contribution that the wider environment can make to supporting Doncaster's Ecological Network	P7.13 – P7.14	X	X	X	X	
Priority 8: Ensure Access to High Quality Green Space & the Countryside	Facilitate the coordinated management of Doncaster's Green Infrastructure	P8.1 – P8.3	X	X	X	X	X
	Ensure every resident in Doncaster has access to sufficient, high quality green spaces	P8.4 – P8.5	X	X	X	X	X
	Ensure that Council owned and managed green spaces are fit for purpose	P8.6 - P8.7	X	X	X	X	X
	Ensure people are well connected to Doncaster's natural assets	P8.8 – P8.9				X	

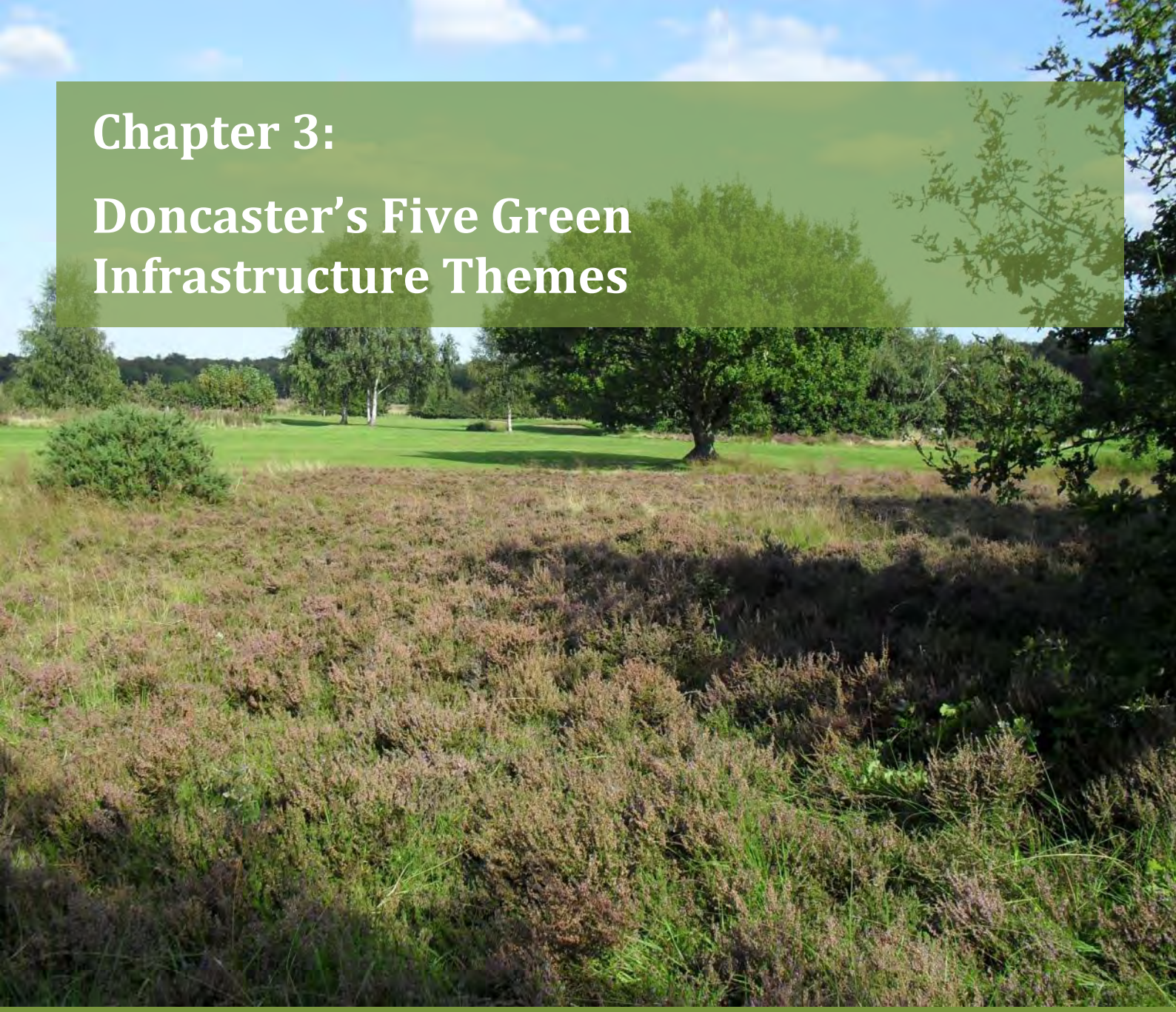
2.14 Table 2.2 sets out the headline monitoring indicators that will be used to track progress of the Green Infrastructure Strategy's effectiveness.

Table 2.2: Headline Monitoring Indicators.

Green Infrastructure Strategy Aims	Green Infrastructure Function	Green Infrastructure Theme(s)					Green Infrastructure Strategy Headline Indicator(s)
		T1	T2	T3	T4	T5	
Aim 1: Attractive setting for investment and place where the workforce wants to live	Historic environment/ Cultural heritage Landscape			X		X	Net increase in average house prices across the borough Number of Conservation Areas and Listed Buildings at Risk
Aim 2: Improving the workforce's health & wellbeing	Health Recreation Accessibility				X		% of people using Public Open Space for health benefits PROWIP Target (TBC)
Aim 3: Provide opportunities to diversify the economy and develop jobs, with associated opportunities for training and volunteering	Economic growth Land and property values Tourism Education	X					Increased visitor numbers to the borough
Aim 4: Halting and reversing the decline of the country's biodiversity	Biodiveristy & Geodiversity	X	X	X	X		Proportion of Local Sites where positive conservation management is being achieved – currently 36% Number of green infrastructure projects (biodiversity and geodiversity enhancement/ priority habitat creation/ restoration etc) delivered through offsetting schemes, S106 or CIL (total area of additional habitat)
Aim 5: Improving resilience to the impacts of climate change	Contribution to mitigating climate change Mitigating flood risk	X	X	X			Number of applications made to the SUDs Approval Body (SAB) and number of applications approved

Chapter 3:

Doncaster's Five Green Infrastructure Themes



- Theme 1: Biodiversity & geodiversity
- Theme 2: Trees & woodlands
- Theme 3: Green spaces
- Theme 4: Green routes
- Theme 5: Historic environment

Above: View Across Doncaster Common

Doncaster's five green infrastructure themes

3.1 The Green Infrastructure Strategy is organised into the following five themed sections. These themes are based on specific elements that make up the green infrastructure network such as green spaces (including playing pitches), trees and hedgerows, cultural heritage and landscape.

Theme 1	Biodiversity & geodiversity
Theme 2	Trees & woodlands
Theme 3	Green spaces
Theme 4	Green routes
Theme 5	Historic environment

Theme 1: Biodiversity & Geodiversity

Why is it an important part of green infrastructure?

3.2 The term biodiversity refers to the whole variety of life of Earth. This diversity includes genetic variation between individuals and species, as well as the richness of habitats and the ecosystems they form part of.

3.3 Doncaster's green infrastructure can be defined, in part, by its biodiversity, which is a unique blend of habitats resulting from its geology, soils, climate and history. The variety of natural habitats found across the borough ranges from species-rich limestone woodlands, lowland heaths, woods and wetlands to the peatlands of the Humberhead Levels.

3.4 Man's activities in the borough have also created numerous semi-natural habitats. The straightening of river courses and construction of navigations created canals, oxbows, borrow pits and wet pastures. New opportunities for wildlife have evolved on post-industrial sites, with the colonisation of quarried rock faces, wastes and spoils and creation of wetland 'flashes' in mining subsidence areas. The railway network continues to provide line-side habitats linking areas of natural and semi-natural habitat, and more recently disused routes have been designed to form recreational 'green' ways.

3.5 The importance of biodiversity as a wider function of green infrastructure is best illustrated through an appreciation of the 'ecosystem services' it provides us with. These can be grouped as:

- Cultural services (an attractive natural environment encourages investment, pride, identity, community cohesion, health and well-being benefits and the common valuing of the natural environment);
- Regulatory services (including climate regulation through the air cooling and cleaning effects of urban trees, hazard regulation such as flood water attenuation by wetlands and pollination);
- Provisioning services (including the products we receive from nature such as water, food, fuel and medicinal products); and,
- Supporting services (including the natural functions of soil formation and water and nutrient cycling that support other services).

3.6 These ecosystem services are not unique to Doncaster, but the opportunities to protect our biodiversity assets (and ecosystem services) are. Planning for biodiversity within green infrastructure can facilitate the conservation of natural and semi-natural habitats, encourage the sustainable enjoyment of countryside and greenspaces and help to preserve the borough's landscape character. The management and enhancement of green infrastructure assets can help the local survival of species, strengthen habitat networks and, by enhancing local areas and enriching communities, create attractive places to live and settings for inward investment.

What is the current situation?

3.7 As mentioned in Chapter 1, the Government's 2011 Natural Environment White Paper 'The Natural Choice: Securing the Value of Nature' and the 'UK Biodiversity Strategy 2020' pull together our international commitments on biodiversity into 4 Strategic work areas;

1. A more integrated landscape-scale approach to conservation on land and at sea;
2. Putting people at the heart of biodiversity policy;
3. Reducing Environmental Pressures; and,
4. Improving our knowledge.

3.8 This approach is designed to underpin a 'step change' in biodiversity conservation, driven by new ways of working collaboratively in partnerships with a landscape–scale outlook to halt and reverse the trend of biodiversity loss.

3.9 The UK's suite of 24 headline biodiversity indicators provide a measure of biodiversity change over time and our progress towards halting and reversing biodiversity losses . They tell us that nationally only 49% of the measures used have shown improvements for biodiversity since 2000, and these include:

- Taking action for nature, i.e. an increase in volunteer time spent in conservation[6], whilst active participation in a range of outdoor activities has also grown. Locally, the Humberhead Levels 'Connect' community engagement project has achieved over 24,000 volunteer hours and 1,800 volunteers on the Nature Improvement Area;
- An increase in the extent and condition of protected sites, reflecting the targeting of conservation on our 'core' wildlife sites. In Doncaster the proportion of Local Wildlife Sites assessed as being in positive conservation management is slowly increasing year-on-year;
- An increase in agricultural and forest area under environmental management schemes. The Humberhead Levels Nature Improvement Area project has helped enter over 600ha of farmland into agri-environment agreements; and,
- Improvements in water quality, driven by targets and obligations set out in the European Union Water Framework Directive. In Doncaster a number of projects have been delivered along the Ea Beck.

3.10 The indicators show that whilst progress is being made to address the environmental pressures on biodiversity in key areas, there remains both long and short-term deterioration for issues associated with freshwater and terrestrial invasive species, reflecting a pattern of continuing or growing threat to UK biodiversity.

3.11 Those measures showing long-term deterioration include:

- Declining populations of farmland, wetland and woodland birds;
- Declining populations of butterflies which are strongly associated with semi-natural habitats. 250 pollinator species (bumblebees, hoverflies, moths, butterflies and solitary bees) are in danger of extinction and listed on the UK BAP priority list;
- Increased pressure from invasive species; and,
- Declining plant diversity (in woodland and grassland and in boundary habitats i.e. the wider network of habitat outside of designated 'core' sites). The two highest perceived threats to the loss and damage of Local Wildlife Sites are inappropriate/lack of management and development pressures[7]. In Doncaster borough over the period 1998 - 2013, the total number of designated Local Wildlife Sites fell from 372 to 288, 9 of which have been lost altogether directly as a result of development or changes in land-use.

3.12 Some long-term trends concerning the status of biodiversity reflect the declines in plant, bird, butterfly and bat populations seen in the 1970s and 1980s, which are thought to have generally slowed since 2000. This slow-down in decline can largely be credited to biodiversity conservation focused on their habitats and efforts to enhance their quality, distribution and connectivity throughout the landscape. However, England's wildlife areas still do not represent a coherent ecological network capable of responding to the challenges of climate change and other pressures. The most recent analysis indicates that over 40% of priority habitats and 30% of priority species are still in decline, with 8 priority

[6] Membership of organisations involved in nature conservation has increased dramatically in recent years (e.g. the Royal Society for the Prevention of Birds currently has over 1 million members, compared with just 10,000 in 1960).

[7] The status of the English Local Wildlife Site System' report (2011)

species lost from the UK between 2002 and 2008[8]. Optimising the resilience of ecological networks remains a key long-term conservation objective.

3.13 A number of other positive achievements have already emerged from the government's Natural Environment White Paper and UK Biodiversity 2020 Strategy, based largely on a proactive response by local conservation partners. These include:

- 2 of England's 12 Nature Improvement Areas (NIAs) now fall partly within Doncaster borough: the Dearne Valley and Humberhead Levels NIAs. These landscape-scale areas have been identified as areas in which conservation activities should be targeted to deliver the greatest gains for biodiversity through collaborative working. Additional landscape-scale partnerships have also developed to focus on the Magnesian Limestone Ridge, River Don 'Revival' Partnership, and Torne Partnership;
- The River Don was identified as a pilot area to develop a partnership-driven Catchment Action Plan, resulting in the River Don Catchment Plan;
  Doncaster Council is taking part in Defra's Biodiversity Offsetting pilot study to inform the potential introduction of a national scheme. This principal underpinning this mechanism allows for the compensation of residual development impacts at strategic locations, to help contribute to a more integrated habitat network whilst delivering an overall net gain for biodiversity.
  Doncaster Council has developed Biodiversity Opportunity Areas to target where the greatest gains can be delivered; and,
- Putting people at the heart of biodiversity - a South Yorkshire Local Nature Partnership has been developed to, amongst other things, work with organisations such as Local Enterprise Partnerships to advocate the value of the natural environment and ensure that it is a key consideration in strategic decision making.

Where are we going: Principles?

3.14 The mission statement set out in the UK Biodiversity 2020 strategy is ***"to halt overall biodiversity loss, support healthy well-functioning ecosystem and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people"***

3.15 This mission will be delivered through the government's 4 strategic work areas and Table 3.1 identifies example actions that will contribute to their delivery.

Table 3.1: Delivery of UK Biodiversity 2020 Strategy Mission Statement.

1. A more integrated landscape-scale approach to conservation on land and at sea	
1.1	Supporting Nature Improvement Areas and other strategic landscape-scale initiatives, to deliver the targeted restoration, creation and management of priority habitats and species, making effective use of resources and supporting the work of partners.
1.2	Achieving favourable condition, and through positive conservation management, maintaining favourable or recovering condition, of priority habitats and species on 'core' sites, i.e. the heart of the biodiversity network (SAC, SPA, SSSI, LWS).
1.3	Enhancing biodiversity on land to improve the functional connectivity between 'core' sites, supporting more resilient species populations and enabling their movement through the provision of 'wildlife corridors' and 'stepping stones'. This increased connectivity of habitat, and / or tailored species conservation will enables species to adapt or respond more effectively to environmental pressures.
1.4	Establishing 'buffer zones' around 'core' sites, 'wildlife corridors' and stepping stones' to protect them from external adverse impacts.

[8] UK Biodiversity Action Plan highlights report, 2008 reporting round.

1.5	Working in collaboration at a catchment scale to deliver improvements to inland waters.
1.6	Reducing Wildlife Crime
1.7	Promoting the responsible management and conservation of our genetic diversity resource, through the procurement of locally sourced and appropriate species and through advisory work with others landowners.
2. **Putting people at the heart of biodiversity policy**	
2.1	Supporting the development and operation of the South Yorkshire Local Nature Partnership to communicate strategic priorities and integrate the value of biodiversity into all decision making
2.2	Enhancing biodiversity (habitat heterogeneity and connectivity) on green space sites, focusing on in those parts of the borough deficient in 'woodland' and 'nature conservation' sites to help make high quality green space available to everyone.
2.3	Engaging and enabling communities to explore, understand, participate in, enjoy and value their natural environment, through walks, events, activities, interpretation, outdoor learning and other initiatives (e.g. Backyard Biodiversity resources, Eels in schools)
2.4	Promoting and supporting national conservation initiatives and encouraging people to 'do the right thing'.
2.5	Empowering communities to protect local environments that are important to them.
2.6	Sharing knowledge to promote the protection, learning and enjoyment of the natural environment, including raising the profile of public body duties under the Natural Environment and Rural Communities Act 2006
2.7	Taking better account of the values of biodiversity in public and private sector decision-making (including through local policy, strategies, procurement and operations)
2.8	Supporting the development and provision of green goods, services, training and skills, products, investment vehicles and markets.
3. **Reducing Environmental Pressures**	
3.1	Improving the delivery of environmental outcomes from agricultural land management practices and incentives such as Environmental Stewardship and Woodland Grant Schemes.
3.2	Bringing a greater proportion of woodlands into sustainable management and expanding areas of woodland.
3.3	Adopting a strategic approach to planning for nature through local planning policies and strategies, locating developments in the best places, encouraging greener design and consideration of enhancing green networks.
3.4	Exploring the potential for the further designation of statutory sites.
3.5	Exploring opportunities to deliver Biodiversity Offsetting to deliver net biodiversity gain at strategic 'conservation' locations and help develop a market for 'green' business services
3.6	Protecting water ecosystems through the river basin planning approach, under the EU Water Framework Directive.
3.7	Reducing air pollution
3.8	Addressing the threats presented by non-native species through the collection of appropriate evidence, surveillance, responsive action, education and advocacy.
4. **Improving our knowledge**	
4.1	Reviewing and refreshing biodiversity targets and ensuring appropriate measures and mechanisms are in

	place to monitor progress against them.
4.2	Contributing to the work of the National Biodiversity Network and promoting biodiversity recording, monitoring, surveillance and data exchange.
4.3	Communicating evidence and priorities e.g. through the South Yorkshire Local Nature Partnership (review species audit)
4.4	Using the most up-to-date information to inform decisions and operations.

Where are we going: Actions?

3.16 At the Doncaster scale our headline actions are embedded into objectives within the Council's Environment Strategy. The targets within Doncaster Biodiversity Action Plan are currently under review, but key actions for conserving England's priority habitats and species are included within Table 3.2. These focus on the Governments Strategic work area 1 'A more integrated landscape-scale approach to conservation on land and at sea', and on those actions being led by the Council or delivered locally in collaboration with conservation partners.

3.17 In parallel to this work, the Biodiversity 2020 Delivery Plan, Annual Update (July 2013) sets out current progress towards delivering the strategy for those actions being led by Defra, Natural England and others at a national level.

UK BAP priority habitat	Doncaster Local BAP priority habitat	Action ref	Key Opportunities	Project Lead/s	Local target (All set within a 5 year timeframe)
Rivers (We do not have this priority habitat as defined in UK BAP)	Rivers, Canals, Oxbows, Major streams and Subsidence flashes.	1.5.1	Introduce measures to **address barriers** to fish movement. Target sites: Sprotbrough weir; Ea Beck sub-catchment; Hampole weir; Skellow Mill sluice/culvert.	Revival Partnership	2 measures
		1.5.2	**Enhance** river channel and floodplain morphology, connectivity and habitat diversity in target areas: Arksey Ings and Sprotbrough/Hexthorpe Ings; The Ea beck and River Torne (Rossington Bridge to Auckley Common Area); Humberhead Levels NIA; Bentley Mill Stream. Retain/plant marginal aquatic and riparian habitats; create low flow-channels; introduce sinuous flows, flow deflectors, coir rolls, tree planting, bays, inlets, woody debris, weed cutting and review flood bank maintenance, sympathetic drain management.	Revival Partnership / Humberhead Levels Partnership/ Torne Partnership	~ 3No. flow deflector sites (Ea Beck) ~ 430m of phragmites planting (Ea Beck) ~ 10km enhanced drains HHL NIA
		1.1.1	Introduce measures to address river bank erosion at the Hexthorpe rowing club site / Hexthorpe Park	Revival / Hexthorpe Rowing Club	Introduce measures
		1.5.3	Reintroduce minor species (e.g. eel and bullhead) to support existing, vulnerable fish populations along target water courses; River Don, Ea Beck.	Revival Partnership	6 Schools to take part in 'Eels in Schools' education & release programme
		1.5.4	Operate alien and invasive species recording and control programmes (e.g. Japanese knotweed, Floating Pennywort, Giant hogweed, mink) to protect 'core' wildlife reserves and areas. Target upstream populations to minimise downstream spread of vegetation and known water vole sites: Dearne Valley and Ea Beck river corridor.	Revival Partnership Dearne Valley Green Heart Partnership	1 invasive recording initiative / catchment by 2015 Maintain a minimum of 4 mink rafts on the Ea Beck

		1.2.1	Identify and implement measures to improve water quality, by reducing environmental pressures at Wheatley Oxbows LWS.	Revival Partnership / Yorkshire Water	Implement measures
		1.3.1	Provision of barn owl / raptor nest boxes along the River Don and Ea Beck target areas. Engage with landowners to identify opportunities to **enhance** and expand grassland foraging habitats.	Revival Partnership	20 boxes
Ponds	Marshes and Swamps, Lakes and Ponds, Ditches and Drains	1.1.2	The **restoration** of pond habitats at key greenspace sites: Cantley Park; Hatchell wood; Doncaster Common; Campsall Country Park; Conisbrough Mill Piece; Crookhill Park; Rossington brick pond.	DMBC	3 ponds
		1.2.2	**Manage and enhance** 'priority' ponds, i.e. core habitats, for their conservation and species interests: Hexthorpe Ings; Duck Holt; Dodge Dike pond; Sammy Roys pond and Cray Holes pond (Buntings wood), Sykehouse meadows pond.	DMBC and private landowners	3 ponds
		1.1.3	Pond **creation** in target areas: Dearne Valley and Humberhead Levels NIA's, North Doncaster Settled Clay Farmlands (Fishlake, Sykehouse), Ea Beck river corridor and Croft Farm site.	Dearne Valley Green Heart Partnership / Humberhead Levels Partnership / Revival Partnership	3 ponds
Mesotrophic Lakes		1.5.5	**Enhance** habitat diversity through the introduction semi-natural and naturalistic features: Vegetated pontoons, reefs, beaches, loafing areas and conservation features for specific species groups (e.g. structures for bats)	DMBC	Measures introduced at Lakeside
Hedgerows	Ancient & Species-rich Hedgerows	1.3.2	Hedge gapping and planting to **connect** core sites and BAP habitats in target areas: Southern Magnesian Limestone Ridge; North Doncaster Settled Clay Farmlands (Fishlake, Sykehouse),	Loving Your Local Limestone Partnership	~ 500m. Stables lane, Barnburgh
		1.1.4	Hedge laying to **enhance** and promote structural and species diversity	Land Trust	Target site: Bentley Community Woodland

