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for

Bolsover District Council.

Final Report.

June 2008.
In preparing this study David Tyldesley and Associates would like to acknowledge the valuable contributions offered by officers of Derbyshire Wildlife Trust, Natural England, The Bolsover Countryside Partnership and Bolsover District Council.
Summary.

Bolsover is a district of a mainly rural nature, although it displays a clear legacy from its mining and industrial heritage in terms of social, economic and environmental characteristics. Partly because of these Bolsover has been identified through regional scale research as being an area where improved management and delivery of Green Infrastructure is likely to deliver the most cost effective and most beneficial outcomes to the wider community.

Green Infrastructure, at the broadest level, is the network of natural or semi-natural green environmental features and spaces (including water) which contribute to and support a healthy, functional and robust natural environment which in turn can significantly contribute to quality of life to local communities and visitors alike. This can be through opportunity for relaxing and healthy recreation, alleviation of some climate change impacts and reduction in its causes, strengthening of local landscape and townscape character, securing important habitat space and linkages between important sites and presenting attractive alternatives to motorised transport.

The political and policy drivers which have raised the profile of Green Infrastructure at the district level are varied and have until recently often referred to Green Infrastructure in all but name. Its profile has been much elevated recently following the publication of the revised PPS12 which specifically highlights Green Infrastructure provision as being a key objective for Local Development Frameworks. The PPS gives the first national policy definition of Green Infrastructure, but it is clear that the constituent parts of a Green infrastructure resource will be varied and the combinations of features which make that resource will also differ from place to place. This study therefore sets out those features which can be seen to be important components of the Green Infrastructure resource across Bolsover.

For any future strategy which seeks to foster and expand Green Infrastructure across the district it is firstly necessary to examine what constitutes the network within the local context. This study has identified the strengths and weaknesses of the current extent and condition of strategic Green Infrastructure across Bolsover. This has found that in many respects there is a strong framework of accessible quality environmental spaces across the district which contributes, or has the potential to contribute, to the quality of life of the local community and visitors to the district. In particular a series of Green Infrastructure Core Assets (GICA) is identified which should be considered as the underpinning framework of the district’s wider Green Infrastructure network within all land-use and land-management policy and decision making in the future. The green Infrastructure resource is also seen as important in supporting the biodiversity, landscape and natural systems of the district during times of significant growth forecasts and pressure on the local environmental resource at a time of climate change.

Following this assessment of the existing assets and shortfalls, proposals are then set out for a series of outline actions by which the overall Green Infrastructure resource across the district can be enhanced and better connected with quality environmental spaces and amenities, including through improved linkages with Green Infrastructure assets within neighbouring districts.

Green Infrastructure management is dependent on more than the focused creation of new assets or management of exiting green spaces. The study also suggests a series of measures or considerations to be integrated within all planning and land management decision making processes which over time will serve to incrementally support the enhancement and resilience of the Green infrastructure of Bolsover.

As proposed by PPS12 (2008), spatial planning is perhaps the key tool at the disposal of communities for the building and supporting of future Green
Infrastructure networks and value. The study sets out a draft policy for consideration as a component part of Bolsover’s Local Development Framework Core Strategy.
Introduction

Purpose of the Report.

‘Green Infrastructure’ has been dramatically elevated in its spatial planning profile since it first emerged as a concept in respect to strategically significant growth objectives as presented within the national Sustainable Communities Plan (ODPM, 2003) and Regional Spatial Strategies (such as the East of England Plan, 2005) in the early part of the decade.

National and regional spatial policy now supports the adoption of Green Infrastructure planning at the local level. Regional Planning studies have identified the potential for maximising ‘public benefits’ from focused Green Infrastructure enhancement and management in specific areas that experience environmental, social and economic difficulties such as the Nottinghamshire and Derbyshire coalfield.

Hence as Bolsover moves towards the adoption of its Local Development Framework there is both a requirement and a desire to maximise the benefits of an integrated approach to Green Infrastructure planning and understanding within the spatial and public investment processes.