Traditional Orchards		1.1.5	**Creation** of new orchards, encouraging the planting of local fruit varieties and managed using traditional techniques. (Carys site)	Yorkshire Wildlife Trust	
Wood-Pasture & Parkland	Parkland, Wood Pasture & Veteran Trees	1.1.6	Parkland **restoration** at selected sites, where possible re-introducing traditional land management techniques.	DMBC	Target site: St Catherine's hospital grounds, Balby
Wet Woodland	Wet Woodland	1.1.7	**Creation** of Wet Woodland in target areas: Mexborough cut area; Croft Farm; Old Denaby Wetlands; Don Gorge; Humberhead Levels NIA; Earth Centre Country Park.	DMBC / Revival Partnership / Humberhead Levels Partnership	10ha within HHL NIA
Lowland Mixed Deciduous Woodland	Limestone Woodlands Lowland Heathy Oak Woodland	1.1.8	The **restoration** of Limestone Woodland habitats at 'core sites': Bella wood, Hickleton Golf course.	Loving Your Local Limestone Partnership	5ha
		1.2.3	**Restoration** of the Wet Woodland and drain features of Sandall Beat Woodland SSSI, to encourage 'favourable' conditions for its designated interests.	DMBC	achieve 'recovering' condition
		1.2.4	**Management and enhancement** of 'core' Local Wildlife and greenspace sites': 20 woodlands brought into positive conservation management for their designated conservation interests. Thinning, replanting, ride/glade creation (DMBC woodland estate), introduction of native ground flora, species-led conservation; (Grove Gardens; Community 'pit' woodlands; Hexthorpe Dell; Cusworth Hall)	DMBC / Land Trust YWT	20 sites
		1.1.9	**Creation** of woodland habitats on green space sites to enhance habitat and structural diversity and connectivity: Piggots field; Cedar road; Hills lane; Crompton Road; Carcroft Common; POS adj Edlington Wood SSSI; Ravenswood Drive; Sandall Park; Martin Wells Lake Area; Earth Centre Country Park; Lakeside; Cantley Park; Edlington Pit Wood Community woodland; Crookhill Park and Plantation; Garage sites - St Leger Homes.	DMBC	5ha

Lowland Heathland Lowland Dry Acid Grassland	Lowland Heathland / Acid Grassland Mosaic	1.1.10	**Restoration** of sites supporting lowland acid grassland and heathland mosaic habitats: Doncaster Common; Howell Wood.	DMBC	3ha
		1.1.11	**Creation** of acid grassland / lowland heathland mosaic habitat at target sites: Carcroft Common; Croft Farm; Black Carr Plantation; Dunsville Quarry Park.		15ha
Lowland Calcareous Grassland	Magnesian Limestone Grassland	1.1.12	**Restoration** of sites supporting Magnesian limestone grassland habitat: Nursery Lane; Conisbrough Viaduct Tip; Earth Centre Country Park; North cliff; Boat farm grasslands; Campsall Country Park; Land adj. Barnburgh Cliff/Stables Wood	Loving Your Local Limestone Partnership	5ha
		1.1.13	**Creation** of calcareous grassland habitat at target sites: Hickleton golf course; Campsall Country Park; Cusworth walled garden; High Melton golf course; Martin Wells lake area; Edlington wood POS; Crookhill Park; Piggots field; Dodds Quarry.		2.5ha
Lowland Meadows	Neutral and Wet Grasslands	1.1.14	**Creation** of species-rich neutral grassland on greenspace sites in target areas: Sandall Park; Lakeside; West Bessacarr Park; Warren House Park and across the Humberhead Levels NIA.	DMBC / Humberhead Levels Partnership	40ha within HHL NIA
		1.3.3	**Enhancement / Conservation management** of grassland to enhance habitat and structural diversity and connectivity. Target areas: greenspace sites, greenways, recreational routes and highway/infrastructure verges, brownfield sites, garage sites, school grounds. Cusworth Park, Lakeside, Edlington Pit Wood, Thunderhole; Old Denaby Wetlands, Campsall Country park, Dunsville Quarry Park, Martin Wells lake, Don Gorge and Earth Centre Grasslands, Warren house, and community 'pit' woodland sites, across the Humberhead Levels NIA.	DMBC / Humberhead Levels Partnership / Loving Your Local Limestone Partnership	35ha within HHL NIA
		1.1.15	**Creation** of wet grassland habitats. Holmes Carr Great Wood;	DMBC	1ha

			Ravenswood Drive POS.		
Lowland Fens	Minor Streams, Springs, Fens, Flushes, Mires and Fenny Fields.	1.1.16	**Creation** of Lowland Fen habitat in target areas: Humberhead Levels NIA	Humberhead Levels Partnership	5ha within HHL NIA
Reedbeds	Reedbeds	1.1.17	**Creation** of reedbed habitats: Mexborough cut area; Old Denaby wetlands; Cantley park and across the Humberhead Levels NIA.	DMBC / Humberhead Levels Partnership	20ha within HHL NIA
		1.1.18	**Enhancement** of existing reedbed habitats on both designated and non-designated sites in target areas: Humberhead Levels NIA	Humberhead Levels Partnership	10ha within HHL NIA
Lowland Raised Bog	Lowland Raised Mire	1.1.19	Restoration and favourable condition of England's largest lowland raised mire system.	Humberhead Levels Partnership	970ha within HHL NIA (of which 510ha on Thorne, Crowle and Goole Moors and 460ha on Hatfield Moor)

Links to Relevant Supporting Documents/Strategies/Further Information

DEFRA (2010) *Flood & Water Management Act* - *http://www.legislation.gov.uk/ukpga/2010/29/pdfs/ukpga_20100029_en.pdf* - Under Schedule 3, there is a requirement for new and redeveloped sites in England to incorporate SuDS.

DEFRA (2011) *Biodiversity 2020: A Strategy for England's Wildlife & Ecosystem Services* - https://www.gov.uk/government/publications/biodiversity-2020-a-strategy-for-england-s-wildlife-and-ecosystem-services

Biodiversity 2020 Pocket guide: http://publications.naturalengland.org.uk/publication/6687439250784256

DEFRA (2012) *Natural Environment White Paper & Implementation Updates* - https://www.gov.uk/government/publications/natural-environment-white-paper-implementation-updates

UK National Ecosystem Assessment - http://uknea.unep-wcmc.org/

Doncaster Council – *Biodiversity Offsetting in Doncaster* - http://www.doncaster.gov.uk/sections/planningandbuildings/planninginformation/Biodiversity_Offsetting_in_Doncaster.aspx

Doncaster Council – *Local Wildlife & Local Geological Sites, Including Interactive Biodiversity Map* - http://www.doncaster.gov.uk/sections/planningandbuildings/environmentalplanning/localwildlifeandgeologicalsites/

Yorkshire Wildlife Trust - *Living Landscapes: Restore, Recreate, Reconnect* – http://www.ywt.org.uk/living-landscapes

Don Catchment Rivers Trust – *The Don Network* - http://www.dcrt.org.uk/archives/1460

Town & Country Planning Association & The Wildlife Trust (2012) *Planning for a Healthy Environment: Good Practice Guidance for Green Infrastructure & Biodiversity* - http://www.wildlifetrusts.org/sites/default/files/Green-Infrastructure-Guide-TCPA-TheWildlifeTrusts_0.pdf

RSPB & WWT (2012) *Sustainable Drainage Systems: Maximising the Potential for People and Wildlife, A Guide for Local Authorities and Developers* - http://www.rspb.org.uk/Images/SuDS_report_final_tcm9-338064.pdf

Woodland Trust (2008) *Woodland Actions for Biodiversity and their Role in Water Management* - *http://www.woodlandtrust.org.uk/mediafile/100083927/Woodland-actions-for-biodiversity-and-their-role-in-water-management.pdf*

Magic - *Interactive Mapping* - www.magic.gov.uk/

Theme 2: Trees & woodlands

Why is it an important part of green infrastructure?

3.18 Trees, wherever they stand, make a valuable contribution to the quality of life for many of Doncaster's residents. Trees are one of the most visible parts of the green infrastructure network and although their role in creating attractive environments has long been known, many of the wider benefits that they provide aren't always obvious.

3.19 There is now a growing body of research that identifies trees as an immensely valuable and functional part of the borough's green infrastructure that is responsible for providing a wide range of social, environmental and economic benefits. Trees and woodlands, in the right place, make a big difference to the quality of people's lives, improving the places in which we live and work, giving a sense of identity to areas where new housing is being developed, and in addressing the impacts of climate change.

3.20 Trees can also confer economic benefits to Doncaster. Unlike commercial woodlands, where trees are grown primarily to produce wood products for sale, amenity trees primarily provide ecosystem services. Such services include the production of oxygen, carbon capture and storage, the removal of pollutants from the air, the slowing of storm water run-off and restoration of derelict and degraded land through screening, and the recycling of soil-borne minerals and toxins.

3.21 Air quality is an issue of public concern. With the rise in road traffic, trees are very desirable along roads, and within Air Quality Management Areas, particularly near schools and shopping areas. Poor air quality is compounded by raised urban temperatures created by expansive areas of hard surface and buildings, which absorb sunlight and reradiate that energy as heat. Trees can help mitigate this effect by blocking solar radiation, creating shade, and by cooling the air through evapotranspiration (the loss of moisture through leaves).

3.22 Increasing the area of woodland with open access and attractively landscaped open spaces close to our urban areas is an important way of promoting exercise and a healthier lifestyle. Research has also shown a link between high quality natural environments and improved sense of wellbeing and reduced stress.

3.23 Trees make a major contribution to the appearance of the borough. They are one of the main 'architectural' elements in many of the most important townscapes and landscapes and an essential component of its biodiversity. They provide food and shelter to many important native and migratory birds and animals and provide a vital resource of deadwood for many invertebrates, with large, mature, native species, veteran trees and woodland having the greatest value. Increasing tree coverage can help improve both the amount of habitat and connectivity between habitats to assist wildlife movement.

What is the current situation?

3.24 The perceived value of trees varies greatly amongst Doncaster's residents and communities and the tree resource is being placed under increasing pressure as a reaction to real or perceived problems, increased contact with human activity and through the demand for land for development and economic growth. As space within the borough becomes ever more constrained and valuable it becomes more difficult to find the room to plant and sustain the trees that deliver the most significant benefits - those which are the biggest and the most long-lived. Integrating trees and woodland into an interconnected network of green spaces across the borough is being seen as an increasingly valuable part of urban growth to create liveable neighbourhoods and offset the impacts of climate change.

3.25 Doncaster's public tree resource is widespread and diverse, but largely unrecorded. This lack of basic asset data makes any attempt to plan and deliver strategic objectives for the management and development of the tree resource almost impossible. This lack of a strategic approach to the management of public trees has resulted in reduced tree maintenance budgets, inconsistent tree management decision making and a reliance on 'reactive' management, with work mainly being carried out following a public enquiry or complaint. All too often the value that trees confer is not fully recognised or understood and pressure is applied for removal or unnecessary pruning of healthy trees in order to be seen to 'do something'. Such reactive work is rarely in the best interests of the tree, not cost effective and sets a poor example to residents and private sector tree owners.

3.26 Approximately 5.8% of the land in Doncaster borough is covered by woodland. This is well below the South Yorkshire average of 7.4% and the national average of 8.4%. Around 30% of Doncaster's woodland is thought to be ancient woodland. The borough's woodlands are a valuable resource that provides a diverse range of opportunities for local residents for recreation, conservation and education and can help mitigate the effects of climate change. Increasing access opportunities to woodland for recreation will bring associated health benefits.

3.27 In recent years, almost 100% of green waste produced by Doncaster's public tree management operations has been reused, recycled or had value recovered by the following means:

- the sale of timber;
- the sale of lower quality timber, brash wood and chippings as fuel for commercial power generation;
- the chipping of 'roundwood' to fuel the heating boiler at the Sandall Beat Visitor Centre, which replaces the oil or gas that would otherwise be required, saving money and helping reduce the Council's carbon footprint;
- the planking of timber for the construction of benches and picnic tables for public woodlands and country parks;
- the sale of timber as firewood logs; and,
- the chipping of brash wood as mulch for planting areas and for surfacing paths in woodlands.

Where are we going?

3.28 In order to capitalise on the benefits that trees provide to the borough it is important that there is a more widespread understanding of the true value of the borough's tree resource and what action is needed, both now and in the future, to sustain and expand it amongst policy makers, tree managers, residents and businesses alike.

3.29 Therefore, our broad approach in relation to Trees and woodlands is as set out below:

- To ensure that trees and woodlands contribute to a high quality urban environment for present and future generations through the use of sustainable management practices and appropriate protection measures;
- To safeguard the borough's existing tree and woodland resource and promote a better understanding of the management, care and value of trees;
- To improve understanding about the distribution, function, condition and value of the borough's trees and woodlands in order to enable better informed decision making about priorities for management and ensure that management practices are appropriate and sustainable;
- To establish more trees and expand and develop woodland across the borough and adopt a best practice approach to the selection of species and site to promote a healthy, diverse tree population in locations that can sustain future growth;
- To protect wildlife and enhance the ecological value of the borough's trees, woodlands and non-woodland habitats and improve their resilience to climate change;
- To ensure that the benefits provided by public investment in trees and woodlands offer comparative 'value for money' and contribute to environmental sustainability; and,

- To involve local people in planning and managing trees and woodlands, to help achieve more cohesive communities and to show how individuals can contribute to environmental sustainability.

3.30 The Council owns and manages 53 woodland sites across the borough, spanning 475.12 ha. A 20 year borough wide plan for managing the woodland estate is being written in 2014, (subject to monies being secured from the Forestry Commission through the assessment and planning grants, submitted May 2013). This will scope out priority sites in terms of timber extraction, particular biodiversity interest, and re-stocking management, and which, along with the individual site management plans, will form an action plan for Council owned woodlands. Individual site management plans exist for the majority of woodlands, which are in the process of being updated. Smaller sites that do not have individual site management plans will be absorbed by the borough wide plan.

3.31 The number of woodlands in the estate (and registered with the Rural Land Register) is now 53, 3 of which have not been surveyed as the timber is <7cm, and 1 of which is undergoing review of who is going to be managing the land, and has therefore not been surveyed (Crook hill).

Total Area of Doncaster's Woodland Estate	475.12 ha
Total Number of Trees in Doncaster's Woodland Estate	409,662 trees
Total Volume of Doncaster's Woodland Estate	414,689m3

3.32 The volume figure above shows the total volume of saleable timber (i.e. over 7cm), so the 'actual figure' for all trees across the estate will be higher. However, it will not be possible to sell certain areas of timber due to issues such as designations, biodiversity, or access. Timber extraction for sale is not the driving force of the Council's woodland, but a bi-product of effective woodland management.

Principles and actions

3.33 At the Doncaster scale our headline actions and principles are embedded into objectives within the Council's Environment Strategy, as set out in Chapter 2 (Table 2.1) previously. In addition, the key principles and actions from this theme are set out below.

A. Every opportunity will be taken to establish new trees and expand our woodland estate on appropriate sites within the Borough.

B. The pruning or felling of trees will be resisted, unless:

   - there is a sound reason to justify the proposed work;
   - no alternative solution can be found; and
   - replacement planting is carried out where felling is allowed.

C. Powers under planning legislation will be used to protect existing trees as appropriate and seek new planting (in relation to both existing protected trees and opportunities associated with development proposals).

D. The use of current best practice and appropriately trained arboricultural operatives in carrying out all tree work within the borough will be promoted.

E. A pro-active management system will be adopted for the Council's tree resource, and any necessary work identified during on-going health and safety inspections will be carried out within the timescale specified.

F. The Council will aim to inform tree owners of their legal responsibilities with regard to their trees and will, where appropriate, use its statutory powers to implement works to privately owned trees in the interests of public safety.

G. The Council will manage its own woodland estate sustainably and to meet the multipurpose objectives of biodiversity, recreation, access, education, geodiversity and landscape value, and to help offset the impacts of climate change, and will encourage sustainable management and increased public access for privately owned woodland within the borough.

H. The Council will seek to investigate breaches of planning legislation relating to protected trees and for unauthorised works to its own trees and woodlands, including theft of timber, and will seek to take proportionate action where deemed appropriate.

3.34 The Council will continue to plant trees to enhance urban and natural areas within the Borough and will seek to plant more trees each year than it fells. We will seek to create a diverse and sustainable tree population by giving careful consideration to the selection of suitable tree species and increase the diversity of tree species in planting schemes, preventing monocultures, whilst maintaining or strengthening the character or distinctiveness of the local tree stock. The planting of young trees is a key part of any tree strategy because the trees selected will shape the landscape of the Borough in the future.

3.35 Where feasible, the Council will consider selective new tree planting in areas identified as deficient in tree cover, where such planting will enhance the character and appearance of the area and contribute towards improved air quality or provide other valuable ecosystem services. In addition, the Council will ensure that highway improvement proposals, traffic management schemes and new developments are adequately landscaped with appropriate new trees planted in engineered tree pits.

3.36 However, public land can be highly constrained and not always suitable for new tree planting. In order to sustain an urban forest that will be capable of delivering the full range of benefits that can be afforded by trees on-going tree planting must occur on both public and private land.

3.37 In order to achieve this, the Council will aim to develop a programme to:

- identify tree and woodland planting opportunities on public land by identifying and prioritising tree-deficient areas and areas with specific needs (e.g. areas of poor air quality);
- select appropriate planting sites, giving consideration to available space, orientation to adjacent properties and gardens, overhead cables, street lights, signs, highway visibility and underground services;
- select appropriate tree species for the site, giving consideration to ultimate size, density of foliage, production of fruit or seeds, presence of thorns, poisonous parts or honeydew, soil conditions and the local species character;
- ensure that the number of replacement trees planted on public land adequately compensates for the loss of existing trees (see Table 3.3 below);
- set tree planting targets for development proposals through planning policies;
- secure the planting of replacement trees on private land whenever possible; and,
- encourage tree planting on private land by promotion of national tree planting events and general advice to the public and businesses.

Table 3.3: Replacement Tree Planting Requirement

Trunk Diameter of Felled Tree (cm measured at 1.5 metres)	Number of Replacement Trees
Less than 19.9	1
20-29.9	2
30-39.9	3
40-49.9	4
50-59.9	5
60-69.9	6
70-79.9	7
80 +	8

3.38 The value of individual trees cannot be overstated yet the removal or pruning of trees is often based on unfounded fears or a misguided belief that trees need to be pruned. As the majority of trees within the borough stand on private land it is important that the Council is seen to set a good example in its own tree management decisions. Whilst it is not possible to anticipate every situation the following section will be used to guide decisions on whether tree pruning or felling is justified, but should not be considered absolutely prescriptive. These policies should further be considered in the context of wider strategic aims relating to individual areas.

3.39 The Council has powers to protect trees, and a statutory duty to ensure appropriate tree retention in development proposals under the Town and Country Planning Act 1990 (as amended). The Council will use its powers to protect selected trees and woodlands with Tree Preservation Orders where their removal would have a significant impact on the local environment and its enjoyment by the public, and will seek to secure, whenever it is appropriate, the retention and protection of trees on development sites through the application of its planning policies and through the use of Tree Preservation Orders and planning conditions. To ensure consistency in the use of Tree Preservation Orders, and in determining applications for tree work, the Council will use a structured way of assessing the amenity value of trees and the guide to decisions set out in the following section.

3.40 It is not only the removal of trees that is causing concern but poor management practices, which reduce the value of benefits and can leave trees prone to early destruction due to disease or insect infestation or environmental stress in the hostile conditions in which many of our trees exist. When work is carried out it is important that it is undertaken by those with the necessary technical knowledge and abilities, as low standard of work are not in the interests of the tree or its owner. The Council will therefore seek to ensure that all work on its trees is carried out in accordance with the relevant British Standard (BS3998 Tree Work – Recommendations), and use planning conditions to ensure that work on protected trees is carried out to the same standard. In addition, Officers will advise private tree owners to engage a professional arboricultural contractor to carry out work on any tree, whether it is protected or not, and will make information easily available to the public on how to go about choosing a contractor.

3.41 Under natural conditions, trees can live for hundreds of years. However, in managed landscapes (including agricultural land) trees are under pressures not present in natural situations and active management is often required to sustain them. Conflict with human activities, pollution, poor soil conditions, winter salt treatment of roads and poor management practices all lead to the premature decline and/or removal of trees. In light of climate change, the threats to trees are only expected to worsen. More frequent and prolonged droughts, extreme rainfall events and higher temperatures will cause periods of reduced soil moisture, water inundation and heat waves, and the onset of milder winters will expose our trees to new pests and diseases. Given the delicate lives of our trees, we must make a commitment to their maintenance and conservation. However, it is important that active management to promote health and longevity, and to ensure that the risk of trees causing harm to people or property is as low as reasonably practicable, is not confused with regular pruning.

3.42 The Council has legal obligations to ensure that the risk of its trees causing harm to people or property is as low as reasonably practicable. The Health and Safety Executive acknowledge that a

sensible approach to managing the risk from trees is to ensure the maintenance of a healthy tree stock and the sound management of the environment around trees.

3.43 In order to achieve this, the Council will aim to develop a programme to:

- survey and record all trees in Council ownership;
- develop a risk management strategy for trees, which it will use to prioritise and plan the on-going management of the trees for which it has direct responsibility and respond quickly to enquiries relating to any Council tree; and
- regularly inspect its trees in accordance with the priorities set by the tree risk management strategy and carry out proactive management works identified by an inspection.

3.44 The Council is legally empowered to ensure that trees in private ownership are maintained in a stable and healthy condition in the interests of public safety and do not cause damage or obstruction. The Council will use its powers under the Local Government (Miscellaneous Provisions) Act 1976 and Highways Act 1980 to serve notice on owners of dangerous trees to make them safe by pruning works or felling as appropriate. Should a tree owner fail to undertake the work within the specified time, the Council will seek to carry out tree work and charge the owner of the tree accordingly.

3.45 The Council will aim to undertake maintenance and management of its woodland estate in a manner that will ensure that it maximises their benefits for nature conservation and biodiversity, public amenity and access and, where appropriate, for timber production. This will be done through the continued implementation of site-specific woodland management plans that will encourage the retention of deadwood, the creation of a natural woodland structure (ground, field, shrub and canopy layers) and appropriate management of features such as ponds, glades and rides.

3.46 Trees & Woodlands are a key part of the borough's biodiversity, therefore the Council will aim to:

- encourage the retention of dead wood within trees in appropriate locations where public safety is not compromised;
- avoid carrying out works to trees known to contain bat roosts, and aim to carry out routine planned work to individual trees, woodlands and plantations outside the nesting season, except in emergencies;
- support the removal of existing trees and resist tree planting on sites where they would prejudice the nature conservation value of the land as identified by an appropriate habitat management plan;
- encourage the use of locally characteristic native species in planting schemes within rural areas, the Green Belt or close to nature conservation sites to protect these areas;
- aim to reuse, recycle or recover value from all 'green' waste from its arboricultural operations; and,
- avoid causing damage to the ground, field or shrub layers of a woodland when carrying out management works by restricting traffic movements to rides and avoiding the spreading of wood chippings into sensitive areas or elsewhere in layers more than 50mm deep.