This study seeks to inform the enhancement of Green Infrastructure planning in Bolsover, although it is not a Green Infrastructure plan. It sets out to:

- clarify the concept of Green Infrastructure in Bolsover context;
- Summarise the national and regional policy influences which have resulted in Green Infrastructure becoming an integral component of sustainable local development planning and community policy;
- Identify the strengths and weaknesses in the existing Green Infrastructure network across Bolsover;
- Identification of key areas for protection and enhancement of the exiting resource and suggest a series of foci for Green Infrastructure enhancement whereby maximum socio-economic and environmental benefits may be secured
- Set out principles for Green Infrastructure planning in Bolsover; and
- Set out a starting point for inclusion of a Green Infrastructure policy within the emerging Local Development Framework Core Strategy for Bolsover.

It is important to recognise the scope of this study as being strategic in its nature. This study is not a comprehensive audit of the extent and quality of Bolsover’s Green Infrastructure components, nor does it seek to provide any comprehensive overview of the important work programmes of key bodies and agencies which have a huge influence on the management and future of the resource across the district. Much of this valuable work and investment will be focused on specific elements, such as habitat management, which are valid components of Green Infrastructure but are focused on single issues. Whilst acknowledging the vitally important work being carried out by such stakeholders, this study seeks to provide an independent overarching, strategic perspective of the well-being and functionality of the Green Infrastructure network, as a multifunctional environmental asset, and sets a starting point for the development of a subsequent more detailed audit of assets and detailed strategy of future management and priorities.
PART 1

What is ‘Green Infrastructure’?

In recent years there has been government acceptance of the need for a step-change in housing and employment-space delivery across much of England in response to increasing demand and affordability issues. Government policy now supports a period of significant planned growth across the country, particularly in respect to housing pressures in the south and east, as embodied within the Sustainable Communities Plan, Growth Points and Eco-Town initiatives. New and emerging Regional Spatial Strategies have tended to reflect the need for greater levels and rates of development than historically experienced across most parts of the UK. This pressure arises at a time when there is enhanced understanding of the impacts of development and human activity on the environment, and as the implications of climate change are demanding a positive response, partially through the planning system.

The suite of national Planning Policy Statements which has accompanied the changes to the planning system since the move to Regional Spatial Strategies and Local Development Frameworks under the Planning and Compulsory Purchase Act 2004, has acknowledged the need for greater levels of growth, but seeks to ensure that development is delivered in a balanced and sustainable way. Delivering sustainable development and facilitating better ‘quality of life’ are embedded core objectives for the planning system. Until 2008 Green infrastructure was not overtly recognised by the PPS suite. However the revised PPS12 – ‘Creating strong safe and prosperous communities through Local Spatial Planning’ (2008) provides a significant elevation in the concept’s profile. It states one of the advantages of a spatial planning systems as being the ability to ‘orchestrate the necessary social, physical and green infrastructure to ensure sustainable communities are delivered’. It goes on to provide a definition of Green Infrastructure (see below).

Hence, Government commitment to deliver sustainable growth means that increases in housing and job opportunity should be mirrored by social, environmental and transport infrastructure delivery, matching the rate of the step-change in housing completions.

The statutory environmental agencies and other organisations - particularly Natural England and its predecessors, have recognised that as well as the need for these vital supporting services to sustainable growth, there is an equally important need to ensure that communities have proportionate enhancement and increases in access to quality green spaces and corridors which link existing and new development with the best of the countryside around and beyond those urban settlements. These assets and opportunities to access and enjoy them are recognised as having potentially very significant benefits in respect to quality of life, community health, biodiversity, landscape, sustainable movement, adaptation to climate change and natural system changes and consequently the economic well-being of local communities. This system of multi-functional spaces and environmental assets has become widely known as ‘Green Infrastructure’. Green Infrastructure has been described as part of the ‘life-support system’ of an area (West Midlands GI Prospectus 2006).
Green Infrastructure is an important concept at all scales. Emerging and recent Regional Spatial Strategies have overtly recognised the fundamental importance of Green Infrastructure as a concept at the regional scale, where major assets and the interconnectivity of them need to be protected, enhanced and further connected so as to enhance the quality of life for all communities, and to be provided as planned elements of growth across the regions. At a district or local level the concept is equally relevant and equally important in securing enhancement to existing and expanding communities’ quality of life. Where Local Development Frameworks propose spatial strategy where significant growth is to be focused, provision of enhanced Green Infrastructure should be a fundamental underpinning feature of that growth profile. Even where growth is at a less intensive rate Green Infrastructure should still be an important element of securing more sustainable futures.