Reasons for Works

3.47 The section below provides detail to inform the assessment of proposals against 3.38 above.

Safety

The pruning or removal of a tree in the presence of a clear and foreseeable threat to the safety of people, or property will be supported.

The removal or pruning of a tree for a risk that is an indirect consequence of a tree (e.g. slippery leaves or fruit on a pavement or obstruction of a CCTV camera) will not be supported unless other reasonable options are not available. The removal or pruning of a tree on the basis of an unfounded fear (e.g. it is tall) will not be supported.

Obstruction of the Highway, Street Lights and Road Signs

The pruning of a tree to ensure adequate clearance of the highway for the type of traffic that would normally be expected to uses that route, to ensure that sight lines or road signs are not obscured and to ensure that street lamps illuminate the highway properly will be supported. The removal of a tree will only be supported where the obstruction cannot be removed by pruning the tree or other reasonable measures.

Daylight Loss

There is a common misconception that there is an absolute right to light. However, there is no established right to light as a result of the presence of trees. The removal or pruning of trees will normally only be considered where:

- the distance between the tree and the window of the nearest habitable room is less than 6m for trees with a height of over 12m, or less than half the height of the tree for smaller trees;
- the separation between the edge of the canopy and the vertical plane of the window wall is less than 2m;
- more than 50% of the main amenity area does not receive unobstructed sunlight in summer.

A 'habitable room' means a dining room, lounge, kitchen, study or bedroom but specifically excludes WCs, bathrooms, utility rooms, landings and hallways.

Where a situation falls within these guidelines cases will be prioritised according to proximity and account will also be taken of the orientation of the affected window or garden. In certain circumstances one or several trees in a group may be removed to increase daylight to properties where the thinning work will ultimately be to the benefit of the remaining trees, by allowing them increased light and resources to develop into good amenity specimens. Any work for this reason will only be carried out if it can be executed within current financial constraints.

Solar Panels

Whilst the Council is generally supportive of the use of solar panels this should not be at the expense of other beneficial environment assets such as trees. Overall, the wide range of environmental services provided by trees is considered to outweigh the environmental benefits afforded by the use of solar panels. Doncaster Council will not support requests to remove or prune trees to improve sunlight for solar panels.

Television and Other Radio Equipment

A television license allows for the operation of a television but, currently, there is no established right to good reception. In many cases it is possible to resolve issues of poor reception involving trees by finding an engineering solution. Doncaster Council will not support requests to fell trees to improve reception and will only consider requests to prune trees to improve reception where:

- efforts have been made to find an engineering solution to the problem and have not been successful;
- the work required is consistent with good arboricultural practice and will not unduly affect the amenity or health of the tree; and
- the work required can be executed within current financial constraints.

View

The removal or pruning of a tree to establish or recreate the view from a window, house or garden will not be supported except in designated historical landscape where a view is an integral part of the landscape.

Low Branches
Most species of tree naturally branch from low down on the stem and the removal of low branches is often detrimental to tree form and the redistribution of wind-loading. Crown lifting to aid grass growth or to ease mowing will not normally be supported unless there is a primary reason that justifies full or partial crown lifting of a tree.

Leaves, Seeds and Fruit
Trees are living growing organisms, which follow a yearly cycle, which cannot be altered by human intervention. Leaves, seeds and fruit are a natural consequence of this and are largely outside the control of Doncaster Council. Clearing of leaves from gutters and pathways and weeding of set seeds are considered to be normal routine seasonal maintenance which property owners are expected to carry out. Remedial pruning work to ease the effects of seasonal problems is unlikely to wholly solve a particular problem. The felling or pruning of trees in an attempt to reduce the fall of leaves, seeds or fruit will not normally be supported.

Honeydew
Honeydew is the natural sticky secretion from aphids, which in summer feed on the sap of trees, particularly Lime and Sycamore. In some circumstances, this residue may cause problems by sticking to the surfaces on which it falls. However, as it may be removed by washing and is a seasonal problem, the removal of trees solely for this reason will not be supported. In exceptional circumstances pruning work may be supported to remove branches where this does not have a detrimental effect on the tree.

Bird Droppings
Birds roosting or perching in trees can occasionally cause problems with droppings left upon surfaces beneath. The actions of wild birds are outside the control of Doncaster Council and, as droppings do not constitute a hazard to health and may be removed by washing, the removal of trees solely for this reason will not normally be supported. Remedial pruning work to lessen severe problems caused by bird droppings may be supported if it is in accordance with good arboricultural practice and does not affect the amenity value of a tree, but it must be borne in mind that this may not wholly solve the problem.

Subsidence
Tree related subsidence damage is a complex issue and each case will need to be considered on an individual basis, however, there will be a presumption against tree removal unless empirical evidence from assessment and monitoring clearly demonstrates that a tree is responsible for causing damage to a structure and other remedies are either not available or disproportionate.

The removal or pruning of a tree based on an unquantified possibility of damage occurring at some unspecified point in the future will not be supported. The Council will require the submission of appropriate supporting evidence from a suitably qualified individual in support of any alleged subsidence involving a Council owned or protected tree and Officers from the Council's tree services, insurance and structural engineers will work closely to resolve any issues in an expedient manner Any costs for reports and supporting evidence will be expected to be met by the complainant.

Direct Damage
As with subsidence, cases of direct root damage will be considered on an individual basis. A balance will be struck between the nuisance experienced by individuals and the benefits offered by the tree(s) to the wider community. Tree removal will not normally be supported unless it is clearly demonstrated that a tree is responsible for causing the damage and other remedies are either not available or disproportionate.

The pruning of a tree to maintain adequate clearance between the crown and an adjacent building to prevent damage resulting from branches moving under wind-loading will normally be

supported. The removal of a tree will only be supported where sufficient clearance cannot be attained by pruning the tree.

Drain Blockage

Trees do not normally have the capacity to break into a sound drain, but they will exploit any existing fault. The removal of one tree will not prevent other vegetation from exploiting the same opportunity.

The Council's presumption is that the appropriate way to deal with tree root blockage of drains is to ensure that the drains are watertight. Accordingly, the Council will not normally support the felling of trees in response to blocked drains.

Vehicular Access to Properties or Development Sites

The provision of crossovers to allow vehicular access to properties or the creation, or widening, of existing vehicular access for a development site may require the removal of trees directly in the line of the access, or cause root damage to nearby trees due to the alteration of surface levels and changes in surfacing materials. Applications that will remove trees or will cause damage to nearby trees will not normally be supported, unless there is an overriding justification in support of the application and the continuation of tree cover can be assured.

Where the removal of a tree on public land is allowed as part of a crossover provision or access to a development site replacement tree planting will be undertaken by the Council in accordance with section 3.36 at a location as close as reasonably practical to the site with all costs to be borne by the applicant.

Prevent Spread of Disease

The scale of devastation caused by Dutch Elm Disease is well known and affected trees are still a common sight within the borough. Climate change is also increasing the range of pests and diseases which affect the tree species commonly found in Doncaster and modern transport links often facilitate their rapid spread. The outbreak of a disease or pest, if left unchecked, could cause significant losses due to the limited variety of species that currently grows in the borough. The removal of trees to halt the spread of pests and diseases will be supported only where it accords with legislation or the current advice of the appropriate Government agency.

Links to Relevant Supporting Documents/Strategies/Further Information

Doncaster Council – *Tree Services* - http://www.doncaster.gov.uk/sections/environment/treesandhedges/index.aspx

Doncaster Council – *Woods & Country Parks* - http://www.doncaster.gov.uk/sections/leisureandculture/outdoorlife/woodsandcountryparks/index.aspx

The Woodland Trust (2010) *Space for People Guide: Targeting Action for Woodland Access* - http://www.woodlandtrust.org.uk/mediafile/100083906/space-for-people.pdf

Forestry Commission England (2010) *Managing Ancient and Native Woodland in England: Practice Guide* - http://www.forestry.gov.uk/pdf/FCPG201.pdf/$file/FCPG201.pdf

Theme 3: Green spaces

Why is it an important part of green infrastructure?

3.48 Doncaster covers approximately 226 square miles and is the largest metropolitan borough in the country. The borough has a population of over 290,000 people, all of whom have a right to access nearby good quality green spaces. There are a wide range of green space benefits which can be subdivided into separate functions such as health and wellbeing (including recreation), child development, community benefits (quality of Life), securing biodiversity, environmental appreciation, aesthetic and economic; these are broken down further below.

Health & wellbeing

- Providing good quality green spaces promote good mental and physical health and makes people happier;
- Providing opportunities for formal and informal sport, leisure and other exercise such as walking and cycling;
- Connecting with nature;
- Reduces noise and light pollution and improves air quality;
- Long term carbon sinks;
- Offset carbon emissions; and,
- Reducing the impact of development on global climate change.

Child development

- Providing opportunities for improving motor skills; and,
- Providing educational opportunities.

Community benefits

- Contributes to community cohesion and local identity;
- Providing spaces for leisure, relaxation and community events; and,
- Areas close to good quality green spaces benefit from increased house prices.

Securing biodiversity, geodiversity and environmental appreciation

- Providing areas for wildlife;
- Providing habitats which can store water which also brings economic and quality of life benefits such as a reduction in flood risk;
- Attracting more wildlife to the countryside; and,
- Providing connections between key areas for wildlife to protect and encourage important species

What is the current situation?

Green Space Audit

3.49 The recently updated comprehensive Green Space Audit provides an invaluable asset, not only identifying the Borough's green open spaces, but also assessing quantity, accessibility, quality and value. The work has been broken down into two discrete phases.

- Phase 1 is complete and identifies sites and facilities and assesses green space provision for quantity;
- Phase 2 is underway and we are now looking at accessibility and will then look to assess the quality and value of green spaces based on a standardised assessment approach. The timescales for phase 2 are to be determined.

3.50 Phase 1 has been published as part of the evidence base for the Local Development Framework. Phase 1 of the re-audit includes a GIS map based database/spread sheets showing the locations of all green spaces in the borough. It includes an up-to-date breakdown of site information by name, identification number, area in hectares, play facilities (e.g. Mixed Use Games Area, skate park, play area etc) if present, and additional target notes.

Green Space Type & Functions

3.51 Each site has also been categorised by typology for analysis of provision against standards adopted by the Council as set out in Table 3.4 below, with additional information, in particular around functions, provided at Appendix 1.

Table 3.4: Green Space Types

Allotments	Golf course
Amenity (housing)	Green corridor
Amenity (other)	Informal
Amenity (road verge)	Marinas and Moorings (amenity other)
Campsite (amenity other)	Nature conservation areas
Cemetery	Public parks
Fish ponds (amenity other)	Recreation (amenity other)
Formal	Woodland
Formal (school)	Local green space

Green Space Standards

3.52 The 2013 Green Space Re-Audit also identifies and uses a number of different standards from different sources to assess a variety of green space types. The Audit includes a comprehensive breakdown of the standards. Some standards have also been modified or combined as they assess different categories of green spaces, which serve the same or similar function or purpose. The standards used to assess the provision of green space in the borough are shown below in Table 3.5.

Table 3.5: Green Space Standards

Green Space Type	Function	Quantity Standard (ha) (per 1,000 population)	Site size	Access Buffer
Formal (sports pitches (all types)) (Fields in Trust)	Recreation / Health and Well being / Child Development	1.6ha	Community	1.2Km (walk)
			Neighbourhood (3 or more pitches and a changing facility)	10Km (car)
Informal (children's playing fields and play areas (no marked pitches)) (destination play grounds) (Fields in Trust)	Recreation / Child Development / Health and Well being	0.8ha	less than 1600sqm	240m
			1,600sqm +	600m
Public Parks (Greater London Authority)	Recreation / Health and Well being / Child Development /	0.69ha	less than 2ha	400m
			2ha+	1.2km
			20ha+	3.2km
Allotments (National Society of Allotment and Leisure Gardeners)	Recreation / Health and Well being	0.125ha	N/A	1km - walk (2001 Survey)
Woodlands (accessible) / Nature Conservation Areas (Woodland Trust and Natural England (Combined standard))	Recreation /Environmental Appreciation / Securing Biodiversity / Health and Well being / Quality of Life / Child Development / Aesthetic	2ha	2ha +	500m
			100ha +	5km
			500ha +	10km

Green Space Provision by Neighbourhood Area and Community

3.53 This section provides the results and analysis of all the green space categories in the borough. All green space which is publicly accessible for recreational use has been included in the Audit. An additional category 'Local Green Space' has also been included in line with paragraph 77 of the NPPF. Green space supply has been assessed by community profile area against the standards.

Table 3.6: Total Green Space Provision for the Borough by Site Category.

Type Name	Number of Sites	Area (Hectares)
Allotments	76	142.56
Amenity (housing)	375	89.53
Amenity (other)	33 (includes campsites (2), marinas (8), fish ponds (1), and 'recreation' (4))	144.46
Amenity (road verge)	150	38.73
Cemetery	29	63.54
Formal	88	330.49
	33 play areas, 4 skate parks, and 7 MUGAs	
Formal (school)	8 (10 with Armthorpe and Hayfield)	52.91
	4 MUGAs	
Golf course	12	471.87
Green corridor	34	125.68
Informal	198	187.40
	89 play areas, 4 skate parks and 17 MUGAs	
Nature conservation areas	37 (1 play area)	3351.76
Public parks	24 (Cantley Park and Cantley Park Pond are one site)	212.01

	16 play areas, 3 skate parks and 9 MUGAs	
Woodland	65	521.29
	1 play area	
Local green space	7	8.67
	TOTAL	**5741.44**

Assessment of Supply by Category

Informal

3.54 The Audit identifies 200 informal open spaces, 89 of which include children's play equipment, 4 have skate parks and 17 have Mixed Use Games Areas. The provision of informal open space varies widely across the Borough. The assessment of provision indicates a wide inconsistency in supply, with 67 communities being deficient in informal open space and 21 communities with sufficient provision. The range of provision also varies dramatically, with communities such as Intake, Lower Wheatley, New Rossington, Sprotbrough, Mexborough and Tickhill, being deficient in informal open space by 3 hectares or more. Intake is the most deficient community with an under supply of informal open space of minus 4.52 hectares.

3.55 Conversely, the communities of Woodlands, Toll Bar & Almholme, Cusworth and Auckley have in excess of 3 hectares above the required standard. Woodlands is identified as having 4.81 hectares of informal open space over the required standard. This is as a direct result of the design of the Woodlands Park 'model village' (also a Conservation Area), which is one of the earliest examples of a 'Garden City' layout, modelled on Ebenezer Howard's 'Garden Cities of Tomorrow'. This innovative early 20th Century design created a bright, healthy, living environment for the local mining community.

Formal

3.56 The Audit identifies 88 formal green spaces and (currently) 9 school sites with known dual use agreements. 33 of the formal open spaces also have play equipment, 4 have skate parks and 7 have Mixed Use Games Areas. As with informal open space, the provision of formal open space varies widely across the Borough. Again the assessment of provision indicates a wide inconsistency in supply, with 56 communities being deficient in formal open space and 32 communities having access to a sufficient supply. The range of provision also varies dramatically, with an under provision of minus 19 hectares in the Bessacarr community to plus 14 hectares in the Old Rossington community, who have access to Rossington Miners Welfare, Castle Avenue Sports Ground, and the Ian Wilson Community Sports College (the local School). It should be noted that the apparent over provision of formal green space, in certain communities (such as Old Rossington) requires further research to identify if the facilities are used to their full potential.

3.57 A formal sports provision hierarchy has also been established identifying both local community facilities and neighbourhood facilities. The community profiles used to assess the open space provision in some instances divide the open space or even miss it out completely. Communities with neighbourhood facilities (such as the 'Town Fields' shared by the communities of Lower Wheatley and Bennethorpe) but it also serves users from neighbouring communities such as Town Moor, who (on paper) may appear to be deficient but are immediately adjacent to the site.

3.58 There are however, communities who are severely deficient in formal open space. Communities such as Balby, Armthorpe and Bessacarr are deficient by 10, 12 and 19 hectares respectively. Factors such as the historic way in which the communities have developed, high population and high housing densities are mitigating factors. *Note: where 'formal' provision is identified within public parks this is shown in the community profile summaries.*

Public Parks

3.59 The Audit identifies 23[9] public parks. As such there is a wide variation in provision across the Borough, with only 15 communities meeting the required standard. The provision in communities such as Cusworth, Cantley, Campsall and Wheatley Park appear to have an over-supply when measured against the standard. However, the public parks in these areas are either 'district' parks, or are just under the threshold benefitting other nearby communities. The 'district' public parks of Cusworth Country Park and Cantley Park serve a very large catchment area, and Cusworth Country Park even attracts visitors from outside the Doncaster Borough. The Audit identifies communities which are severely deficient in this category of green space. Communities such as Armthorpe (deficient by over 9 hectares), Mexborough (deficient by 8 hectares), and Conisbrough (deficient by 6 hectares) could benefit from the development of a new public park. Satellite communities such as Thorne and Moorends are also deficient and importantly have more limited access to other facilities due to their location in the far eastern part of the Borough. More work is, however needed to identify priorities.

Nature Conservation Areas and Woodlands

3.60 The Audit identifies 38 nature conservation areas and 61 woodlands. New additions to nature conservation sites include Conisbrough Viaduct Tip, The Dome Petty Whin Site and Gally Fields. As with all other categories of green space the provision varies widely across the Borough. The assessment identifies a wide variation in supply with 49 of the 88 communities being deficient against the defined standard. The communities of Scawthorpe, Dunscroft, Balby, Wheatley Park, Askern and Lower Wheatley are all deficient by 10 hectares or more against the standard. In contrast the communities of Hatfield Woodhouse and Moorends exceed the standard by over 1,200 hectares, but this is due to the internationally important Thorne and Hatfield Moors being situated within these communities. The Audit also identifies the communities of High Melton, Loversall and Cadeby as having over 100 hectares above the standard. This again is due to their proximity to large sites such as Melton Wood, Potteric Carr and the Earth Centre.

Allotments

3.61 The audit identifies 76 allotments sites and again a wide variation in supply between communities. 53 of the 88 communities are deficient against the standard. The communities of Armthorpe and Sprotbrough are deficient by approximately 1 hectare, with the communities of Kirk Sandall, Bessacarr, Skellow, Hatfield and Wheatley Hills being deficient by approximately 0.5 of a hectare. The remainder of the communities are deficient by less than half a hectare. Conversely the communities of Bentley, Moorends, Edlington and Mexborough are well above the standard, by 16, 14, 12 and 11 hectares respectively.

Assessment of Supply by Community Profile Area

3.62 The assessment of provision by community varies markedly around the borough. 11 of the 88 community profile areas are deficient in all types of green space, with only one community having sufficient provision in all green space categories. Table 3.7 below identifies 11deficient communities, although Hatfield prison is an unusual community profile area in terms of green space analysis.

Table 3.7: Green Space Deficiencies by Community Profile Area

Community Profile Area	FIT (informal) 0.8ha	FIT (formal) 1.6ha	Public Parks (0.69ha)	Woodlands and Nature Conservation Areas (2 ha)	Allotments 0.13 ha
Arksey	-0.79	-0.38	-0.86	-2.51	-0.16
Fenwick	-0.09	-0.17	-0.08	-0.22	-0.01
Hatfield Prison	-1.65	-2.06	-1.42	-4.11	-0.27

[9] Cantley Park is sub-divided into three

Micklebring	-0.18	-0.35	-0.15	-0.44	-0.03
Moss	-0.31	-0.63	-0.27	-0.78	-0.05
Old Edlington	-0.24	-0.49	-0.21	-0.61	-0.04
Owston	-0.10	-0.20	-0.09	-0.25	-0.02
Scawsby	-0.07	-6.41	-2.76	-8.01	-0.40
Skellow	-0.45	-2.59	-2.79	-1.73	-0.53
Town Moor	-1.91	-3.82	-1.65	-4.78	-0.31
Wheatley Hills	-1.49	-0.44	-0.60	-3.67	-0.48

3.63 Table 3.8 below identifies the one community in the borough sufficient in types of green space.

Table 3.8: Green Space Sufficiency by Community Profile Area.

Community Profile Area	FIT (informal) 0.8ha	FIT (formal) 1.6ha	Public Parks (0.69ha)	Woodlands and Nature Conservation Areas (2 ha)	Allotments 0.13 ha
Cantley	0.16	2.79	37.32	88.75	0.42

Summary

3.64 In summary, the provision of green space around the borough varies greatly both by type and by community. It is important therefore to look at provision, accessibility, quality and value of green space when looking at a community's needs and requirements. Information on accessibility, quality and value of green spaces will follow. In addition, substantial work has been undertaken on a Playing Pitch Strategy. The green space audit uses the Fields in Trust 4 acres standard, but this focuses primarily on quantity and lacks detail that should be contained in the strategy, in particular around availability, usage and demand of pitches.

Where are we going?

3.65 The key outcomes of this strategy in relation to green space are summarised below:

- Improve the appearance and character of parks and woodlands (e.g. Cantley Park and Sandall Beat Wood);
- Increase the range of functions within parks and other green spaces, where appropriate, to maximise social, economic and environmental benefits;
- Secure a more equitable distribution of green spaces across the borough;
- Better signage and linkages to leisure attractions (e.g. Lakeside);
- Preserve and increase the number of functions within parks and other green spaces; and,
- Extensive landscape buffering to screen new developments from green wedges.

Principles and actions

3.66 At the Doncaster scale our headline actions and principles are embedded into objectives within the Council's Environment Strategy, as set out in Chapter 2 (Table 2.1) previously. In addition, the key principles and actions from this theme are set out below.

- Complete the Green Space Audit (phase two) and synthesise the results;
- Incorporate open space standards in terms of quality, quantity and accessibility as specific targets;

- Continue to progress the Playing Pitch Strategy to reflect the results of the latest Green Space Audit and changes to national planning policy set out in the National Planning Policy Framework. Further information is required, particularly around availability, usage and demand of pitches and some of the evidence is also out-of-date (e.g. demographic trends). The Green Space Audit will help identify priority areas of the borough to target this work first and foremost;
- Interrogate and review the evidence to highlight potential trends, threats and potential opportunities e.g. the degree of correlation between open space provision and levels of obesity and physical activity; and,
- Establish a steering group to progress the second phase of Audit (Street Scene).

Links to Relevant Supporting Documents/Strategies/Further Information

Doncaster Council – *Green Space Audit, Community Profile Analysis & Maps* - http://www.doncaster.gov.uk/sections/planningandbuildings/localdevelopmentframework/LDF_Sites_and_Policies_DPD/LDFEvidenceBased/Sites_and_Policies_Evidence_Base__E7__Greenspace_Documents.aspx

Doncaster Council – *Interactive Open Space Map* - http://doncaster.opus3.co.uk/ldf/maps/Open%20Space#x=459170.0007745&y=404513.49847077&l=432407.41105963&r=485932.59048937&t=420719.21888635&b=388307.77805519&scale=175000&1386&1371&1372&1374&1373&1375&1376&1377&1378&1379&1380&1381&1382&1383&1385

Doncaster Council – *Doncaster's Woods & Country Parks* - http://www.doncaster.gov.uk/sections/leisureandculture/outdoorlife/woodsandcountryparks/index.aspx

Theme 4: Green routes

Why is it an important part of green infrastructure?