There are many definitions of Green Infrastructure, although these tend to have clear commonalities. PPS12 sets out a strategic interpretation of green Infrastructure, as being a ‘network of multi-functional green space, both new and existing, both rural and urban, which supports the natural and ecological processes and is integral to the health and quality of life of sustainable communities’.

Other definitions can be seen to have a core set of key characteristics and functions as follows:

- **Is of significant habitat and biodiversity value** - as individual places, but especially as a functional ecological network;
- **Makes a positive influence** on landscape character and the settings of urban areas and smaller settlements;
- **Presents opportunities for informal and organised outdoor leisure activities**;
- **Provides opportunities for sustainable non-vehicular transport** and communication routes;
- **Can be urban and rural, greenfield or brownfield, in terms of location and characteristics**;
- **Can facilitate and complement the functionality of natural systems and processes, such as functional flood plains; and**
- **Can help people and biodiversity adapt to climate change, and contribute to combating its causes through habitat connectivity and role as carbon sinks and green transport corridors.**

The environmental assets which together form a Green Infrastructure network can therefore be extremely varied in type, composition, extent, accessibility and ownership. However, typically a network of Green Infrastructure at a local level might include linear and area features as follows:

- **Green Spaces and Patches**
  - Parks - neighbourhood, playing fields, pocket parks, country parks,
  - Gardens,
  - Allotments,
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- Cemeteries
- Village greens,
- Communal green-spaces and landscaped areas in development,
- Woodland – from very small to large areas,
- Community Forests,
- Historic parks and gardens
- Heritage sites where the outdoor setting or interest is significant
- Naturalised, or naturalising derelict land
- Ponds, lakes, reservoirs and flooded surface minerals workings
- Designated sites for wildlife and geological conservation, national, regional and locally designated
- Habitat rich agricultural land, or land being positively managed for biodiversity enhancement,
- Land being positively managed for enhanced public access or landscape,
- Important landscape tracts and features.

- Green Corridors
  - Hedges,
  - Verges,
  - Railway cuttings and embankments – used and disused,
  - Ditches and drainage networks
  - Avenues of trees, hedgerow trees, urban trees,
  - Watercourses and their bankside environments
  - Canals and towpaths
  - Public Rights of Way, footpaths, bridleways, green lanes and tracks and other concessionary access.

The value of a Green Infrastructure network is enhanced by its connectivity between important open spaces, and its ability to be accessed and enjoyed close to where people live and work. Green Infrastructure is not a rigid entity, and is likely to be a dynamic network which can change and grow, be healthy and robust or decline in extent, quality or value. Importantly, Green Infrastructure needs to be planned and managed, particularly in the context of growth and pressure on environmental assets. Even though significant parts of the network may be green or semi-natural, in reality all elements of the open and natural environment in England are significantly influenced by human activity and the choices we make in relation to them.

Waymarking - Whitwell Woods

The health, understanding and overall wellbeing of the local community has been seen to be improved as a result of access to local green spaces that have natural qualities and spaces where wildlife can be observed and enjoyed. This is recognised and promoted by Natural England, which has developed specific targets for the accessibility of habitat rich green spaces within and close to communities - Accessible Natural Green Space Targets (ANGST). The connections between people and wildlife and a healthy ‘natural’ environment develop mutual benefits; with overall improvements in the wellbeing of the local community and a greater understanding and enjoyment of the natural environment, with a likely consequence being a greater participation by the local community in the conservation of those natural assets.