3.67 The rights of way network is an integral means of accessing the countryside, linking residential areas with amenities and providing safe alternative routes away from vehicular traffic.

What is the current situation?

3.68 **Public Rights of Way:** There is over 500 km of public rights of way in the Doncaster area consisting of 588 different routes, spread across 38 Parishes, 6 Town Councils and 4 former urban districts. In 2008, the Council published its first Rights of Way Improvement Plan which was informed by a wide consultation process with key stakeholders and the general public. The aim was to develop and improve the rights of way network and other green spaces, including access land and other Council open space to ensure that residents' needs for recreation, exercise and access to local services are met and that the network is more accessible and connected for all users.

3.69 Building on the improvements that have already taken place, the Doncaster Rights of Way Improvement Plan is under review and a revised version will include a condensed set of SMART targets/actions.

3.70 **Walking:** There are lots of initiatives and activities that take place that revolve around walking (festival of walks, training, map production, Walking Boost initiative for workplaces) and there is recent public health guidance on the benefits of walking. Work is on-going to produce maps, and ensure all walking maps in Doncaster are in one place, with any gaps in coverage identified and, where possible, addressed.

3.71 **Green Corridors:** These are areas connecting or capable of connecting green spaces to improve green infrastructure and wildlife connectivity. The Green Space Audit identifies 34 in the borough with a total area of 125.68 hectares.

3.72 **Green Wedges:** To complement the green infrastructure corridors identified in the Local Development Framework Core Strategy, and to reinforce the protection of the countryside, green wedges have been identified where development allocations need to be sensitive to strategic rural gaps between settlements. The Core Strategy portrays the indicative locations of these, with the exact detailed boundaries being shown on the Proposals Map. The green wedges are as follows:

- land to the east of the borough (between Thorne and Moorends, Barnby Dun and Kirk Sandall, Armthorpe and Edenthorpe; and, Armthorpe and Bessacarr/Cantley); and,
- land to the west of the borough (between Adwick and Carcroft/Skellow; and, Adwick and Scawsby/Scawthorpe).

3.73 Green wedges will overlay Countryside Protection Policy Areas/Green Belt designations and areas identified for development to identify areas where there will be an expectation that the development must deliver an extensive buffer and an exceptionally high standard of landscaping (to prevent the complete merging of settlements and enhance the amenity and visual appearance of settlement edges), as well as improving access to the countryside. They will thus function as a type of green infrastructure corridor with a focus on landscape and amenity.

Where are we going?

3.74 The key outcomes of this strategy in relation to green routes are summarised below.

- Improving links between the Town Centre and other attractions within the green corridors around the main urban area (e.g. Lakeside, Doncaster Racecourse and Sandall Beat Wood);
- Improve and extend the bridleway network (e.g. horse riders and users with mobility problems) and create new routes (e.g. Thorne heritage walk);
- Widen community involvement in environmental and educational access initiatives;
- Congestion and pollution: Studies indicate high levels of carbon dioxide are emitted in the Town Centre and the motorway corridors to the east and south of the main urban area, especially at the interchange of the M18 and M180 motorways to the north east;
- Connectivity: parts of the network are fragmented (e.g. between Marr and Hickleton, Marr and Brodsworth and the areas surrounding Braithwell, Stainton, Tickhill and Wadworth, Finningley, Auckley, and Blaxton) and have limited or no access to the open countryside;
- Open up the river valleys and washlands to public access and recreation, such as bird watching, walking, cycling and fishing (e.g. Rivers Dearne and Don);
- Improve access to small woodland plantations and public access land (e.g. Thorne Moors), especially to cyclists and horse riders; and,
- Overcome barriers and physical constraints (e.g. M18 and M180 corridors, and the Rivers Don and Dearne).

Principles and actions

3.75 At the Doncaster scale our headline actions and principles are embedded into objectives within the Council's Environment Strategy, as set out in Chapter 2 (Table 2.1) previously. The key principles and actions from this theme are set out below.

- Develop the on-line walking map of public rights of way routes into a comprehensive and interactive "green grid" map of all our green infrastructure assets (including green spaces, routes and corridors) to distinguish between different types of route, tiers of intervention and highlight key priorities;
- Ensure that the actions and targets from the revised Public Rights of Way Improvement Plan reflect those within the strategy and are mutually supportive; and,
- Incorporate the key findings of the original plan/update.

Links to Relevant Supporting Documents/Strategies/Further Information

Doncaster Council – *Public Rights of Way* – http://www.doncaster.gov.uk/sections/leisureandculture/outdoorlife/publicrightsofway/index.aspx

Doncaster Council – *Rights of Way Improvement Plan* – http://www.doncaster.gov.uk/sections/leisureandculture/outdoorlife/publicrightsofway/Rights_of_Way_Improvement_Plans.aspx

Doncaster Council – *Health Walks & Maps* – http://www.doncaster.gov.uk/sections/leisureandculture/sportsandpastimes/walkingforhealth/index.aspx

Doncaster Council – *Cycle Strategy & Cycling Map* - http://www.doncaster.gov.uk/sections/transportstreetsandparking/transportation/Cycling_in_Doncaster.aspx

Doncaster Council – *Local Development Framework – Core Strategy Green Wedges & Interactive Proposals Map* - www.doncaster.gov.uk/ldf

Yorkshire Wildlife Trust - *Living Landscapes: Restore, Recreate, Reconnect* - http://www.ywt.org.uk/living-landscapes

Town & Country Planning Association & The Wildlife Trust (2012) *Planning for a Healthy Environment: Good Practice Guidance for Green Infrastructure & Biodiversity* - http://www.wildlifetrusts.org/sites/default/files/Green-Infrastructure-Guide-TCPA-TheWildlifeTrusts_0.pdf

Theme 5: Historic environment

Why is it an important part of green infrastructure?

3.76 The historic environment is important for its own sake but it is also central to the character and identity of the borough. It is a source of immense local pride, as well as being a valuable educational and economic resource. The historic environment should also act as a stimulus and inspiration to place making in all parts of the borough so that it can reinforce local identity and play a part in increasing the appeal of the area as a place to live, work, visit and invest in. Some parts of the borough's historic environment, such as its historic parks and gardens and its country houses, are an integral part of the green infrastructure while other heritage assets provide many of the places or areas that are linked by green infrastructure. Conserving and realising the potential of Doncaster's historic environment, including its below ground archaeology, standing historic structures and surviving historic landscapes as part of the wider green infrastructure network is a key focus for this Strategy, as set out below.

- Well designed and managed green infrastructure assets which complement landscape character and heritage, and engage local communities, can enhance local sense of place and foster community spirit;
- Green infrastructure can contribute to maintaining and enhancing the value of our historic landscape and built heritage through protection and enhancement of settings. Indirect benefits through greater surveillance of isolated heritage assets could reduce heritage crime;
- Green Infrastructure can also contribute to the interpretation, promotion and appreciation of our historic environment; and,
- Improving the connections to and between green infrastructures can make our historic environment more accessible.

3.77 Improving the green infrastructure and conserving the historic environment are mutually beneficial and interdependent. A well-managed historic environment provides attractive destinations in their own right but also enhances the functions of the network of green infrastructure. This section is concerned with the character of the historic environment.

What is the current situation?

3.78 Doncaster's distinctive heritage assets are richly diverse, including evidence of early settlements, castles, country houses and estates, nationally significant parks and gardens, historic market towns and villages, ecclesiastical, agricultural, civic and industrial buildings, railway and canal structures, twentieth-century suburbs and planned colliery settlements. The geology of the district gives rise to an interesting variety of vernacular building materials including sandstone to the west, through limestone, to brick and timber-framing to the east. Stone slate, Welsh slate, clay pantile and clay plain tile roofs are distinctive characteristics of parts of the borough. Figure 1.4 in Chapter 1 showed the historic character of the existing landscape of the borough divided into 19 historic Character Zones and explained the wider heritage context for green infrastructure.

3.79 More specific heritage assets are recognised through national and local designations. The borough has around 800 listed buildings, designated nationally. In addition, Doncaster has 4 nationally registered parks and gardens of special historic interest and 51 nationally designated scheduled ancient monuments. There are also 46 Conservation Areas, 13 locally designated parks and gardens of local interest as well as significant numbers of undesignated historic buildings which may in the future be considered for designation as buildings of local architectural and historic interest.

3.80 The historic environment is a combined description of an area's built heritage, archaeology and historic landscape. Some of the resource lies hidden beneath the ground in the form of archaeological deposits; these assets cannot normally be directly perceived by local people and visitors but can indirectly contribute to green infrastructure through museums, interpretation boards, local history and sense of place. They can sometimes provide a focus for community-based projects (e.g. Bentley Pinfold). Other elements, such as the area's historic buildings and landscape, supply a highly visible record of agriculture, industry and commerce over the millennia and now form an integral aspect of peoples' daily lives.

3.81 Although the designation of a heritage asset gives some indication of its national significance it is more useful for this strategy to consider them in terms of heritage sites. The heritage site of Brodsworth includes the listed hall, various listed garden structures, the nationally designated park and garden and the wider Conservation Area so should be considered as a whole. Cultural heritage is a wider concept than the narrow designation of a heritage asset and embraces any building, place, or area that has significance to people.

3.82 The most significant heritage assets integral to the green infrastructure strategy, and having public access, are: Conisbrough Castle and its park, Brodsworth Hall and Garden (both run by English Heritage), Cusworth Hall and Garden, and Hexthorpe Park, which are both owned by the Council. It is considered good conservation practice that they have conservation plans which describe their heritage significance including the green character so that this can be safeguarded in future proposals. It is not clear how many have such a plan.

3.83 Most of the borough's Conservation Areas and local historic parks and gardens can be considered to be part of the green infrastructure through their rural locations or the significance of their green spaces. In addition, such historic parks and gardens contain important ancient, veteran or notable trees which contribute further to green infrastructure, although such trees are not exclusively found in such places, for example agricultural land. Of the 46 conservation areas, 16 have published character appraisals available on the Council's website (links below) which describe their special interest. These include reference to open spaces, avenues of trees or other features which contribute to green character which then becomes a material consideration in planning applications. The appraisals cover mainly the urban area of Doncaster and the major settlements of Mexborough, Conisbrough, Thorne, and the Conservation Town of Bawtry. An appraisal of Tickhill, Woodlands, and Burghwallis are also currently being undertaken.

3.84 There is also a report on local parks and gardens of historic interest which explains their heritage significance which is part of the evidence base for the Sites and Policies DPD of the Local Development Framework. This will increase the number of local parks and gardens to 26.

3.85 Some of the more significant heritage assets which are also part of the green infrastructure are shown on the interactive map via the link below. It is not possible to show all the numerous heritage assets which feature alongside or are accessible from potential green infrastructure.

3.86 Within the Council the responsibility for the protection, maintenance, and promotion of the borough's heritage assets is divided among a number of teams, sometimes in different Directorates. This includes Planning (Conservation), Museums, Archives, and Tourism. Protection and promotion of archaeological remains in the borough is the responsibility of the South Yorkshire Archaeology Service based in Sheffield. This work has overlaps into other areas such as tree protection, maintenance, and natural environment. Unfortunately, there is no borough co-ordination or overall strategy for this work. This is being addressed through the development of a Heritage Strategy which is currently being prepared.

3.87 At present Doncaster is underrepresented in applications to, and grants from, the Heritage Lottery fund. Projects which support green infrastructure can benefit from this funding and a heritage strategy can provide a co-ordinated approach by the borough to the Heritage Lottery Fund which would increase the chances of successful bids.

Where are we going?

3.88 In order to fully support a Green Infrastructure Strategy it is first necessary to identify those heritage assets which are an integral part of the strategy and explain what contribution they make to the strategy in terms of the functions and the level of contribution (i.e. regional, borough-wide, or local) they make. Once this is described then proposals for the enhancement of those functions and actions that can support them can be developed as part of the wider Green Infrastructure Strategy.

3.89 Where heritage assets perform a more secondary role their preservation and enhancement would assist the Strategy generally but would be part of the overall Heritage Strategy for the preservation and enhancement of the historic environment.

3.90 It is important that the strategy retains some flexibility so that small community projects which may come forward involving heritage assets and which can enhance a part of the green infrastructure can be supported.

Principles and actions

3.91 At the Doncaster scale our headline actions and principles are embedded into objectives within Council's Environment Strategy, as set out in Chapter 2 (Table 2.1) previously. In addition, the following principles and actions from this theme are set out below.

- A Heritage Strategy is under preparation. It should incorporate and describe how it can mutually support the Green Infrastructure Strategy and identify where the common links are.
- As a first step, those heritage assets which are an integral part of the Green Infrastructure Strategy, the contribution they make to the strategy in terms of the functions set out in Chapter 1 and the level of contribution (i.e. regional, borough wide, or local) they make needs to be identified. Then proposals for the enhancement of those functions and actions that can support them can be developed as part of the wider Green Infrastructure Strategy.
- The significance of rural conservation areas which make an important contribution to the Green Infrastructure Strategy should inform the priority given to the programme of Conservation Area appraisals and the order undertaken.
- Where proposals for enhancement to green infrastructure are in the setting of, or affect Scheduled Monuments, or areas of archaeological significance, it is important that they do not harm the archaeological asset. Scheduled Monument Consent may be required and it is important to consult the South Yorkshire Archaeology Service (SYAS) in such instances.

3.92 Some potential projects or actions which may result from this exercise are set out below.

- Incorporate green infrastructure into heritage/townscape improvement schemes (e.g. Thorne Town Centre Conservation Area/listed building restoration);
- **Public realm:** develop strategies for enhancing the quality of the public realm within Doncaster, Mexborough and Thorne Town Centres;
- **Tourism**: promotion of high quality green space destinations;
- Improve access between the countryside and heritage sites and visitor information (e.g. Don Gorge and Trans Pennine Trail);
- **Image promotion:** increase visitor numbers (international, national, regional, sub-regional and local) and coordinate activity to promote Doncaster as a visitor designation;
- Protect and where possible preserve below ground archaeology in situ through the sensitive placement of new green infrastructure assets;
- Design and deliver green infrastructure that protects and enhances important views and the local landscape character;
- Protect and enhance the identities of settlements and their setting;
- Engage local communities in actively caring for local landscapes and enhancing local sense of place; and,

- Create and publicise 'round walks' around and between the villages of the Magnesian Limestone ridge including features of historic interest.

Links to Relevant Supporting Documents/Strategies/Further Information

Doncaster Council – *Design & Conservation Advice, including Conservation Areas & Appraisals, Listed Buildings & Registered Parks & Gardens* - http://www.doncaster.gov.uk/sections/planningandbuildings/designandconservation/index.aspx

Doncaster Council – *Interactive Heritage Map* - http://doncaster.opus3.co.uk/ldf/maps/Heritage_Map#x=459170.0007745&y=404513.49847077&l=432407.41105963&r=485932.59048937&t=420719.21888635&b=388307.77805519&scale=175000&1332&1333&1334&1335

The Woodland Trust – *Ancient Tree Hunt Project: Mapping the UK's Ancient & Special Trees* - http://www.ancient-tree-hunt.org.uk

The South Yorkshire Historic Landscape Characterisation Project - http://sytimescapes.org.uk/home

South Yorkshire Archaeology Service - https://www.sheffield.gov.uk/planning-and-city-development/urban-design--conservation/archaeology.html

Heritage Gateway, *South Yorkshire Sites and Monuments Record* - http://www.heritagegateway.org.uk/gateway/

Chapter 4:

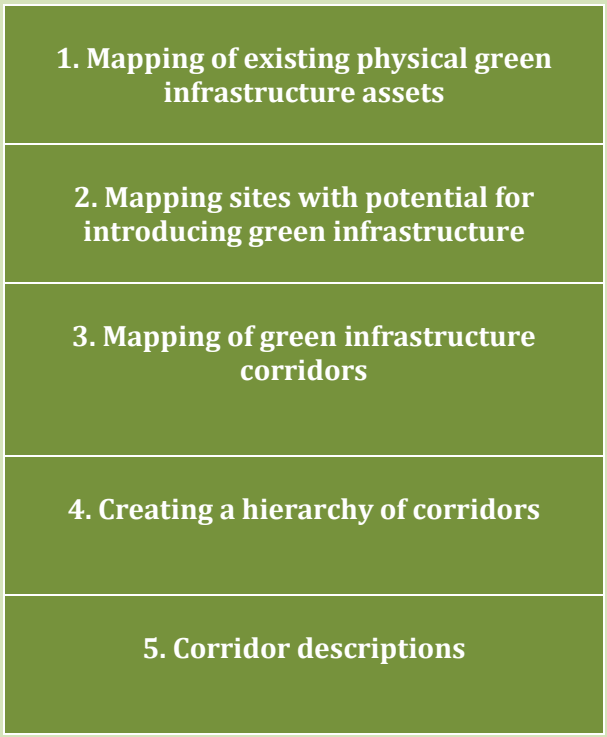
Green Infrastructure Corridors & Project Areas

- Green infrastructure corridors
- Strategic green infrastructure project areas

Above: View from Clifton Beacon

Green Infrastructure Corridors

4.1 As eluded to in both Chapter's 1 and 3, to inform the Local Development Framework Core Strategy, a hierarchy of seventeen green infrastructure corridors have been produced using a methodology developed by Natural England. In brief, the process included the following steps (please see Appendix 2 for more detail):



4.2 For the purposes of the Local Development Framework the outputs resulting from the five steps are:

- A mapped data set of green infrastructure assets within Doncaster;
- A Doncaster Council Green Infrastructure Corridors map showing all Doncaster Council's corridors: local, district, sub-regional and regional;
- A Doncaster Council Green Infrastructure Corridors map showing Doncaster Council's district, sub-regional and regional corridors, with amendments and links to corridors outside the borough but within the Yorkshire & Humber area (see Figure 4.1 for the corridors within the Borough boundary);
- A Yorkshire and Humber Diagrammatic Green Infrastructure Corridors map, in which the corridors are represented in simplified form by single lines (see Figure 4.2). This map includes the identification of an additional 3 local green infrastructure corridors; and,
- A detailed description of the green infrastructure corridors in Doncaster.

4.3 The green infrastructure corridors, including descriptions and how each corridor contributes to each green infrastructure function is briefly summarised in Tables 4.1 & 4.2 below.

Figure 4.1: Doncaster's Green Infrastructure Corridors – Regional, Sub-regional & District.

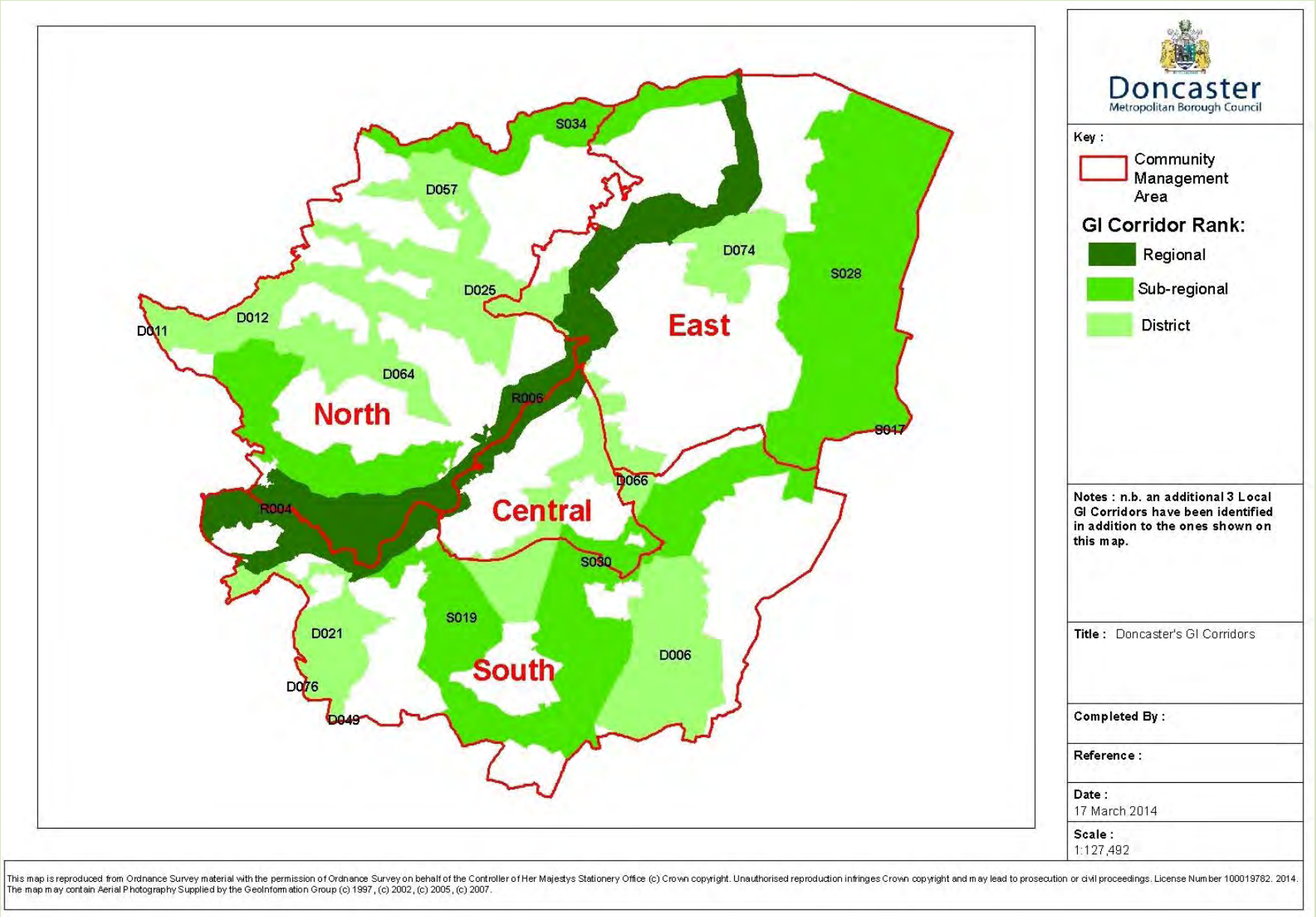


Figure 4.2: Doncaster's Seventeen Green Infrastructure Corridors – Regional, Sub-regional, District and Local Level.

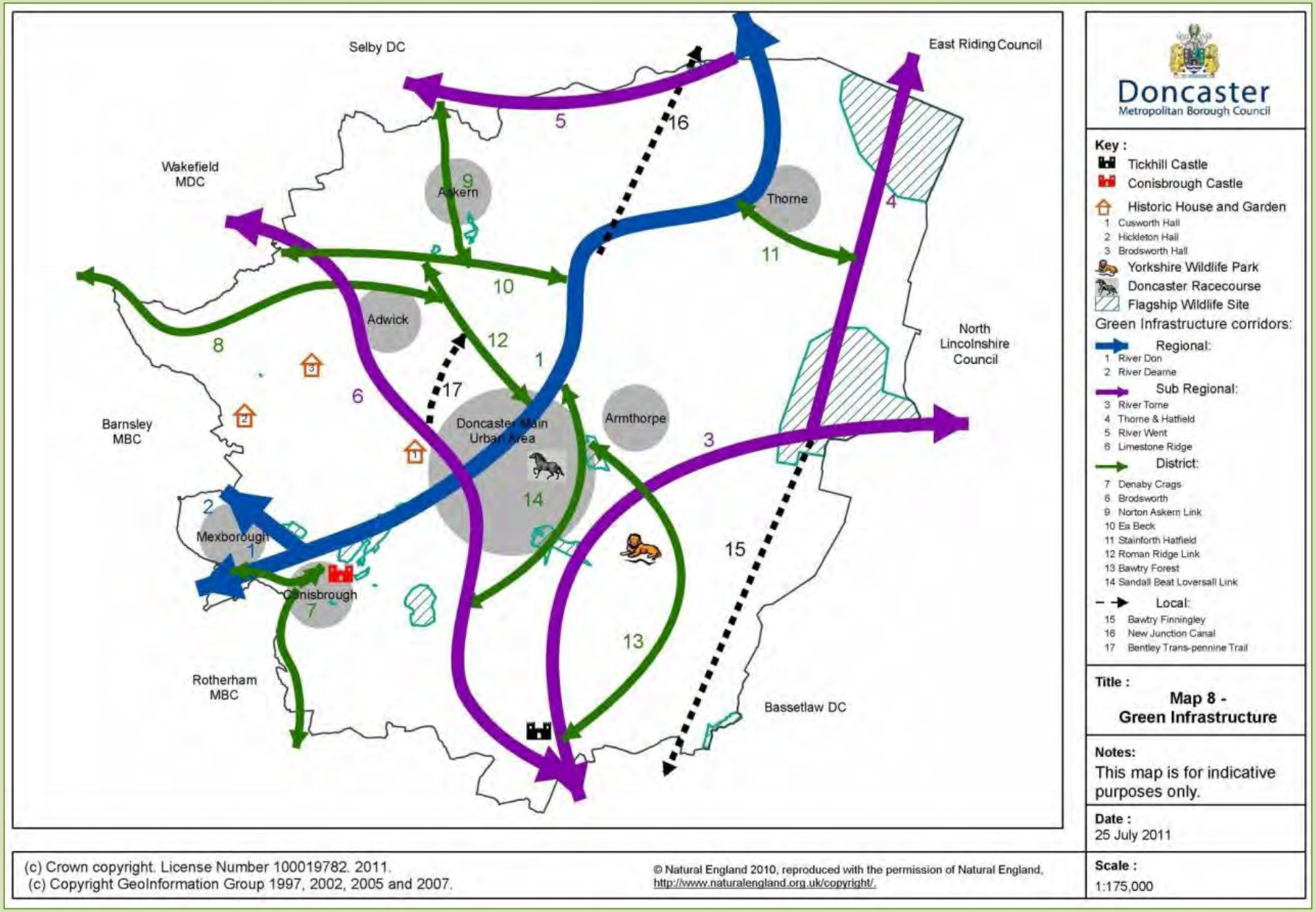


Table 4.1: Doncaster's Green Infrastructure Corridors

Name and rank of corridor	Role within the hierarchy	Location	Number of functions
Regional green infrastructure corridors	The primary function of these corridors is to connect communities and wildlife at the regional and city region scales (e.g. the river Don corridor runs from Goole to the Pennines).	Doncaster has 2 regionally significant corridors: the Don and Dearne River corridors cross several local authority boundaries and are of national importance due to their linkages (e.g. Trans Pennine Trail) and the number and range of functions they perform, such as countryside protection, landscaping, strategic habitat corridors for wildlife movements and water management.	These corridors have the highest proportion of green functions of between 13 and 15.
Sub-regional green infrastructure corridors	These corridors provide the link between the major areas of population within Doncaster and beyond into neighbouring authorities. The function of these corridors is to connect areas of natural heritage, green space, biodiversity or other environmental interests.	Doncaster has 4 sub-regional corridors: River Torne, Thorne and Hatfield, River Went and Limestone ridge. These corridors cross two or more local authority boundaries.	These have between 10 and 13 functions.
District green infrastructure corridors	These corridors provide the linkages between the regional and sub regional green infrastructure corridors.	Doncaster has 8 district corridors (Denaby Crags, Brodsworth, Norton Askern Link, Ea Beck, Stainforth Hatfield, Roman Ridge, Bawtry Forest and Sandall Beat Loversall Link), the majority of which are contained within the boundaries of the plan area along key routes such as footpaths, roads, canals and river corridors.	These have between 8 and 11 functions.
Local green infrastructure corridors	Effectively these act as small- scale, linear corridors and provide links between the district and sub-regional corridors within close proximity to existing settlements.	Doncaster has 3 corridors of local importance (Bawtry Finningley, New Junction Canal and Bawtry Trans Pennine Trail).	These have 4 to 8 functions.

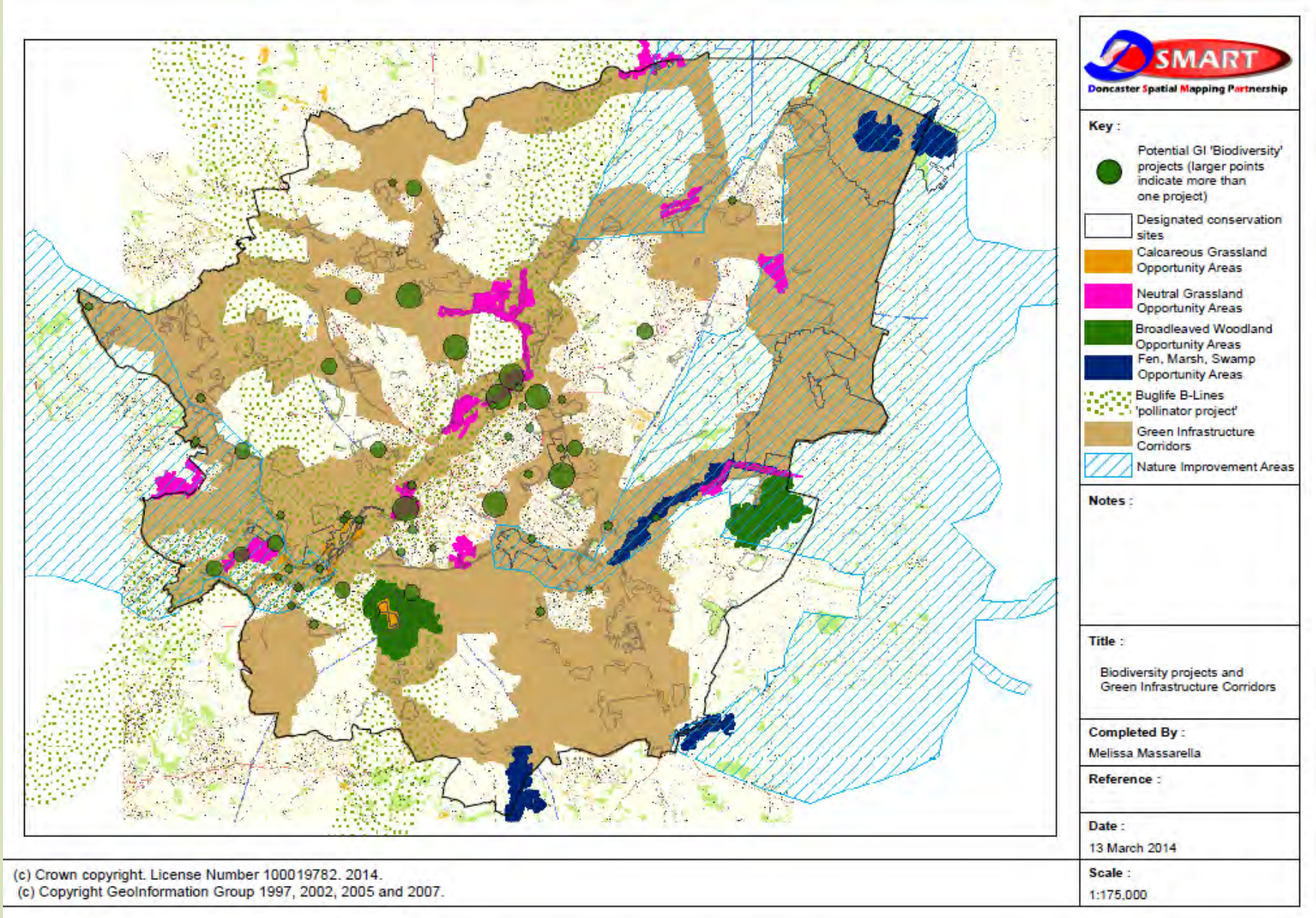
Table 4.2: Green Infrastructure Corridor's Descriptors, Roles & Functions by Corridor.

Corridor	Description, Roles & Functions
DON-1 Rivers Don & Dearne	There was some discussion as part of the identification of this as to whether the group should look for proactive projects, short rotation coppicing and wind farms. The group felt that this function was not addressed within this corridor. All other functions were felt to be covered, making the score 14 and the status of the corridor was considered to be regional.
DON-2a Thorne & Hatfield Moors	This is a site of national and international importance for biodiversity and is being promoted as a future tourist destination. It was considered that the corridor functions addressed all areas apart from land property values and economic growth as the area was relatively remote with little development. The status of the corridor was considered to be sub regional.
DON-2b Bawtry-Finningley	This corridor incorporates a number of local wildlife sites (including minerals restoration sites) and the River Idle Washlands, giving it points for flood risk and biodiversity. Extensive areas of farmland score points for products from the land. This area also scored for tourism and culture as it contains the village of Austerfield, which is being developed as a faith tourism destination, as it has links with the founding Pilgrim Fathers. The corridor was considered to be of local importance.
DON-3 River Went	This was considered to be a local link with only relatively few functions compared with other sections of the River Went, outside the borough, which have higher status. The corridor contains the SSSI of the Went Hay meadows, a section of the Trans Pennine Way, rights of way, arable farmlands and is in an area of high flood risk which gives it function points for accessibility, recreation, products of the land, biodiversity and flood risk.
DON-4a N Magnesian Limestone	This area of quality landscape and tourism (with its country estates and historic gardens) was considered to have many functions and quickly scored as a sub-regional corridor which would link into corridors outside the borough.
DON-4b S Magnesian Limestone	This corridor when compared with the N Magnesian Limestone has less accessibility and linkages and no educational function but would bring local benefits for property values and restore mineral extraction sites and was determined to be more of a district corridor which would be contained within the borough.
DON-5 Sandall Beat Central Corridor	This was determined to be a very important district corridor with some features of international and national importance (the racecourse and the football stadium). Sandall Beat Wood performs a number of functions including flood risk as it absorbs surface water run-off from nearby urban areas.
DON-6 River Torne	The corridor around the modified River Torne performs a large number of functions and was quickly assessed to be a sub regional corridor. There was however, a long discussion about the boundary around Loversall Carr and whether Potteric Carr nature reserve should go over to the Loversall

	Carr corridor and the boundary re-drawn. It was decided that the discussion be left until the Loversall Carr corridor was assessed later in the workshop.
DON-7 Bawtry Forest Corridor	This was scored as a local corridor with a final assessment of 9 for its biodiversity within large country estate areas, accessibility and the assets associated with Bawtry, such as culture and tourism (historical buildings and founding Pilgrim Fathers links) Other assets include the estate and listed building of Rossington Hall. It is anticipated that this corridor will accommodate a new road link to the M18 to support a strategic road/rail freight interchange and the airport. This will result in lost habitat and it was agreed that having this corridor will help towards new habitat creation to replace that lost. The corridor does not cover all functions, making it a local corridor.
DON-8 Conisbrough Parks	This is an area with quality landscape, arable farming and biodiversity, which also scored points for its frequent rights of way and recreation (having a golf course). The status of the corridor was assessed as local.
DON-9 Denaby Crags-Old Denaby Corridor	It was agreed that this small corridor had local importance, due to its diversity, numerous functions and cultural links. It scored 8, making it a district link. The elevated recreation area of Denaby Crags was considered to be culturally important as the former work route for the local mine workers of the now redundant pit. Another function was flood risk in the lower level western end of the corridor because of its area of washland.
DON-10 Brodsworth	Brodsworth was assessed as a district link with a score of 8, due to its quality landscape, arable land, areas of woodland and the important regional tourist feature of Brodsworth Hall.
DON-11 Askern – Norton Link	This corridor contains a number of former pit communities (and deprived neighbourhoods) as well as areas of high flood risk. It also contains some biomass planting. The scoring exercise identified numerous green infrastructure corridor functions with a score of 10 making it a district link. Campsall Country Park and Askern Lake were noted GI features but it was considered that more GI provision would offer benefits for the health of the communities (improving recreation areas, providing more open space).
DON-12 Ea Beck and Skelbrook	This relatively extensive corridor scored 10 for its diverse functions, which include biodiversity and climate change (biomass). Like the Askern – Norton Link, it contains a number of relatively deprived former pit communities but has larger areas of high flood risk, in particular the area of Toll Bar which suffered very badly during the 2007 flood events. There was a discussion about the benefits of making the banks of the watercourses more natural and how the provision of wetland habitat could reduce flood risk, not only for the immediate area but also downstream. As this corridor contains Owston Hall with its golf course and part of the Trans Pennine Trail, it picked up points for heritage, recreation and health.
DON-13	This corridor had been drawn at the previous workshop to protect and enhance the waterway and its surrounding habitats. During the

New Junction Canal Corridor	scoring workshop, the simplicity of the corridor, in being a waterway through a rural area, gave it a relatively low score of 5, making it a local corridor. The corridor was however considered important for those few functions which include biodiversity, recreation, accessibility and tourism.
DON-14 Stainforth-Hatfield Link (incorporating the Stainforth-Keadby Canal)	This corridor contains the proposed development area of the Stainforth-Hatfield Triangle and has the Stainforth Keadby Canal on its northern boundary. There was a discussion about how the inclusion of the area within a GI corridor could address the problem of flood risk by providing natural drainage and providing some structure for contributions towards flood defence infrastructure. The corridor scored 10 to make it a district corridor and it was considered to be important in supporting the proposed major redevelopment of the area so that a quality environment is created and there are benefits for local communities.
DON-15 Loversall Carr	There was a discussion about where the boundaries of this corridor should be (which previously started during the assessment/scoring of the River Torne Corridor). A few members of the workshop group felt that the Loversall Carr corridor should be expanded to include part of Potteric Carr, but the decision was to leave the Potteric Carr as a complete unit in the River Torne Corridor. The scoring produced a score of 4 to make this a local corridor. (NB. The north eastern corridor boundary was later changed after Natural England sent the regional map of workshop simplified GI corridors to local authorities, where corridors were shown as a simple line. This generated comments and discussion leading to an amendment where the western part of Potteric Carr, west of the railway boundary, was put in the Loversall Carr corridor. It was felt that this represented a more fluid link between the Sandall Beat corridor and the Loversall Carr corridor. The corridor was re-scored to make it a local or district corridor with a score of 8)
DON-16 Roman Ridge	This corridor was seen as important in protecting and enhancing the scheduled ancient monument of the roman road in the area of Scawsby in north-west central Doncaster, as well as offering recreation benefits for local communities. It scored 5 and was considered to be a district corridor.
DON-17 Bentley Trans-Pennine Trail	The role of this corridor was considered to be the protection and enhancement of the sustainable travel route of the Trans Pennine Trail through Bentley in the north-central area of Doncaster. It scored important points for accessibility and health and was seen as a peaceful route through a busy area. The corridor score was 5 making it a local corridor.

Figure 4.3: Doncaster's Green Infrastructure Corridors and Key Biodiversity Projects.



Strategic Green Infrastructure Project Areas

4.4 This section showcases the key projects (both existing and planned) of strategic importance that will contribute to the vision and aims of the Doncaster Green Infrastructure Strategy as outlined in Chapter 2. The multi-functional benefits of these projects will be spread beyond the immediate area at a landscape scale. Some of the projects are aspirational in nature, while others are more advanced. Each individual strategic project is described below.

Strategic Project Area 1: River Torne Corridor Masterplan

This area includes the floodplains of the River Torne, Robin Hood Airport and associated business park, Rossington Colliery site and FARRRS corridor. The aim of the project is to guide the scale and location of new development proposals to ensure it can be sensitively integrated into the surrounding countryside.

Strategic Project Area 2: Dearne Valley Green Heart

This landscape-scale project extends from Cudworth in Barnsley to Adwick in Doncaster and will focus on improvements to existing habitats and conservation assets such as Old Moor, Trans Pennine Trail, and the River Dearne, in particular the washlands. This project has secured funding through the Heritage Lottery Fund Landscape Partnership Programme.

Strategic Project Area 3: Doncaster Green Gateway

This project aims to develop an integrated and continuous network of high quality and well-managed green spaces and links between the Doncaster Town Centre and open countryside. It offers the opportunity to create a vibrant and attractive green gateway into the heart of Doncaster along key transport routes (M18 motorway, A18 and A638) and open spaces.

Strategic Project Area 4: Don Revival

This project aims to revive the River Don and its tributaries (e.g. River Ea Beck, River Went and the New Junction Canal) from the Don Gorge at Sprotbrough to the River Ouse at Goole.

Strategic Project Area 5: Don Gorge

This project seeks to preserve and enhance the distinctive character and natural beauty of the landscape such as the limestone gorges, field enclosures and waterways (e.g. Sheffield & South Yorkshire Navigation Canal) and enable communities to learn about, enjoy and celebrate their local area. Steep sided River valleys (e.g. Don and Went) are a distinctive feature of the landscape.

Strategic Project Area 6: Thorne and Hatfield Moors

The project forms the southern part of the Humberhead Levels with its component parts (Goole Moors, Crowle Moors and Rawcliffe Moors) and includes the lowland peatlands at Thorne and Hatfield Moors. The overall vision of the project is to create an internationally renowned, unique and accessible wetland landscape to support thriving communities, ecosystem services, and wildlife.

Strategic Project Area 7: The Magnesian Limestone Corridor

The Yorkshire Wildlife Trust is currently running The 'Loving Your Local Limestone' project which will help ensure the survival of specialist species associated with this particular grassland habitat and reintroduce traditional management methods to the area.

Strategic Project Area 8: Low Carbon & Energy Development Corridor

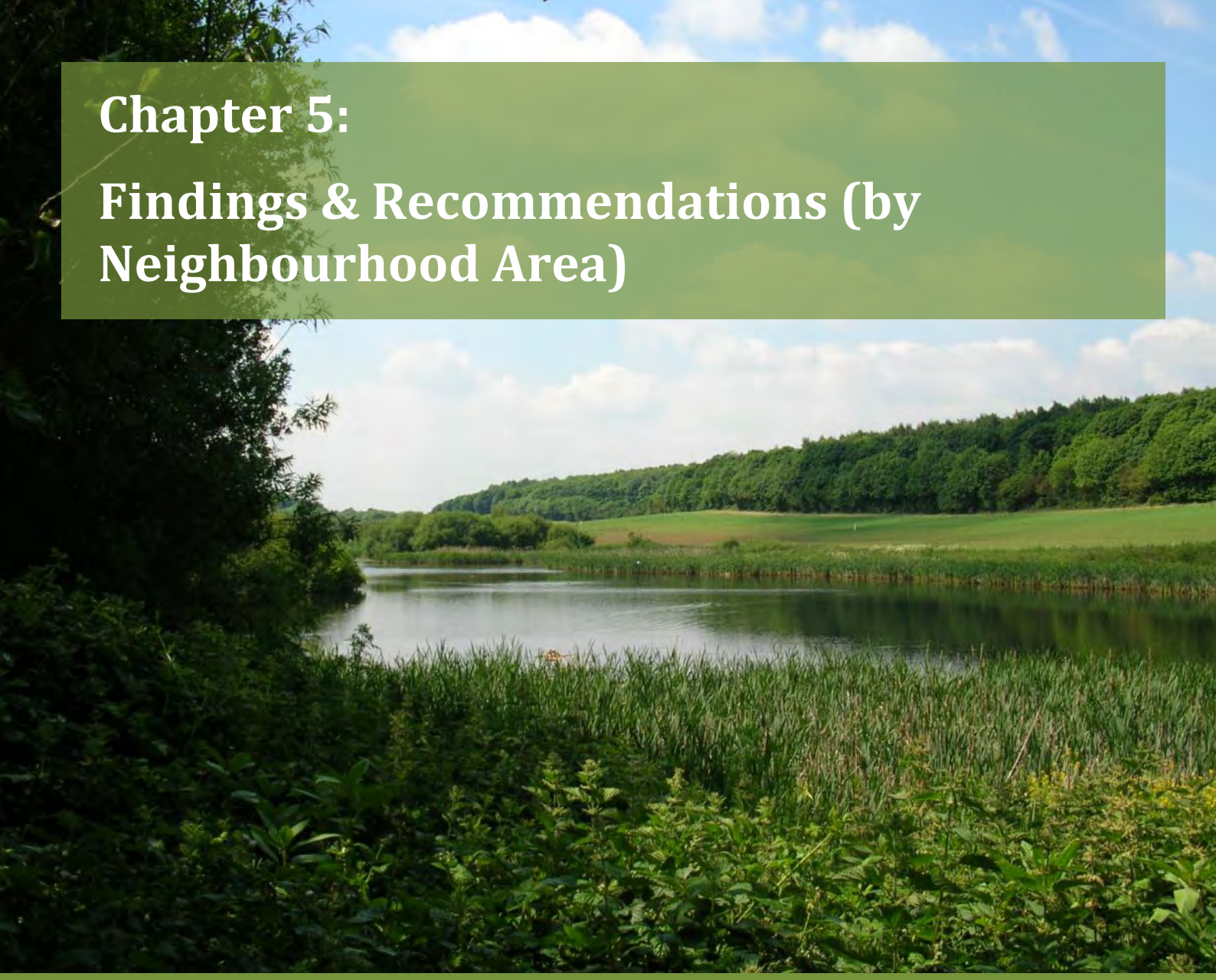
This project is a 25 year vision to create a low carbon and energy development corridor extending from Thorne and Hatfield Moors in the east to Thorpe Marsh Nature Reserve in the north that will attract a range of green businesses and renewable technologies within a high quality living and working environment. This corridor encompasses a 1,900 hectare carbon sink (Thorne and Hatfield Moors), wetland areas (e.g. River Don), wildlife corridors, cycle and walking routes and vast tracks of arable farmland to grow energy crops.