Green Infrastructure can also be viewed as a potentially valuable tool in addressing the challenges of Climate Change. Its benefits may be twofold. Firstly its role as a linked network of spaces and linear
features can serve to encourage more sustainable forms of recreation and movement. Provision of attractive recreation and movement routes adjacent to where people live and work may serve to reduce the overall level of trip generation by motorised vehicles, and hence reduce the need to travel and consequent vehicle emissions. Secondly, it has an important role to play in allowing the natural environment, and our role within it, to adapt to the inevitable changes which climate change will bring. For example a key benefit of securing a functional network of habitats, linear natural features and an increase in semi-natural spaces will be fundamental in facilitating the movement and colonisation of species to more suitable ‘climate space’. Bolsover lies in an area of broad transition between the lowland south and east of England, and the northern uplands. Many established species will need to move and adapt to more suitable climate space, but this will only be possible where there are routes and opportunities to do so. Whilst this is a very generalised description of the very complex concept of biodiversity adaptation, it is clear that the availability of wildlife corridors and habitat spaces will be absolutely essential in the general adjustment and composition of biodiversity in England as climate changes. Furthermore, landscape and natural systems are likely to display natural responses to climate change. Agricultural practice and profitability may alter as climate changes, altering its landscape influence along the way. Appropriate Green Infrastructure management and protection can help to strengthen the landscape character and amenity value of the district as the summers generally become drier and winters wetter (UKCIP). Similarly, climate change is expected to bring wetter winters and more significant rainfall events in the summer. This will raise the threat of flooding in certain localities, although the river system in Bolsover is relatively minor. Nevertheless, ‘permeable’ urban green spaces in particular, but also woodland and semi-natural green space management can help moderate surface water run-off which contributes to localised flooding, whilst also benefiting landscape, biodiversity and recreational opportunity.

It is clear that Green Infrastructure, in its many forms and functions is a fundamentally sustainable concept and should be a cornerstone on which to secure more sustainable communities in the future. Whilst the term may be new, many of its component parts have for many years been recognised and valued, and often managed positively. However the pressure for growth, increased recognition of the positive links between local environmental quality and the well being of local communities, and the need to slow the rate of and adaptation to climate change has elevated its importance as a coherent concept, requiring joined-up policy and action.

Green Infrastructure is sometimes confused with ‘environmental infrastructure’. Environmental Infrastructure is the engineered framework of systems used to manage water storage, supply and disposal, sewage and its treatment, coastal and river flood management and defences. Whilst there will often be close parallels with the roles of Green Infrastructure and Environmental Infrastructure, they are not the same or interchangeable concepts.

It is important therefore that within Bolsover, a clearer recognition of what constitutes Green Infrastructure and why it is so important is established, recognising where it is robust, valued and functional, and where there are gaps or deficiencies in its extent, usage and functionality. In
doing so, opportunities to maximise assets, and counter negative characteristics across the district’s Green Infrastructure resource can be identified and objectives and actions put in place so as to achieve recognised priorities.
PART 2.

A Policy Framework Context for Green Infrastructure in Bolsover.

This study is partly driven by a desire to better understand, plan and manage the Green Infrastructure resource of Bolsover. However it is also heavily influenced by the specific requirements of Regional policy to integrate Green Infrastructure planning into the spatial planning system at a local level. This section briefly summarises the drivers for the mainstreaming of Green Infrastructure into day to day planning and management of Bolsover’s natural environment.

A fuller illustration of the major drivers of Green Infrastructure policy is set out at Appendix 1.

Figure 1 sets out a diagrammatic interpretation of the core drivers for Green Infrastructure management and spatial policy in Bolsover:
The term ‘Green Infrastructure’ has been increasingly utilised since 2000 and has largely been associated with the Government’s Sustainable Communities Plan and the subsequent framework of new regional plans and strategies. However, it has its roots in thinking that goes back several decades, encompassing concepts of urban parks, landscape ecology, ecological networks, greenways and green routes. The term itself originates in the United States in the mid-1990s to describe the concept of integrating the importance of the natural environment in decisions about land use planning.

In the UK Green Infrastructure planning is increasingly recognised as a valuable concept within spatial planning and is referred to in national, regional and local planning policy documents and strategies. This has been most clearly demonstrated by the overt reference to the value of Spatial Planning to the delivery of green infrastructure in the revised PPS12. An overview of Green Infrastructure policy in the England is set out at Appendix 1.

Critically for Bolsover, the Regional Spatial Strategy (as emerging in early 2008) has set a lead for Local Development Frameworks to address Green Infrastructure Planning at the local level (although under a joint policy coverage with Environmental Infrastructure).