Activities within this area will focus on energy production (through the use of innovative technologies such as carbon capture, waste treatment and anaerobic digestion), wetland restoration (e.g. peatlands), flood risk management (e.g. sustainable drainage systems) and sustainable transport solutions (e.g. rail freight) which in turn will help reduce carbon emissions, improve air quality and mitigate the effects of climate change. It has the potential act as a national hub for energy technology and innovative place-making, putting Doncaster at the vanguard of the green revolution.

4.6 The above projects will provide case study examples of successful green infrastructure investment. Other potential projects include:

- the designation of a heritage townscape improvement area within Thorne Town Centre to facilitate the re-use and restoration of listed buildings, improve the amenity of the street scene, and access to the waterfront through green infrastructure interventions; and,
- a new leisure hub programme – a pioneering borough-wide initiative that aims to focus new community and recreational facilities (e.g. new gyms and health centres) within or close proximity to existing accessible green spaces, especially within areas with high levels of obesity and social deprivation to maximise co-location opportunities, such as joint services, multi-activity and meeting areas etc.

4.7 These projects are aspirational in nature and require further input from stakeholders to progress them from conception to implementation.



Chapter 5:

Findings & Recommendations (by Neighbourhood Area)

- Central Area
- North Area
- East Area
- South West Area

Above: Sprotbrough Flash

Central Area

5.1 The Central area includes Balby, Bessacarr & Cantley, Central, Town Moor, Wheatley and part of Finningley Wards. This area also includes the following green infrastructure corridors:

- R006 – Don
- S030 – Torne
- D066 - Sandall Beat/Loversall Link

Strengths

5.2 The Central Area has:

- 38 Local Sites, of which 2 are geological;
- 2 SSSI covering an area in excess of 180ha;
- 1 Local Nature Reserve (Sandall Beat Wood); and,
- 2 areas of Ancient Woodland.

5.3 The most species-rich grid squares in the Borough surround Potteric Carr SSSI (60 UK Biodiversity Action Plan & 202 Local Audit Species), and there are 'area' hotspots (on key sites along the River Don) and 'island' hotspots (at key sites such as Sandall Beat Wood SSSI). Key sites for notable and locally rare species include Petty whin at Doncaster Common, which features in the Mansion House stained glass window. In Doncaster it is at its northern most range in the UK and is predominantly restricted to this grassland/heathland site. Recent lowland acid grassland and heathland restoration at Doncaster Common has successfully restored UK Biodiversity Action Plan habitat.

5.4 The area contains the key woodland sites of Sandall Beat Wood and Cantley Wood. These are a vital habitat to conserve (and the wildlife it supports), a Co2 sink and are free for people to visit. Parts of the area include tree lined avenues and a high density of trees and hedgerows.

5.5 Key green space sites within the area include Potteric Carr, Sandall Beat Wood and the Racecourse. Lakeside provides an urban green boulevard which includes a 22 hectare lake and generous open space/landscaping. There are key formal open spaces at Town Fields (78.50 hectares), Elmfield Park (9.55 hectares), Sandall Park (19.44 hectares) and Cantley Park (40.88 hectares).

5.6 In relation to green routes, Sandall Beat Wood has good access and facilities for mobility impaired users. The area contains the Doncaster Greenway and Bessacarr cycle paths. There is access to waterways. The area includes the main routes out to Yorkshire Wildlife Park and Robin Hood Airport Doncaster Sheffield.

5.7 Doncaster Town Centre benefits from historic buildings and Conservation Areas. The Great North Road gateway to the town through Bennetthorpe/South Parade Conservation Areas is the historic approach from the south and consists of a wide, tree lined Georgian parade. All the buildings along South Parade are listed. Going south, this avenue character is picked up again in the Bessacarr Conservation Areas.

5.8 There are a number of historic parks and gardens, as well as other open spaces, which provide the setting to a number of historic buildings. Christchurch, Town Moor and Thorne Road are Conservation Areas. The railway and racing heritage of the town is reflected in the grade 2 listed station buildings and the grade 2 listed stand at the racecourse. The historic core of Warmsworth is a limestone village based around Warmsworth Hall. The section of roman wall in front of the Minster is a reminder of the roman origins of Doncaster. The Town Centre benefits from being the home of the major cultural assets of the borough, including the Minster, Theatre, Museum, and Library.

5.9 A strength of the area is the on-going, and potential, collaboration and support for partners, including:

- The Humberhead Levels Nature Improvement Area Project;
- The Humberhead Levels Heritage Lottery Fund Landscape Partnership Project which is being developed to complement and further the work of the Nature Improvement Area;
- 'Don Catchment Plan' Plan and Water Framework Directive funding;
- The River Torne Catchment Partnership;
- 'Revival' Partnership and Action Plans;
- Potential use of developer contributions and biodiversity offsetting; and,
- Potential to improve monitoring and informed decision making through better use of data, strategies and specialist advice.

Issues and Challenges

Strategic Approach

- Activities and operations are not always co-ordinated and informed by clear strategic direction.
- There is a lack of evidence for species populations and habitat condition monitoring, and a lack of appropriate management on some public sites and land holdings, to the detriment of wildlife.
- There is also a lack of understanding about the distribution, function and condition of trees across the borough. Pests and diseases and, in some places, an absence of care, threaten the long term future of our trees and woodland, leaving them prone to early destruction or environmental stress. However, tree work is sometimes carried out as a 'knee-jerk' reaction to a real or perceived problem with little regard to the future health, safety or appearance of the tree or the safety of property and the public.
- The quality and value information for green spaces is not yet known, and some areas are unsure of green space priorities, therefore further research and analysis is required.

Funding

- Changes to agri-environment funding streams (Farm stewardship and Woodland management) as a major land-use contributor to biodiversity conservation.
- Lack of funding and resources to either manage land appropriately or to effectively promote, inform and support others in delivering conservation.
- Pressure to sell green spaces currently owned by the Council.

Climate Change Impacts

- Range shifts for species and implications for pollinators of insufficient, poor quality and dis-connected foraging, nesting and larval habitats.
- Population growth and unsustainable demands on ecosystems.
- Increased surface run off from rainfall will exacerbate flooding and affect the local drainage network.

Land Use, Development and Infrastructure

- Pressures between different land users and uses.
- Development and its distribution and design, including impact on trees.
- Physical barriers to the migration of wildlife (major infrastructure development). For example, major arterial roads (e.g. M18, A638 and A18) and railway lines fragment connections from east to west and north to south. The new FARRRS road link could increase habitat severance.
- Agricultural intensification, and particularly pesticide use, and the loss and degradation of permanent features for wildlife (grassland, scrub, hedge).

Water Management

- Water abstraction/lowering the water table and impacting on wetland sites, e.g. Sandall Beat Wood drains.

- Unsympathetic management of the farmland drain network.
- Invasive species – particularly along watercourses, e.g. Floating Pennywort.
- Channel erosion issues along the River Don (below Doncaster Town Centre) and at river clearance locations.
- Improving access to waterways for rights of way may be hampered by landowner issues, suitability for users, cost and potential conflict with nature conservation.

Condition and use of existing assets

- Lack of adequate infrastructure in the woodlands, including maps, signage, interpretation, leaflets, decent paths, car parks.
- Relatively low levels of recreational participation and customer satisfaction.
- On some sites there are inappropriate and anti-social activities, as well as littering and dog fouling issues.
- Lack of connectivity between green spaces and visitor attractions and between the Town Centre and open countryside;
- Limited access on some areas of public rights of way network for less mobile, and some routes/cycle paths not suitable for equestrians.
- Routes fragmented in some areas.
- Trees form an important part of the historic character of the residential suburbs, particularly Bessacarr and around Town Moor. However, Doncaster has an aging street tree population which, over recent years, has been substantially reduced.
- The lowest density of tree canopy coverage corresponds to some of the more deprived areas of the borough where public housing is high.
- Unsympathetic alteration of historic buildings and areas is an issue in the more residential Conservation Areas with some vacancy in the Town Centre.

Health

- In the Wheatley Ward, there are high rates of all-cause mortality. The number of children assessed as being ready for school is lower than the Doncaster average and there are a higher number of young people classified as Not in Employment, Education, or Training (NEETs). In addition, there are a higher number of emergency admissions due to falls.
- The Central Ward has low life expectancy at birth. There are high rates of deaths for all causes, but in particular for deaths under 75 years due to coronary heart disease, circularity disease, stroke, Chronic Obstructive Pulmonary Disease, chronic liver disease and respiratory disease. There are a high number of NEETs and teenage conception is also higher than the Doncaster average. There are more children that are overweight and obese compared with the Doncaster average, but this is not a statistically significant difference. There are also a high number of hospital admissions due to falls.
- In Balby life expectancy is low for females and there are a high number of young people identified as NEETs.
- Within the Town Moor Ward there are a high number of deaths due to the cold.

Opportunities

Access and Engagement

- Increase the visitor potential of the area, including better and more legible signage and lighting, in the interests of community education and safety, and strengthen connections between the open spaces and tourist attractions.
- Woodlands, as well as other greenspaces, can be used as part of a drive for healthier lifestyles, such as bike hire, fitness classes, green gyms, running and walking, to the benefit of mental health and wellbeing and for educational purposes.
- Improving public access to privately owned woodlands.

- Influence the management of privately owned woodlands, where the opportunity arises, so that they are managed positively for wildlife and people.
- In the Central Area, increases are needed generally across the area in woodlands & nature conservation (informal x10 & formal x5) to meet Public Open Space requirements. Increasing the amount of and quality of informal children's play space and children's play equipment provision is also important.
- Access of Rights Of Way network for less mobile through removal of unnecessary barriers and improvements to surfacing on selected strategically important routes.
- Review and re-launch the existing community 'backyard biodiversity' resources.
- Improve interpretation of lesser known heritage assets in the Town Centre.

Key Sites

- Manage Statutory and Local Wildlife Sites and Local Geological Sites in a positive way for their special interests, to conserve and enhance their quality, including a programme of informed lowland acid grassland and heathland restoration at Doncaster Common.
- Deliver habitat restoration and creation projects within the wider landscape with conservation partners.
- Use key sites to implement and promote positive action, e.g. enhancing public parks for wildlife.
- Realise potential income in terms of selling standing timber and also firewood as a bi-product of smaller scale woodland management.
- Networks of privately owned woodlands are found within the countryside (e.g. golf courses) and waterway and railway corridors (e.g. canals and rivers). Care and management of privately owned woods will rest with private landowners, investors, companies, quangos, and charitable trusts.

Climate Change

- Use tree planting and woodlands to provide valuable habitat, intercept runoff, provide air cooling, improve air quality within Air Quality Management Areas, and reduce soil erosion.
- Woodland sequestration - carbon neutral fuel to power heating or combined heat and power equipment within buildings.
- Create wetlands and washlands along the river to improve resilience to flooding, improve fish passage and ecological connectivity, provide better access and recreation for local communities and visitors, re-naturalise river channels and restore modified watercourses, and promote improved water quality and diffuse pollution control at the catchment scale.

'Greening' of the Built Environment, Public Realm and Connectivity

- Improve green aspect and green infrastructure in Town Centre.
- Potential improvements to Hexthorpe Park, including investigating heritage grant scheme to make good its park features, improving its links with the river, and improve access to and paths along the south bank of the River Don.
- Link Town Centre with Hexthorpe Park.
- Creation of flower rich areas in towns and villages, including along roadside verges, alongside appropriate management of them.
- The inclusion of hedgerow planting and restoration helps to provide a year round nectar source for bees.
- Maximise the use of wildlife friendly Sustainable Drainage Schemes and green walls/roofs within developments.
- Improve wider habitat diversity/landscape heterogeneity to support more species. This works at any scale – especially for insect pollinators.
- Improve habitat connectivity between fragmented habitats.
- Preservation of long-established features and traditional management e.g. on ancient hedgerows.
- Eliminate/control invasive species.

- Link ancient woodlands with parks and areas of significant historical landscape or wildlife importance (e.g. Doncaster Green Gateway Project).
- Reverse the decline of mature tree coverage and increase the number and diversity of trees, especially in the most deprived areas and encourage tree planting along gateways leading into main urban areas and Town Centres (e.g. tree lined boulevards).
- Explore the possibilities to improve links between Elmfield Park, Regent Square, and Town Moor.

East Area

5.10 The East area includes Armthorpe, Edenthorpe, Kirk Sandall & Barnby Dun, Hatfield, Stainforth and Moorends, and Thorne Wards. This area also includes the following green infrastructure corridors:

- R006 – Don
- S028 – Thorne and Hatfield
- S030 – Torne
- S034 – Went
- D025 – Ea Beck
- D066 – Sandall Beat/Loversall Link
- D074 – Stainforth & Hatfield

Strengths

5.11 The East Area has:

- Humberhead Levels Nature Improvement Area which is 1 of 12 areas in England, where conservation activities should be focused for maximum national gain.
- 112 Local Sites of which 2 are geological.
- 4 SSSI covering an area in excess of 3,411ha and including 1 geological SSSI.
- 469 mapped ponds – the highest proportion of wetland sites in the Borough, concentrated around the Fishlake and Sykehouse areas.
- 2 Local Nature Reserves (Sandall Beat Wood and Buntings Wood, Thorne).
- 9 areas of Ancient Woodland.
- International designations: Special Protection Area and Special Area for Conservation (Thorne and Hatfield Moors).
- National Nature Reserve (Thorne and Hatfield Moors).

5.12 The most species-rich grid squares in the Borough surround Thorpe Marsh Reserve with 37 UK Biodiversity Action Plan and 115 Local Audit Species. 'Area' hotspots exist around Thorne and Hatfield Moors SSSI/NNRs/SAC/SPA and along key waterways, Went Valley SSSI, and also Local Sites along the River Don and Navigation. 'Island' hotspots exist at key sites such as Sandall Beat SSSI. Dunsville Quarry Park is also a key local site.

5.13 The area contains the key woodland site of Quarry Park. This is a vital habitat to conserve alongside the wildlife it supports. It acts as a Co2 sink and is free for people to visit. Parts of the area include tree lined avenues and a high density of trees and hedgerows.

5.14 Key green space sites within the area include Thorne and Hatfield Moors, Armthorpe Miners Welfare, Markham Main Woodland, Brosley Avenue, Buntings Wood, Far Field, and Glass Park.

5.15 In relation to green routes, the Green Space Audit identifies three green corridors within the East of the borough at Armthorpe, Hatfield, and Stainforth. The area benefits from a dense well connected network for walkers in the Fishlake, Moss, Sykehouse areas, the Trans Pennine Trail, Thorne and Hatfield Moors access land, the Cycle track from Long Sandall to Barnby Dun, and access to waterways.

5.16 The area benefits from key heritage assets including the historic market town of Thorne and the historic village of Hatfield, based around Hatfield Manor and Church. Thorne Memorial Park is a historic park and a substantial contributor to the Thorne Conservation Area. The River Don Villages (Kirk Sandall, Barnby Dun, Kirk Bramwith, Stainforth and Fishlake), rural farmsteads (e.g. Fenwick, Moss, Sykehouse) and Country Houses are also heritage assets; Lindholme Hall for example is on raised ground which marks it out from the rest of Hatfield Moors.

5.17 A strength of the area is the on-going, and potential, collaboration and support for partners.

- The Humberhead Levels Nature Improvement Area Project.

- The Humberhead Levels Heritage Lottery Fund Landscape Partnership Project is being developed to complement and further the work of the Nature Improvement Area.
- 'Don Catchment Plan' and Water Framework Directive funding.
- River Torne Catchment Partnership.
- 'Revival' Partnership and Action Plans.
- Potential use of developer contributions and biodiversity offsetting.
- Potential to improve monitoring and informed decision making through better use of data, strategies and specialist advice.

Issues and Challenges

Strategic Approach

- Activities and operations are not always co-ordinated and informed by clear strategic direction.
- There is a lack of evidence for species populations and habitat condition monitoring, and a lack of appropriate management on some public sites and land holdings, to the detriment of wildlife.
- There is a lack of survey work evidence on the distribution of superficial sediments, particularly exposed superficial sediments. Although this applies to other areas in the borough as well, it is particularly an issue regarding the biological SSSI areas within the Humberhead Levels Nature Improvement Area.
- Lack of understanding about the distribution, function and condition of trees across the borough. Pests and diseases and, in some places, an absence of care threaten the long term future of our trees and woodland, leaving them prone to early destruction or environmental stress. However, tree work is sometimes carried out as a 'knee-jerk' reaction to a real or perceived problem with little regard to the future health, safety or appearance of the tree or the safety of property and the public.
- The quality and value information for green spaces is not yet known, and some areas are unsure of green space priorities, therefore further research and analysis is required.

Funding

- Changes to agri-environment funding streams, including Farm stewardship and Woodland management, as a major land-use contributor to biodiversity conservation.
- Lack of funding and resources to either manage land appropriately or to effectively promote, inform and support others in delivering conservation.
- Pressure to sell green spaces currently owned by the Council.

Climate Change Impacts

- Range shifts for species and implications for pollinators of insufficient, poor quality and dis-connected foraging, nesting and larval habitats.
- Population growth and unsustainable demands on ecosystems.
- Increased surface run off from rainfall will exacerbate flooding and affect the local drainage network.

Land Use, Development and Infrastructure

- Pressures between different land users and uses.
- Development and its distribution and design, including impact on trees.
- Physical barriers to the migration of wildlife such as major infrastructure development. For example, major arterial roads and railway lines fragment connections from East to West and North to South.
- Agricultural intensification, and particularly pesticide use, and the loss and degradation of permanent features for wildlife (grassland, scrub, hedge).

- New development will need to provide comprehensive and wide landscape buffers to protect the setting of Thorne and Moorends and preserve the openness of the strategic gap between these settlements.
- Some settlements (Armthorpe and Edenthorpe; Armthorpe and Cantley; Kirk Sandall and Barnby Dun) are physically close together or have partially merged to form part of the continuous urban area. The open gaps between settlements are relatively narrow and contain a number of important landscape and wildlife features which are worthy of preservation. There is considerable development pressure in the green wedges making them particularly vulnerable to coalescence.
- The River Don, the Don Navigation, and its banks are assets that could be better utilised. The Power Station, pylons, and the spoil heaps of the mining industry detract from the visual appearance of the area.

Water Management

- Water abstraction and lowering the water table and impacting wetland sites, such as Sandall Beat Wood drains.
- Unsympathetic management of the farmland drain network.
- Invasive species – particularly along watercourses, e.g. Floating Pennywort.
- Channel erosion issues along the River Don and at river clearance locations.
- Improving access to waterways for rights of way may be hampered by landowner issues, suitability for users, cost and potential conflict with nature conservation.

Condition and Use of existing assets

- Lack of adequate infrastructure in the woodlands, including maps, signage, interpretation, leaflets, decent paths, and car parks.
- Relatively low levels of recreational participation and customer satisfaction.
- On some sites there are inappropriate and anti-social activities, as well as littering and dog fouling issues.
- Lack of connectivity between green spaces and visitor attractions.
- Rights Of Way around Fishlake, Moss, and Sykehouse area have very limited access for equestrians and limited access for less mobile. Not all of the Trans Pennine Trail is available to equestrians. Poor connectivity of Moors to remainder of rights of way network is an issue. Cycle track from Long Sandall to Barnby Dun covers only a short stretch and has a lack of promotional information.
- Doncaster has an aging street tree population which, over recent years, has been substantially reduced. The lowest density of tree canopy coverage corresponds to some of the more deprived areas of the borough where public housing is high.
- 3 communities are deficient in all types of green space - Fenwick, Moss and Owston.
- Vacancy and unsympathetic alteration of historic buildings and areas is an issue in the more built up conservation areas of Thorne and Hatfield, but is also seen elsewhere in this area.

Health

- Armthorpe Ward has low life expectancy for females at 75 years. There are high rates of all-cause mortality.
- Hatfield also has low life expectancy for females at 75 years. School readiness for children is also low.
- Stainforth and Moorends have low life expectancy at birth and low life expectancy at 75 years for men. There is a high rate of deaths from all-causes. There are a high number of young people classified as Not in Employment Education or Training (NEETs). The number of children that are classified as overweight and obese is higher than the Doncaster average, but not significantly so.

Opportunities

Access and Engagement

- Increase the visitor potential of the area, in particular visitor facilities for the Moors. Better and more legible signage and lighting, in the interests of community education and safety, and strengthen connections between the open spaces and tourist attractions.
- Woodlands, as well as other greenspaces, can be used as part of a drive for healthier lifestyles such as bike hire, fitness classes, green gyms, running and walking, to the benefit of mental health and wellbeing, and for educational purposes.
- Improving public access to privately owned woodlands.
- Influence the management of privately owned woodlands, where the opportunity arises, so that they are managed positively for wildlife and people.
- In the East area, increases are needed in Informal open space (x9), Formal open space (x6), Allotments (x2), Play equipment (various locations) and woodlands and nature conservation (some areas) to meet Public Open Space requirements. Increasing the amount of, and quality of, informal children's play space and children's play equipment provision is also important.
- Formalise equestrian access on Rights Of Way around Fishlake, Moss, and Sykehouse areas.
- Remove unnecessary barriers, improve surfacing on selected strategically important routes.
- Develop new links to Trans Pennine Trail. Identify additional routes to connect to the Thorne and Hatfield Moors. Possible extension north of Cycle track from Long Sandall to Barnby Dun. Promoted routes and information about what is available, such as facilities, published on the internet and hard copies made available.
- Review and re-launch the existing community 'backyard biodiversity' resources.
- Explore further and maximise the role of green tourism (e.g. Thorne and Hatfield Moors)
- Improve interpretation of heritage assets in Thorne and Hatfield.

Key Sites

- Manage Statutory and Local Wildlife Sites in a positive way for their special interests, to conserve and enhance their quality. South Yorkshire's identified top 20 areas for habitat enhancement include Neutral Grassland along the Ea Beck (Thorpe Marsh area) and River Don (Fishlake area) and River Went.
- Deliver habitat restoration and creation projects within the wider landscape with conservation partners.
- Use key sites to implement and promote positive action, e.g. enhancing public parks for wildlife.
- Realise potential income in terms of selling standing timber and also firewood as a bi-product of smaller scale woodland management.
- Networks of privately owned woodlands are found within the countryside (e.g. golf courses) and waterway and railway corridors (e.g. canals and rivers). Care and management of privately owned woods will rest with private landowners, investors, companies, quangos, and charitable trusts.

Climate Change

- Use tree planting and woodlands to provide valuable habitat, intercept runoff, air cooling, improve air quality within Air Quality Management Areas, and reduce soil erosion.
- Woodland sequestration - carbon neutral fuel to power heating or combined heat and power equipment within buildings.
- Create wetlands and washlands along the river to improve resilience to flooding, improve fish passage and ecological connectivity, provide better access and recreation for local communities and visitors, re-naturalise river channels and restore modified watercourses, and promote improved water quality and diffuse pollution control at the catchment scale.