Policy 27 states:

**Policy 27: Regional Priorities for Environmental and Green Infrastructure**

*Local Authorities, statutory environmental bodies and developers should work with the voluntary sector, landowners and local communities to ensure the delivery, protection and enhancement of Environmental Infrastructure across the Region. Such infrastructure should contribute to a high quality natural and built environment and to the delivery of sustainable communities. Local Authorities and those responsible for the planning and delivery of growth and environmental management across the Region should work together to:

- assess the capacity of existing Environment Infrastructure to accommodate change in order to inform decisions on the scale, location and phasing of new development. Account should be taken of current deficits and likely future demands, including those likely to result from climate change, to identify any further needs or constraints;
- select appropriate indicators and targets to monitor the condition of Environmental Infrastructure and to ensure that its capacity to accommodate change is not breached;
- ensure that the provision and design of new Environmental Infrastructure is considered and its delivery planned through environmental capacity analysis at the same time as other infrastructure requirements;
- develop ‘Green Infrastructure’ plans based on character assessments of existing natural, cultural and landscape assets and the identification of new assets required to meet the needs of existing and expanding communities;
- increase access to green space that can be used for formal and informal recreation, educational purposes and to promote healthy lifestyles; and
- identify delivery and funding mechanisms for the creation and future management of Green Infrastructure, including from the planning system and other funding sources such as EU funded Environmental Stewardship Schemes.*
As well as Government Planning guidance and Regional Policy setting a very firm foundation on which to build local frameworks for action, other drivers add to the broadening consensus as to the importance and scope of Green Infrastructure as a practical application of the broader concept. Natural England, the Government’s advisor on the natural environment, biodiversity, landscape and the enjoyment thereof is developing internal policy to guide its engagement in all aspects of policy development and agenda setting, including its involvement within spatial planning. It affords high importance to the development and management of multi-functional, interconnected, accessible green spaces which serve to afford multiple benefits to local communities and visitors to an area. As a statutory consultee in the development plan process, it is clearly appropriate that Bolsover should seek to accommodate Natural England’s agenda for the management and planning of the natural assets across the district where possible.

Locally, the Bolsover Local Strategic Partnership’s Housing and Environment Group annual review of the Sustainable Community Strategy (2007/2008) has identified three priority actions in pursuit of a more sustainable future across the community. It specifically seeks to ‘place greater emphasis on improving Green Infrastructure…..’ and hence further underlines the need for better understanding of the resource within Bolsover.

This rapidly emerging policy framework sets a clear agenda and strong basis on which to develop Green Infrastructure policy within the Bolsover Local Development Framework (see part 5), and subsequently secure protection and appropriate management and expansion of the Green Infrastructure network across the district.

In order to develop locally specific and effective spatial policy, it is necessary to have a clear understanding of the characteristics, extent and condition of Green Infrastructure components across the district, as examined within Part 3.

Overview and Green Infrastructure Core Assets.

Whilst characterised in many places by its mining and industrial heritage, the essentially rural nature of Bolsover district affords its communities and visitors a relatively rich Green Infrastructure network, with the existing resource well established in several respects. However, there are significant variations and disparities across the study area in the quality, variety and extent of a coherent Green Infrastructure network, as examined below. Moreover, the best of these assets will often be subject to concentrated visitor use, and this pressure is only likely to increase with raised awareness of environmental and health issues across the community, and the sub-regional growth proposals in the East Midlands, focused on the three cities of Nottingham, Derby and Leicester.

There are a small number of very significant Green Infrastructure assets within Bolsover which constitute the foci of its recognised Green Infrastructure Network. These are important for combinations of their habitat, historic, landscape, access and amenity values. These are:

- **Creswell Crags** and the wider heritage area
- **Bolsover Castle and grounds**
- **Hardwick Hall, Country Park and its wider landscape context**
- **The Doe Lea corridor** and its series of reclaimed industrial sites and nature reserves.
- The district wide **Multi-User Trails Network** and various adjacent spaces, on former rail-line trackbeds. (Note, not shown on figure 2, see figure 7)

![Hardwick Hall and parkland, a GICA](image)

The GICA are fundamental elements of the district’s wider resource. They are special places and assets which would be of significant value wherever they occurred. Whilst the individual components of the woodlands and historic sites and landscapes are clear focal points of great value, it is perhaps the multi-user trail network which presents the district with its most important true Green Infrastructure asset, offering extensive non-motorised access to the countryside from main settlements, allowing for healthy exercise, peaceful recreation and sustainable transport along wildlife rich linear routes. The Doe Lea corridor differs in several ways from the other GICA in that it is a partially new resource which has arisen from the reclamation of derelict industrial and mining sites close to the district’s boundary.

**Bolsover’s Green Infrastructure Core Assets ‘GICA’. (see figure 2)**

- The ‘**Bolsover Woodlands and Grasslands**’ (a loose network of extensive woodlands and pockets of unimproved grasslands) and including the **Country Parks** at Poulter and Pleasley

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with North East Derbyshire and is in close proximity to the M1. This network of landscaped tips, paths, open space, ponds and the river itself affords multiple opportunities for recreation and contact with nature as a consequence of its diverse and rich habitats and proximity to Bolsover and other settlements on the western district fringe.

However, these assets only constitute the most significant elements of the Green Infrastructure of Bolsover, and on their own would be insufficient to provide adequate 'life-support' to the community. However, there is a more widespread network of Green Infrastructure assets across the district, of which these core assets are the centrepieces.

The settlement and population distribution of Bolsover – villages and small towns within an essentially rural district, affords widespread and immediate access to open countryside for most communities, often of good amenity value, particularly in the central and northern parts of the district. This is a strong feature of the district’s Green Infrastructure resource and presents a solid foundation upon which strategically significant enhancement can be built.

Conversely there are some problems associated with the accessibility of open countryside across the district, and particularly the trails and woodlands which often afford secluded areas. Fly-tipping and vandalism is apparent in several locations, undermining the efforts of public and voluntary organisations’ work to enhance the Green Infrastructure resource across Bolsover.

The southern towns of Pinxton and South Normanton sit within a denser area of settlement, population and recent industrial and commercial development within and outside the district, and are located close to the M1 and A38 corridors. Consequently these communities are less well positioned to access good quality open space and natural environmental assets than elsewhere in Bolsover. Likewise the interconnectivity and extent of habitats or semi-natural spaces in the most southerly parts of the district are fragmented. The characteristics of Green Infrastructure in the southern area, allied to its larger settlements suggest the need for a focused enhancement of the Green Infrastructure resource in the Pinxton and South Normanton area.

The following sections examine more specifically the state of the core components of the Green Infrastructure resource in Bolsover.
Public Rights of Way and Access Green Infrastructure.

Some parts of the district have a dense Public Rights of Way network, affording good access to open countryside from most settlements. Areas particularly well served include countryside around Tibshelf and Newton, around Hardwick Hall and in a west-east band across the settlements and rural hinterlands of Barlborough, Clowne, Creswell and Whitwell.

However, in some areas there is a recognisable dearth of Public Rights of Way (see figure 3). Whilst this judgement is not made against any agreed standards for density or accessibility to rights of way, it is clear that there is an area of notable deficiency from the town of Bolsover (and Shuttlewood) in a broad band to the eastern district boundary, broadly reflecting an area of intensive arable farming on the limestone plateaux. It is not clear whether there has been historical losses of public access across this area, but the core issue in respect to improved Green Infrastructure provision will be how to redress this shortfall whilst recognising its agricultural importance. Other areas where the network of paths is sparse are between Bolsover and Glapwell, to the west of South Normanton and South West of Shirebrook. These areas should be a focus for improvements to the Rights of Way Network. Whilst the relevant footpath Improvement plan seek to address concerns of user groups in respect of condition, waymarking and access, there does not appear to be focused approach to increasing the density of footpaths in areas where provision is low, and this should be addressed in future RoWIP reviews.

A major Green Infrastructure asset in Bolsover is the network of rail track beds across the district which once served the dense distribution of collieries and industrial sites. A number of these have been successfully managed and promoted for multi-user access trails, such as the Blackwell, Stockley, ‘5 Pits’ and Rowthorne Trails. These offer level, accessible and motor-free routes for people, often relate well to settlements and afford very important linear habitats - important in respect to linking semi-natural spaces and facilitating species migration in response to habitat loss and climate change.