'Greening' of the Built Environment, Public Realm and Connectivity

- Creation of flower rich areas in towns and villages, including along roadside verges, alongside appropriate management of them.
- The inclusion of hedgerow planting and restoration helps to provide a year round nectar source for bees.
- Town Centre improvement scheme for Thorne. Investigate heritage grant schemes.
- Improve access to and paths along banks of River Don connecting villages and possibly as far as Doncaster Town Centre.
- Maximise the use of wildlife friendly Sustainable Drainage Schemes and green walls/roofs within developments.
- Improve wider habitat diversity/landscape heterogeneity to support more species. This works at any scale – especially for insect pollinators.
- Improve habitat connectivity between fragmented habitats.
- Preservation of long-established features and traditional management e.g. on ancient hedgerows.
- Eliminate/control invasive species

North Area

5.18 The north area includes Adwick, Askern, Bentley, Great North Road, and Sprotbrough Wards. It includes the following green infrastructure corridors:

- R004 – Dearne
- R006 – Don
- S019 – Limestone Ridge
- S034 – Went
- D012 – Brodsworth
- D025 – Ea Beck
- D057 – Norton/Askern Link
- D064 – Roman Ridge Link

Strengths

5.19 The north area has:

- Dearne Valley Nature Improvement Area which is 1 of 12 areas in England, where conservation activities should be focused for maximum national gain.
- 117 Local Sites of which 12 are geological.
- 6 SSSI covering a total area in excess of 220ha and including 1 geological SSSI.
- 2 Country Parks (Cusworth and Campsall) which are a valuable resource for the Borough.
- 34 areas of Ancient Woodland.

5.20 The most species-rich grid squares in the Borough surround Sprotbrough Gorge SSSI and Cadeby Quarry SSSI with 29 UK Biodiversity Action Plan & 175 Local Audit Species, as well as the Earth Centre and Denaby Ings SSSI (30 UK Biodiversity Action Plan & 110 Local Audit Species. 'Area' hotspots exist along key waterways, converging along Bentley Common Local Wildlife Site and Arksey and Long Sandall Ings Local Wildlife Sites on the River Don. 'Island' hotspots exist at key sites including Cusworth and Campsall Country Park, Owston, Skelbrooke and Hickleton Parks & Owston Hay Meadow SSSI. Also at Brodsworth and Bentley Community Woodlands. Key Local Sites include Melton Wood (of limestone character) and Howell Wood (on the Coal Measures). The Roman Ridge also forms a long linear habitat corridor. The area includes key geodiversity assets associated with the house and grounds of Brodsworth Hall.

5.21 The area contains the key woodland sites of Melton, Howell and Campsall Woods. These are a vital habitat to conserve, as well as the wildlife they support. They act as a Co2 sink and are free for people to visit. Parts of the area include tree lined avenues and a high density of trees and hedgerows.

5.22 Key greenspace sites within the area include Adwick Park, Warren House Park, Askern Miners Welfare, Sprotbrough Gorge, Campsall Country Park, Carcroft Miners Welfare, Howell Wood, Cusworth Hall and Country Park, Melton Wood, Brodsworth Community Woodland, Bentley Community Woodland, and Highfields Country Park.

5.23 In relation to green routes, the area benefits from a dense well-connected network around Hooton Pagnell and Clayton for walkers, the Trans Pennine Trail, good access for all including less mobile (at Community woodlands, Bentley, Brodsworth, Warren House Park), and the Doncaster Greenway cycle route, including links onto the Trans Pennine Trail, Roman Ridge, and Highfields Country Park. There is also access to waterways.

5.24 This area contains two large green wedges of strategic importance to the west of the A1(M) motorway between Adwick-le-Street and outlying settlements. These green wedges play a vital long term role in preventing the coalescence of these settlements.

5.25 The area benefits from key heritage assets, including Brodsworth Hall and Cusworth Hall, each set in a listed historic park and are major heritage attractions with important views into and from the sites. There are a number of conservation villages, many of which are on the Magnesian Limestone ridge, or clearly influenced by it. The Roman Ridge adjacent to Woodlands is a Scheduled Monument.

5.26 A strength of the area is the on-going, and potential, collaboration and support for partners.

- The Dearne Valley Nature Improvement Area Project.
- A Dearne Valley Heritage Lottery Fund Landscape Partnership Project is being developed to complement and further the work of the Nature Improvement Area.
- 'Don Catchment Plan' Plan and Water Framework Directive funding.
- 'Revival' Partnership and Action Plans.
- Planned continuation of 'Loving Your Limestone' project.
- Explore use of developer contributions and biodiversity offsetting.
- Improved monitoring and informed decision making through better use of data, strategies and specialist advice.

Issues and Challenges

Strategic Approach

- Activities and operations are not always co-ordinated and informed by clear strategic direction.
- There is a lack of evidence for species populations and habitat condition monitoring, and a lack of appropriate management on some public sites and land holdings, to the detriment of wildlife.
- Lack of understanding about the distribution, function and condition of trees across the borough.
- There is a lack of detailed survey information on non-designated but significant geodiveristy assets, including those at Brodsworth Hall.
- Pests and diseases and, in some places, an absence of care threaten the long term future of our trees and woodland, leaving them prone to early destruction or environmental stress. However, tree work is sometimes carried out as a 'knee-jerk' reaction to a real or perceived problem with little regard to the future health, safety or appearance of the tree or the safety of property and the public.
- The quality and value information for green spaces is not yet known, and some areas are unsure of greenspace priorities, therefore further research and analysis is required.

Funding

- Changes to agri-environment funding streams, including Farm stewardship and Woodland management, as a major land-use contributor to biodiversity conservation.
- Lack of funding and resources to either manage land appropriately or to effectively promote, inform and support others in delivering conservation.
- Pressure to sell green spaces currently owned by the Council.

Climate Change Impacts

- Range shifts for species and implications for pollinators of insufficient, poor quality and dis-connected foraging, nesting and larval habitats.
- Population growth and unsustainable demands on ecosystems.
- Increased surface run off from rainfall will exacerbate flooding and affect the local drainage network.

Land Use, Development and Infrastructure

- Pressures between different land users and uses.
- Development and its distribution and design, including impact on trees.
- Impact of permitted Quarrying on adjacent Pot Riding Woodland SSSI.

- New development could result in the merging of settlements. Due to the development pressure in this area it is important to retain the existing open gaps between Adwick and Carcroft and between Adwick and the main urban area (Bentley and Scawthorpe) to preserve the separate identifies of these settlements and prevent them from merging. This area is vulnerable to speculative development owing to the proximity of the motorway and the main urban area.
- Impact on Trans-Pennine Trail of development and potential sale of Earth Centre.
- Physical barriers to the migration of wildlife from major infrastructure development. For example, major arterial roads (e.g. M18, A638 and A18) and railway lines fragment connections from East to West and North to South.
- Agricultural intensification, and particularly pesticide use, and the loss and degradation of permanent features for wildlife (grassland, scrub, hedge).

Water Management

- Water abstraction which is lowering the water table and impacting on wetland sites.
- Unsympathetic management of the farmland drain network.
- Invasive species – particularly along watercourses, e.g. Floating Pennywort.
- Channel erosion issues along the River Don and at river clearance locations.
- Pollution, sediment and metals within the Don Catchment watercourses – i.e. on the Ea Beck.
- Improving access to waterways for rights of way may be hampered by landowner issues, suitability for users, cost and potential conflict with nature conservation.

Condition and Use of Existing Assets

- Lack of adequate infrastructure in the woodlands, including maps, signage, interpretation, leaflets, decent paths, and car parks.
- Relatively low levels of recreational participation and customer satisfaction.
- On some sites there are inappropriate and anti-social activities, as well as littering and dog fouling issues.
- Lack of connectivity between green spaces and visitor attractions.
- The rights of way network around Hooton Pagnell and Clayton has limited access for equestrians. There's a distinct void in the network around Marr, Brodsworth, and Hickleton extending west. There is limited access on the public rights of way network for less mobile. Not all sections of the Trans-Pennine Trail are available to equestrians.
- None of the Doncaster Greenway cycle route, and not all of the Trans Pennine Trail, is suitable for equestrians. There is a lack of promotional information.
- Doncaster has an aging street tree population which over recent years has been substantially reduced. The lowest density of tree canopy coverage corresponds to some of the more deprived areas of the borough where public housing is high.
- Vacancy and unsympathetic alterations to historic buildings and areas is less of a problem in the villages of this area than elsewhere in the borough. However, unsympathetic alteration is an issue in the more suburban Conservation Areas.
- The conversion of rural buildings to residential uses is an issue. The 20th Century suburbs with large plots outside the Sprotborough Conservation Area is subject to backland development pressure. Increased pressure for wind farms and domestic solar power affect visual appearance.

Health

- Within the north, the Adwick Ward has low life expectancy at birth and at 75 years for females. The all-cause mortality rate is high and there are high rates of mortality from cancer, respiratory disease and smoking attributable deaths.
- There are a high number of young people identified as Not in Employment, Education or Training (NEETs) within the Bentley Ward.
- Within the Adwick and Bentley ward there are a higher number of children who are overweight and obese than the Doncaster average, but this is not statistically significant difference.

- The Askern Ward female residents have a lower life expectancy at 75 years of age, and there are a high percentage of children at reception that are classed as overweight and obese.

Opportunities

Access and Engagement

- Increase the visitor potential of the area through better and more legible signage and lighting, in the interests of community education and safety, and strengthen connections between the open spaces and tourist attractions.
- Woodlands, as well as other green spaces, can be used as part of a drive for healthier lifestyles, such as bike hire, fitness classes, green gyms, running and walking, for the benefit of mental health and wellbeing and for educational purposes.
- Improving public access to privately owned woodlands.
- Influence the management of privately owned woodlands, where the opportunity arises, so that they are managed positively for wildlife and people.
- Access of Rights Of Way network for less mobile is an issue. Remove unnecessary barriers and improve surfacing on selected strategically important routes. Develop new links on the Trans Pennine Trail (e.g. Adwick-upon-Dearne) and formalise access from Conisbrough.
- Review and re-launch the existing community 'backyard biodiversity' resources.
- Interpretation is a core activity with the major heritage assets, but there are opportunities to improve interpretation of heritage assets in particular with regard to the limestone villages and key listed buildings and distinctive village features.

Key Sites

- Manage Statutory as well as Local Wildlife Sites and Local Geological Sites in a positive way for their special interests, to conserve and enhance their quality. South Yorkshire's identified top 20 areas for habitat enhancement include: Neutral Grassland along the Ea Beck and River Don and Calcareous grassland at the Don Gorge and Limestone ridge.
- Deliver habitat restoration and creation projects within the wider landscape with conservation partners.
- Use key sites to implement and promote positive action, e.g. enhancing public parks for wildlife.
- Realise potential income in terms of selling standing timber and also firewood as a bi-product of smaller scale woodland management.
- Networks of privately owned woodlands are found within the countryside (e.g. golf courses) and waterway and railway corridors (e.g. canals and rivers). Care and management of privately owned woods will rest with private landowners, investors, companies, quangos, and charitable trusts.

Climate Change

- Use tree planting and woodlands to provide valuable habitat, intercept runoff, provide air cooling, to improve air quality within Air Quality Management Areas, and reduce soil erosion.
- Woodland sequestration - carbon neutral fuel to power heating or combined heat and power equipment within buildings.
- Create wetlands and washlands along the river to improve resilience to flooding, improve fish passage and ecological connectivity, provide better access and recreation for local communities and visitors, re-naturalise river channels and restore modified watercourses, and promote improved water quality and diffuse pollution control at the catchment scale. For example, potential flood storage and habitat creation at Bentley Ings.

'Greening' of the Built Environment, Public Realm and Connectivity

- Link green corridors and green wedges to wider green infrastructure network linking Adwick, Carcroft and other settlements to the main urban area.

- Public realm schemes in the centre of Conservation Areas.
- Creation of flower rich areas in towns and villages, including roadside verges, alongside appropriate management of them.
- The inclusion of hedgerow planting and restoration helps to provide a year round nectar source. This has been implemented successfully in Barnsley and Rotherham as part of the Nature Improvement Area Project, receiving public support.
- Improve wider habitat diversity/landscape heterogeneity to support more species. This works at any scale – especially for insect pollinators.
- Improve habitat connectivity between fragmented habitats.
- Preservation of long-established features and traditional management e.g. on ancient hedgerows.
- Eliminate/control invasive species.
- Maximise the use of wildlife friendly Sustainable Drainage Schemes and green walls/roofs within developments.
- Link ancient woodlands with parks and areas of significant historic landscape or wildlife importance.
- Reverse the decline of mature tree coverage and increase the number and diversity of trees, especially in the most deprived areas and encourage tree planting along gateways leading into main urban areas and town centres (e.g. tree lined boulevards).

South West Area

5.27 The South-west area includes Conisbrough and Denaby, Edlington and Warmsworth, Mexborough, Rossington, Torne Valley, and part of Finningley Wards. The area includes the following green infrastructure corridors:

- D006 – Bawtry Forest
- D021 – Denaby Crags
- D066 – Sandall Beat/Loversall Link
- S019 – Limestone Ridge
- S030 – Torne

Strengths

5.28 The South Area has;

- Dearne Valley Nature Improvement Area and Humberhead Levels Nature Improvement Area which are 2 of 12 areas in England, where conservation activities should be focused for maximum national gain.
- 129 Local Sites of which 16 are geological and represents the highest proportion in the Borough.
- 7 SSSI's covering an area in excess of 411ha and including 2 geological SSSIs. These conserve a critical reservoir of important species.
- 3 Local Nature Reserves: Hatchell Wood, Northcliffe Quarry, and Old Denaby Wetlands – the highest proportion in the Borough.
- 58 Areas of Ancient woodland – again, the highest proportion in the Borough.

5.29 The most species-rich grid squares in the Borough surround Potteric Carr SSSI (60 UK Biodiversity Action Plan & 202 Local Audit Species), Sprotbrough Gorge SSSI (29 UK Biodiversity Action Plan & 175 Local Audit Species found in the limestone grasslands and woodlands) and, Earth Centre and Denaby Ings SSSI (30 UK Biodiversity Action Plan &110 Local Audit Species). 'Area' hotspots exist along key waterways such as the Rivers Don, Dearne, Torne, and River Idle Washland SSSI. 'Island' Hotspots exist around key sites such as Wadworth and Edlington Woods SSSI, Bawtry Forest, Kings Wood and the Mosaic reserve, the Council woodlands and large parkland and golf courses towards the east of the Town Centre. The area includes key geodiversity sites within the former Earth Centre site and geodiversity opportunities associated with Cadeby Quarry SSSI.

5.30 The area contains the key woodland sites of Holmes Carr and Kings Woods. These are a vital habitat to conserve alongside the wildlife they support. They act as a CO2 sink and are free for people to visit. Parts of the area include tree lined avenues and a high density of trees and hedgerows.

5.31 Key green space sites within the area include Mosaic Trust, Rossington Miners Welfare, Holmes Carr Great Wood, Old Denaby Wetlands, Ian Wilson Community Sports Village, Rossington Brick Pond, Tickhill Recreation Ground, Tickhill Mill Dam, Wadworth Memorial Sports Ground, Warmsworth Park, and Levitt Hagg Wood.

5.32 In relation to green routes, the Green Space Audit confirms that the area contains three green corridors, totalling some 18.3 hectares. There are two green corridors within Edlington. The area benefits from the Doncaster Greenway cycle track, access to waterways and permissive access into Bawtry Forrest. A green wedge provides a strong green buffer between Rossington, Bessacarr and Hayfield, being predominately open and rural in nature. It also has amenity and landscape value as it has a coherent and unified character and forms part of a wider strategic green infrastructure corridor from Potteric Carr in the west to the River Torne in the east.

5.33 The area benefits from Conisbrough Castle as a key heritage asset and attraction. There are a number of settlements with Conservation Areas and Tickhill and Bawtry are both attractive historic towns. In terms of archaeology, as well as a number of Scheduled Monuments, such as market crosses within the villages, the Scheduled Roman Camp at Rossington is also of interest.

5.34 A strength of the area is the on-going, and potential, collaboration and support for partners.

- The Dearne Valley and Humberhead Levels Nature Improvement Area Projects.
- 2 Heritage Lottery Fund Landscape Partnership projects are being developed to complement and further the work of the Nature Improvement Areas.
- 'Don Catchment Plan' Plan and Water Framework Directive funding.
- River Torne Catchment Partnership.
- 'Revival' Partnership and Action Plans.
- Planned continuation of 'Loving Your Limestone' project.
- Explore use of developer contributions and biodiversity offsetting.
- Improved monitoring and informed decision making through better use of data, strategies and specialist advice.

Issues and Challenges

Strategic Approach

- Activities and operations are not always co-ordinated and informed by clear strategic direction.
- There is a lack of evidence for species populations and habitat condition monitoring, and a lack of appropriate management on some public sites and land holdings, to the detriment of wildlife.
- Lack of understanding about the distribution, function and condition of trees across the borough.
- There is a lack of up to date survey information on non-designated geodiveristy sites, including superficial sediments and soils on the Magnesian Limestone outcrop.
- There is a lack of information on accessible Geological Viewpoints.
- Pests and diseases and, in some places, an absence of care threaten the long term future of our trees and woodland, leaving them prone to early destruction or environmental stress. However, tree work is sometimes carried out as a 'knee-jerk' reaction to a real or perceived problem with little regard to the future health, safety or appearance of the tree or the safety of property and the public.
- The quality and value information for green spaces is not yet known, and some areas are unsure of green space priorities, therefore further research and analysis is required.

Funding

- Changes to agri-environment funding streams, including Farm stewardship and Woodland management, as a major land-use contributor to biodiversity conservation.
- Lack of funding and resources to either manage land appropriately or to effectively promote, inform and support others in delivering conservation.
- Pressure to sell green spaces currently owned by the Council.

Climate Change Impacts

- Range shifts for species and implications for pollinators of insufficient, poor quality and dis-connected foraging, nesting and larval habitats.
- Population growth and unsustainable demands on ecosystems.
- Increased surface run off from rainfall will exacerbate flooding and affect the local drainage network

Land Use, Development and Infrastructure

- Pressures between different land users and uses.
- Development and its distribution and design, including impact on trees. While there is no impending threat of settlement coalescence, the open character of the green wedge will become increasingly vulnerable to development pressure. The north western edge of the green wedge is particularly vulnerable given its linear form and proximity to the M18 motorway, Inland Port and several proposed housing sites. The underlying character of the area between Bessacarr,

Rossington and Finningley will change as a result of transport infrastructure (e.g. new FARRRS link road) and new development (e.g. the Airport Business Park).
- Physical barriers to the migration of wildlife from major infrastructure development. For example, major arterial roads (e.g. M18, A638 and A18) and railway lines fragment connections from East to West and North to South.
- Agricultural intensification, and particularly pesticide use, and the loss and degradation of permanent features for wildlife (grassland, scrub, hedge).

Water Management

- Water abstraction and lowering the water table and impacting wetland sites.
- Unsympathetic management of the farmland drain network.
- Invasive species – particularly along watercourses, e.g. Floating Pennywort.
- Channel erosion issues along the River Don (below Doncaster Town Centre) and at river clearance locations.
- Improving access to waterways for rights of way may be hampered by landowner issues, suitability for users, cost and potential conflict with nature conservation.
- No information on the distribution of exposed bedrock, superficial sediment and soil profiles within river and other watercourse systems.

Condition and Use of existing assets

- Very large area at 171 km squared with major variation in green space provision between communities. Major deficiencies in all types of green space in some areas, Loversall and Micklebring for example.
- Lack of adequate infrastructure in the woodlands, including maps, signage, interpretation, leaflets, decent paths, and car parks.
- Relatively low levels of recreational participation and customer satisfaction.
- On some sites there are inappropriate and anti-social activities, as well as littering and dog fouling issues.
- Lack of connectivity between green spaces and visitor attractions and between the Town Centre and open countryside.
- Distinct void in network for all users around north-west Tickhill, Stainton, Braithwell, and Wadworth. Sparse network around Finningley, Auckley and north-east Branton for all users. Limited access on public rights of way network for less mobile.
- Doncaster Greenway cycle track surface is not suitable for equestrians. Permissive access into Bawtry Forrest, which is an isolated area with no direct Public Rights Of Way links. Lack of promotional information.
- There are significant opportunities for the creation of accessible geodiversity assets within the disused and active quarries in the Stainton area that may also provide opportunities for calcareous grassland habitat creation.
- Doncaster has an aging street tree population which over recent years has been substantially reduced. The lowest density of tree canopy coverage corresponds to some of the more deprived areas of the borough where public housing is high.
- Vacancy and unsympathetic alteration is an issue in the more built up Conservation Areas of Mexborough and Conisbrough, but is also seen elsewhere in this area.
- The conversion of rural buildings to residential uses is an issue.
- Increased pressure for wind farms and domestic solar power affect visual appearance.

Health

- The Conisbrough and Denaby Ward has low male life expectancy. The death from all causes rate is high with lung cancer and smoking attributable deaths also higher than the Doncaster average.
- Mexborough Ward has low life expectancy and high death rates due to all causes, there are high rates of mortality owing to Coronary Heart Disease, Chronic Obstructive Pulmonary Disease and

all respiratory disease. There are a low number of children identified as ready for school at Key Stage 1. The Excess Winter Death rates are high in this Ward.

- The Rossington Ward has low female life expectancy at birth for females. At 75 years, life expectancy is low for both males and females. There are also high mortality rates from all causes. School readiness is low. There are a high number of hospital admissions for fracture of head of femur which is caused predominantly by falls in older people.

Opportunities

Access and Engagement

- Increase the visitor potential of the area with better and more legible signage and lighting, in the interests of community education and safety, and strengthen connections between the open spaces and tourist attractions.
- Provide facilities to support the recreational enjoyment of the natural environment, whilst protecting natural assets in 'honeypot' areas, in particular provision of car-parking in the Don Gorge and climbing facilities to displace unauthorised activity within the Don Gorge SSSI.
- Woodlands, as well as other green spaces, can be used as part of a drive for healthier lifestyles such as bike hire, fitness classes, green gyms, running and walking, for the benefit of both mental health and wellbeing and for educational purposes.
- Improving public access to privately owned woodlands.
- Influence the management of privately owned woodlands, where the opportunity arises, so that they are managed positively for wildlife and people.
- Access of Public Rights Of Way network for less mobile is an issue. Remove unnecessary barriers and improve surfacing on selected strategically important routes. Promotional material - promoted routes, information about what is available, e.g. facilities, should be published on the internet and hard copies made available.
- Review and re-launch the existing community 'backyard biodiversity' resources.
- Improve interpretation of heritage assets in particular with regard to the southern limestone villages and key listed buildings and distinctive village features.

Key Sites

- Manage Statutory as well as Local Wildlife Sites and Local Geological Sites in a positive way for their special interests, to conserve and enhance their quality. South Yorkshire's identified top 20 areas for habitat enhancement include:
    - Broadleaved native woodland – Edlington/Wadworth wood area.
    - Calcareous grassland – Don Gorge and Limestone Ridge.
    - Neutral Grassland – along the River Torne, and along the Dearne at Mexborough Ings
    - Fen, Marsh and Swamp – along the Idle at Bawtry Carr, along the River Torne (south of Tickhill and Auckley area), and Blaxton Common.
- The planned installation of a fish pass at Sprotbrough weir will help overcome the biggest barrier to the return of salmon to the Don Catchment rivers.
- Deliver habitat restoration and creation projects within the wider landscape with conservation partners.
- Use key sites to implement and promote positive action, e.g. enhancing public parks for wildlife.
- Explore and maximise Green tourism opportunities, e.g. Conisbrough Castle.
- Realise potential income in terms of selling standing timber and also firewood as a bi-product of smaller scale woodland management.
- Networks of privately owned woodlands are found within the countryside (e.g. golf courses) and waterway and railway corridors (e.g. canals and rivers). Care and management of privately owned woods will rest with private landowners, investors, companies, quangos, and charitable trusts.

Climate Change

- Use tree planting and woodlands to provide valuable habitat, intercept runoff, provide air cooling, to improve air quality within Air Quality Management Areas, and reduce soil erosion.
- Woodland sequestration - carbon neutral fuel to power heating or combined heat and power equipment within buildings.
- Create wetlands and washlands along the river to improve resilience to flooding, improve fish passage and ecological connectivity, provide better access and recreation for local communities and visitors, re-naturalise river channels and restore modified watercourses, and promote improved water quality and diffuse pollution control at the catchment scale.

'Greening' of the Built Environment, Public Realm and Connectivity

- Public realm schemes in the centre of major conservation areas of Bawtry, Tickhill, Mexborough and Conisbrough.
- Creation of flower rich areas in towns and villages, including roadside verges, alongside appropriate management of them.
- The inclusion of hedgerow planting and restoration helps to provide a year round nectar source. This has been implemented successfully in Barnsley and Rotherham as part of the Nature Improvement Area Project, receiving public support.
- Improve wider habitat diversity/landscape heterogeneity to support more species. This works at any scale – especially for insect pollinators.
- Improve habitat connectivity between fragmented habitats.
- Preservation of long-established features and traditional management e.g. on ancient hedgerows.
- Eliminate/control invasive species.
- Maximise the use of wildlife friendly Sustainable Drainage Schemes and green walls/roofs within developments.
- Reverse the decline of mature tree coverage and increase the number and diversity of trees, especially in the most deprived areas and encourage tree planting along gateways leading into main urban areas and town centres (e.g. tree lined boulevards).

Glossary of Terms

Above: View Across Doncaster Common Towards Race Course

Air Quality Management Ares (AQMA)	An area where the national air quality objectives cannot be met; from this the Local Authority will put together a plan to improve the air quality called a Local Air Quality Action Plan.
Biodiversity	The variety of different life forms found in an area including all types of plants and animals.
Biodiversity 2020	Government Strategy which transposes the findings from the White Paper on the Natural Environment into 4 strategic priority work areas.
Biodiversity Opportunity Area	An area where the creation of new habitats or wildlife features, and the restoration of existing ones, is expected to deliver the greatest benefit for biodiversity.
Biomass	Plant materials and animal waste used as fuel.
Community Infrastructure Levy (CIL)	The Community Infrastructure Levy (CIL) is a relatively new tariff approach for obtaining contributions from developers towards infrastructure projects. CIL is charged at a £/m2 of development area at a rate determined by local viability evidence base, as well as having regard to infrastructure needs of the area. CIL is discretionary so Local Authorities do not have to charge it.
Community Profile Area	A spatial scale smaller than Ward boundary and developed by the Primary Care Trust. The borough of Doncaster has 88 Community Profile Areas.
Doncaster Biodiversity Action Plan	A plan that outlines wildlife and conservation priorities and provides guidance on how we can protect and enhance biodiversity.
Doncaster Geodiversity Action Plan	A plan that outlines geological and geomorphological priorities and provides guidance on how we can protect and enhance geodiversity.
Ecosystems Services	The valuable benefits that people get from a healthy natural environment.
Fields in Trust (FiT)	Independent national organisation responsible for acquiring, protecting and improving playing fields including playgrounds and provides an advisory service for play, sport and recreation.
Geodiversity	The variety of different minerals, rocks, fossils and landforms that determine the landscape and character of our natural environment.
Green Space	Land which is used for recreation, amenity, nature conservation, allotments, woodlands and other open space uses; it is usually but not necessarily greenfield.
Green Space Audit	Study that identifies the borough's green open spaces and assesses the quantity, accessibility, quality and value of them.
Green Space Standards	Standards by which the different types of green spaces are assessed to determine whether the level of provision is sufficient for the borough and in the right locations.
Green Infrastructure Corridor	A number of interlinked functions such as open space, land productivity, flood risk mitigation and wildlife that connect different green infrastructure assets such as parks, woodlands and floodplains across the wider network of green infrastructure
Green Wedge	Green wedges comprise the open areas around and between settlements, which maintain the links between built-up-areas and the countryside, prevent the coalescence (merging) of settlements and provide recreational opportunities. The key wedges are areas of strategic importance to the setting and identity of the settlements, providing a number of functions in the interests of protecting and promoting access to the countryside.
Heritage Asset	A building, monument, site, place, area or landscape positively identified as having a degree of significance meriting consideration in planning decisions. Heritage assets are the valued components of the historic environment. They include designated heritage assets such as listed buildings, conservation areas, historic parks and gardens and archaeological remains as well as assets identified by the local planning authority during the process of decision-making or through the plan-making process (including local listing).
Heritage Lottery Fund (HLF)	The body responsible for distributing a share of the income from the National Lottery to projects aimed at preserving and making accessible the nations heritage.
Local Development Framework (LDF)	The new statutory development plan; it replaces the Unitary Development Plan. The Core Strategy is the first part of the new development plan.
Local Geological Site	Area designated by the local authority for its geological interest.
Local Wildlife Site (LWS)	Area designated by the local authority for its wildlife interest.

Local Geological Site (LGS)	Area designated by the local authority for its geological interest. In Doncaster LGS include Regionally Important Geological Sites (RIGS) of national to sub-regional importance.
Magnesian Limestone (Dolostone)	A sedimentary rock formed by the dolomitisation of limestones. The Magnesian Limestone in Doncaster Borough is of late Permian age.
National Planning Policy Framework (NPPF)	The National Planning Policy Framework sets out the Government's planning policies for England and how they should be applied.
Nature Improvement Areas (NIAs)	Initiative from the Government's White Paper on the Natural Environment/Biodiversity 2020 Strategy. 2 of England's 12 NIA's now fall partly within Doncaster – The Dearne Valley & Humberhead Levels NIAs. These landscape scale areas have been identified as areas in which to conservation activities should be targeted
NEETs	A young person who is classed as not being in either education, employment or training.
Proposals Map	This shows formal allocations and designations made through Development Plan Documents.
Public Rights of Way (PROW)	Public rights of way are open to everyone. They can be roads, paths or tracks and can run through towns, countryside and private property. As such, you have the right to walk along them. Some rights of way are also open to horse riders, cyclists or motorists.
Scheduled Monuments	These are 'nationally important' archaeological sites or historic buildings, given protection against unauthorised change.
Section 106 Agreement (S106)	A Section 106 Agreement under the Town & Country Planning Act 1990 (as amended) are a mechanism for making development proposals acceptable in planning terms, that would otherwise be unacceptable. They are used for site specific mitigation and include contributions from developers for either on/off site open space, affordable housing, or highways.
Sites of Special Scientific Interest (SSSI)	Designated by Natural England and are afforded protection due to their importance as some of the Country's best examples of wildlife sites. Geological SSSI area are selected by JNCC on a minimalistic basis for sites within the British isles, and designated by Natural England with each geological feature of national importance represented by one or an associated series of geological SSSIs.
Special Area of Conservation (SAC)	This is a designation designed to conserve habitats and species that are rare or threatened in Europe.
Special Protection Area (SPA)	This is a designation designed to safeguard the habitats of vulnerable, threatened or migratory birds.
Tree Preservation Order (TPO)	A Tree Preservation Order (TPO) is an Order made by the Council in respect to tree(s) because the tree is considered to bring amenity value to the surrounding area. The Order makes it an offence to cut down, uproot, prune, lop or damage the tree in question without first obtaining the Council's consent. A TPO can apply to a single tree, a group of trees or a woodland.

Appendix 1:
Green Space Types/Categories

Above: View Towards Brodsworth Hall

Green Space Type	Definition
Allotments	Areas of land, which are cultivated by the public as small plots. They include statutory and non-statutory allotment sites and smallholdings and include all sites irrespective of ownership or management.
Amenity (housing, road verge and other)	Amenity areas are public open spaces that improve and enhance the appearance of the local environment. Generally, amenity areas are either unsuitable for recreational use or recreational use is prohibited, and as a result they are distinct from informal open space suitable for children's play. They include road verges, roundabouts, and amenity areas in housing developments. 'Amenity (other)' is also an included category to cover areas that provide opportunities for alternative recreational activity (such as model aircraft flying and horse racing) or are council owned and capped landfill sites used for passive recreation such as dog walking.
Cemetery	A burial ground generally laid out in the form of a park. Churchyards are also included in this category
Formal	Outdoor sports facilities including pitches, greens, courts and athletics tracks
Formal (school)	As above but within the education sector which are available for public use through written agreement
Golf course	Areas laid out for playing the sport of golf
Green corridor	An area connecting or capable of connecting green spaces to improve green infrastructure and wildlife connectivity.
Informal	Casual un-equipped playing space within residential areas, or areas for children and young people containing a range of facilities and an environment that has been designed to provide focused opportunities for outdoor play
Public parks	Areas of land which are public gardens, recreation or pleasure grounds containing walks and facilities for passive or active recreation
Nature conservation areas	Accessible designated and un-designated wildlife and geodiversity areas containing habitats that contribute toward local, regional or national biodiversity and provide opportunities for passive and active recreation, and environmental education
Woodland	
Green Space of Local Value	A green area close to the local community, which has local significance or community value (see NPPF para.77)

Appendix 2:

Green Infrastructure Corridor Identification Process

Above: Kings Wood, Bawtry

Stakeholders

The following groups were involved in the study:

- A stakeholder group coordinated by NE which included representatives of local authorities within South Yorkshire, the Forestry Commission, Pennine Prospects, the Wildlife Trusts, and Leeds City Region.
- A GI working group was set up within DMBC which included:
    - Natural England;
    - Environmental Planning (represented by the Ecologist Planner, Landscape Planning Officer, Tree and Hedgerow Officer, Environmental Planning Officers);
    - Public Rights of Way;
    - Development Management;
    - Urban Renaissance;
    - LDF Housing and Employment;
    - Tourism Officer;
    - Pollution Control (Air Quality); and,
    - Neighbourhood Services (Countryside Interpretation, Community Parks).

The organisations involved by Natural England at a regional level are summarised below:

- Agencies and Statutory Bodies:
    - Government Office, Yorkshire and Humber Assembly, Forestry Commission, Environment Agency, British Waterways, English Heritage, Yorkshire Dales National Park, North York Moors National Park, Defra, Welcome to Yorkshire, and Natural England (East Midlands, North East, North West)

- Local Authorities:
    - Kirklees, Calderdale, Bradford, City of York, Leeds, Wakefield, Barnsley, Sheffield, Rotherham, Doncaster, Craven, Harrogate, Selby, Ryedale, Hambleton, Richmondshire, Scarborough, North East Lincolnshire, North Yorkshire County Council, Lancashire County Council, Oldham, Rochdale, North Lincolnshire, Hull, and East Riding of Yorkshire.

- Voluntary Sector:
    - Sheffield Wildlife Trust, CPRE, Heywoods, Dreamweavers, South Pennines Association, RSPB, Yorkshire Wildlife Trust, Sustrans, National Trust, Woodland Trust, Wheatlands Educational Community Woodlands

- Private Sector:
    - Ecotec, ARUP, Knight Kavannah Page, Yorkshire Water, and CUDEM

- Representative/Other:
    - Pennine Prospects, White Rose Forest, West Yorkshire Ecology, South Yorkshire Forest, South Yorkshire biodiversity, Leeds City Region, Forest of Burnley, Airedale Partnership, Bradford Environment Forum, Natural Economy North West, Pennine Heritage, Places for People, Nidderdale AONB

Process

STEP 1 - Mapping of existing physical green infrastructure assets

The process started by creating a baseline dataset of existing green infrastructure assets. This was achieved by pulling together GIS green space and green infrastructure data from Natural England and partner organisations. This covered existing sites such as open spaces, nature reserves and woodland in Doncaster. Regional and local green infrastructure data sets were produced relating to Doncaster Borough and adjacent authorities showing actual site boundaries. List of all mapped green infrastructure assets – green sites and designated land:

- Wildlife Trusts sites
- Local Authority green space, parks, sports pitches, recreation grounds and allotments
- Unitary Development Plan/Local Development Framework information
- Designated Sites (SPA, SAC, Ramsar, SSSI, NNR, LNR, SEGI, SINC, RIGS)
- Countryside Rights of Way open access land
- Registered Common Land
- Woodland sites (FC Land, Woodland Trust Land, Ancient Woodland)
- Yorkshire Water accessible land holdings
- BAP Habitats
- RSPB Reserves
- National Trust land
- National Parks & Heritage Coast
- Country Parks
- Areas of Outstanding Natural Beauty
- Rivers, flood zones, washlands, waterlogged ground, lakes, waterbodies, canals
- Public Rights of Way, National Trails, Cycleways and Greenways

- Cemeteries & Churchyards
- Historic Data (Historic Parks & Gardens, SAMs, Historic Environment Record, World Heritage Sites)
- Indicative habitat network
- Air Quality Management Areas
- Outdoor tourist attractions
- Conservation Areas
- Group tree preservation areas
- Schools and colleges with grounds

STEP 2 - Mapping sites with potential for introducing green infrastructure

Next, sites which did not constitute green infrastructure assets in themselves, but might have potential to introduce it such as derelict land, were collected and mapped. Additional data which helped with understanding the functions of green infrastructure, but was not site based, e.g. area health statistics was also collected. List of all mapped data which may have potential for green infrastructure:

- Previously Developed Land
- Housing Market Renewal Areas
- Mineral sites
- Regeneration Zones (local)
- Proposed new green spaces (local)
- Disused railways
- Historic Landfill sites
- Coalfield sites

STEP 3 - Mapping of green infrastructure corridors

The next stage involved holding a series of workshops. Two initial workshops were held with Natural England and other partners from neighbouring local authorities, the Forestry Commission, Pennine Prospects, the Wildlife Trusts and Leeds City Region, to assess data and identify green infrastructure corridors linking with adjacent local authorities. Participants at the workshops were asked to examine maps which included all the data collected from stages 1 and 2 and use their local knowledge of land use, land ownership, planning policy and local initiatives, to develop corridors and networks of green infrastructure.

The functionality and connectivity between different green infrastructure assets was considered. Firstly in terms of how single functions of green infrastructure can be linked, for instance connecting public open space together into corridors. Secondly in terms of linking multifunctional assets together such as connecting a designated nature area to other green infrastructure assets such as a lake or a historic tourism site. Participants were also asked to consider realistic opportunities to increase green infrastructure based on known proposed initiatives such as major redevelopment schemes. These were considered over the full Local Development Plan timescale to ensure that not just immediate opportunities for green infrastructure were included.

The work was not completed at the initial workshops and two further workshops were held internally within Doncaster Council. Both these workshops were attended by officer's of the council and chaired by Natural England. Those involved were invited from a wide variety of disciplines to reflect the multifunctional nature of green infrastructure including

- Green space/Parks & Countryside
- Nature Conservation/Ecology, Rights of Way, sport and recreation, Geographic Information and the historic environment.

The first workshop held on 31st July 2009 used the green infrastructure evidence base to identify and draw the corridor boundaries. Corridors were defined on maps using physical boundaries on the ground such as roads and rail lines to define the edges and to ensure future legibility. These maps were then digitised by Natural England. The maps were then circulated within Doncaster Council in order to verify the boundaries and identify any omissions.

Other Data Used (in addition to that listed previously):

- Agricultural Land Classification - indicates soil type which can infer likelihood of different habitat expansion success;
- Health - Combined Health Index (Obesity, Mental, Coronary Heart Disease, Chronic Obstructive Pulmonary Disorder);
- Integrated Access/Access Network mapping;
- Sport England active citizen participation survey;
- Education - School results data – Key stage 4 average uncapped GCSE and post 16 average 3 point score per student;
- Index of Multiple Deprivation.

There are a number of caveats for all site based data used:

- The sites included have not been individually assessed as part of the mapping process for quality, accessibility, safety for use, environmental/ecological value or similar;
- Areas which are not included in the "Green Asset" layer cannot be assumed to not be green and/or do not have green infrastructure value – it's just that those areas are not available in GIS mapped form.
- Individual areas of farmland and private gardens have not been included as the volume of information would have taken the project considerably longer and the value of including it was considered limited.

STEP 4 - creating a hierarchy of corridors

A further internal workshop attended by the Doncaster Council working group and chaired by Natural England was held on 21st August 2009 to look again at the green infrastructure corridors they had defined in the earlier workshops. The purpose of the workshop was to:

1. Check the corridor boundaries;

2. Agree the green infrastructure functions that each corridor contained; and,

3. Place the green infrastructure corridors into a hierarchy.

Each Corridor was scored against the following set of key indicators or functions:

- Open Space – Contains open space assets such as parks and woodlands
- Biodiversity – Contains one or more site of significant wildlife value
- Landscape – Contains at least one landscape feature worthy of protection or enhancement
- Products of the land – Includes areas in agricultural or food production
- Mitigating Flood Risk – Contains floodplain, areas at risk from flooding or areas where green infrastructure could be used to reduce run off into flood risk areas
- Contribution to mitigating Climate Change – Contains areas which are, or could be, managed for non flooding climate change mitigation through, carbon sequestration in areas such as peatlands, managed woodlands or locations for energy crop production
- Health – Includes Air Quality Management Areas or locations with populations with poor health where green infrastructure can be used to increase outdoor activity or address pollution issues
- Accessibility – Contains rights of way allowing access by foot, cycle or horse riding along the corridor
- Recreation – Contains formal and informal outdoor recreational assets such as golf courses, play areas and sports pitches
- Education – Visitor centre or site already used for environmental education
- Cultural – Contains gardens, cemeteries, historic features or buildings with public access
- Tourism – Includes tourism assets which would form part of at least a day trip for people from outside the immediate area
- Poor quality environment – Contains existing poor quality environments which could be improved with investment in green infrastructure
- Land and property values – Areas where investment in green infrastructure would be likely to positively affect local land and property values
- Economic Growth– Includes areas where development is proposed and increased green infrastructure is likely to attract further economic investment e.g. higher value industry

Each corridor was scored according to the number of functions found to exist in the corridor. Participants of the workshop took a strategic approach towards identifying which functions were present and significant in each corridor. Sites providing very localised green infrastructure functions, such as incidental open space, were not scored as having a strategic function. Depending on how many functions were present a category for each corridor was determined. This was based on the number of functions present, the corridor size and local knowledge of initiatives and likely opportunities for interventions. The corridor categories are given below:

- Strategic/Regional – Likely to cross several local authority boundaries and demonstrates 13 to 15 functions;
- Sub-regional – Likely to cross two or more local authority boundaries and demonstrates 10 to 13 functions;
- District – Likely to be contained within a single local authority or simply connect two localities across a boundary and demonstrates 8 to 11 functions; and,
- Local – Likely to be contained within a defined locality and demonstrate 7 or less functions.

The number of functions in each category overlaps i.e. a corridor scoring 11 functions could be both sub-regional and district. In the pilot work, carried out by Natural England it was found that having absolute number of functions for each category was too rigid. This was because a few corridors demonstrated a high number of functions but were too small in scale to be considered as being categorised at a higher level. In these cases these corridors were examined in great detail to place them in the right category taking into account their scale and the degree to which each function was present.

Three maps were produced by the Natural England Team. These were:

1. Doncaster Metropolitan Borough Council Green Infrastructure Corridor Map showing all Doncaster Council Green Infrastructure corridors: local, district, sub-regional and regional.

2. Yorkshire and Humber Green Infrastructure showing the corridor boundaries at 1:50,000 scale. This map shows district, sub-regional and regional GI corridors.

3. Yorkshire and Humber diagrammatic Green corridors map (This map was amended by Doncaster Council to show the Barnsley Council boundary).

After the workshop the output was distributed for consultation, among those who attended and colleagues in their teams, as well as other relevant officers (i.e. in departments that equate to the green infrastructure function themes) throughout the council. A small number of changes were subsequently made to reflect omissions of green infrastructure assets or refine corridor boundaries.

A Yorkshire and Humber regional scoring table was produced by Natural England which placed each corridor in the hierarchy. The scores of some green infrastructure corridors in Doncaster were increased by Natural England to reflect the importance of the corridors outside the borough where they perform additional functions. A number of minor changes to the corridor boundaries were also made by Natural England such as the division of the River Don and Dearne green infrastructure corridor into the River Don green infrastructure corridor and the River Dearne green infrastructure corridor. This was necessary to describe the wider context of these corridors.

Natural England produced a map on behalf of Doncaster Council showing the boundaries and locations of local, district, sub-regional and regional green infrastructure corridors. Natural England also plotted the green infrastructure corridor boundaries for the Yorkshire and Humber Region at a scale of 1:50,000 and a diagrammatic corridor map in which the corridors were represented in a simplified form by single lines. The map places emphasis on the hierarchy and strategic linkages of green infrastructure corridors. This map was adapted by Doncaster Council to show Doncaster's Borough boundary within the context of the wider region. Based on these maps a simplified map of green infrastructure was included in the Local Development Framework Core Strategy.

STEP 5 - Corridor descriptions

In order to provide a robust evidence base justifying the functions identified in the corridors and the hierarchy of each corridor a table was developed. This included:

- A description of each corridor explaining the main features and key future opportunities for green infrastructure ;
- Evidence against each function to justify its inclusion, for example if the biodiversity function had been identified then sites such as SSSIs were named.

Doncaster Council prepared descriptions of green infrastructure corridors and their functions within Doncaster borough based on local knowledge and contributions from members of the working group. Other local authorities who share the same green infrastructure corridors also prepared descriptions and these were assimilated by Natural England in produce representative evidence base. Not all sites in the corridors were listed as this would have resulted in an unmanageably large amount of data. However sufficient sites and opportunities were included to ensure justification for each function. Natural England adjusted the hierarchy of some corridors to reflect their regional importance. The Regional Don and Dearne River green infrastructure corridor identified in the workshops was divided into the Don green infrastructure corridor and the Dearne green infrastructure corridor to reflect their connectivity across the region.

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