The habitat value of the trails can be significant, particularly because of their linear characteristics, enhancing habitat connectivity. However there are inevitable conflicts which arise between the undeveloped former track-beds and those managed for access and subject to heavy use. Managed and widened routes suitable for multi-user trail ‘status’ may compromise its existing or potential habitat value, particularly in respect to track-bed flora and invertebrate value, rather than embankments and cuttings which are generally less affected by use. Such conflicts must be taken into consideration when addressing enhancement of the trail network (see part 4), and decisions taken as to the relative worth of retained habitats and species, and the benefits offered by fostering public accessibility.
A significant opportunity for enhancement of the trails networks exists in respect of remnant trails where formal access is not currently permitted (but informal access is commonplace along some stretches), for example, Clowne to Pleasley and in the north west of the district between Spinkhill and Barlborough. Proactive measures should be taken to develop these routes as multi-user trails and habitats (see part 4). For example, Derbyshire County Council and its local partners are in the process of investigating the improved interconnectivity of such trails under the Bolsover Loop Greenway project.

Informal access is apparent on the non-designated track bed north west of Barlborough

**Landscape.**

Landscape character and its relative quality varies considerably across the district. The Joint Character Areas prepared by the Countryside Agency and English Nature (1996) divides the district into two parts. The western fringe and most of the southern area falls within the ‘Nottinghamshire, Derbyshire and Yorkshire Coalfield’ JCA, whilst the eastern and northern sections mainly fall within the ‘Southern Magnesian Limestone’ JCA. The Derbyshire Landscape Character Assessment – ‘The Landscape Character of Derbyshire’ (2004) further refines these Landscape Character types into locally defined units, the following occur within Bolsover:

- **Nottinghamshire, Derbyshire and Yorkshire Coalfield** (western fringe of the district)
  - Coalfield Village Farmlands
  - Estate Farmlands
  - Wooded Farmlands
  - Coalfield Estatelands

- **The Southern Magnesian Limestone:**- (north and eastern parts of the district)
  - Limestone Farmlands
  - Limestone Gorges

The detailed descriptions presented in the county study are not of direct significance to a strategic overview of the Green Infrastructure of Bolsover, but may be important reference material when delivering specific enhancement proposals through development and land management opportunities.

There are however important areas of high and low quality landscape within the district (see figure 4). For the purposes of this study landscape ‘quality’ is a subjective judgement made for those tracts of land which may be considered to have strong visual attractiveness because of their combination of relief, tree and woodland cover, vegetation, field boundaries and ‘ambience’. These are identified as:

- The ‘Hardwick Landscape Area’,
- Along the northern fringe between Spinkhill and the north eastern fringe of the district.
- A roughly diagonal band between the north east of Tibshelf to the south east of Creswell.
The district possesses a major landscape asset in the limestone escarpment running north-south from Clowne to Hardwick Hall. This is a significant feature affording a dramatic setting for settlements, significant historic buildings and presenting extensive views south, west to the Peak District’s eastern moors, and northwards towards Sheffield and beyond. In recreational access terms this asset is under-provided for given its strategic importance. Significant benefit may accrue from the establishment of a trail from Clowne to Hardwick, via Bolsover, - a ‘Castle Ridge trail’, which allows enhanced multi-user enjoyment of the vistas afforded from this significant landscape asset, although this may be restricted as a longer term strategic aspiration in the light of land assembly difficulties (see part 4).

Much of the district’s landscape appeal is less significant and unremarkable, but nevertheless has sufficient amenity value as a setting for its settlements and a canvas upon which recreation opportunity and biodiversity value is set. Such areas will always benefit from appropriate landscape restoration and strengthening of character however, and development should be sensitive to its location and also contribute to such landscape improvements where appropriate. More important will be the role of the farming and forestry sectors in increasing their environmental sensitivity of their operations, primarily facilitated through uptake of agri-environment schemes.

There are however significant tracts of landscape in Bolsover which are detractors or of low amenity value in respect of the Green Infrastructure network.

A large area of the Southern Magnesian Limestone landscape character area is characterised by intensive arable cropping exploiting the fertility of the soil resource, with large fields and consequent loss of walls, hedgerows and woodlands. This has resulted in a dilution of historic and scenic character and habitat interest, exacerbated by a lack of footpaths and access, despite accommodating pockets of important grassland, small woodland pockets and geological sites. Restoration of landscape character in this area, better connectivity of rights of way and enhancement of biodiversity interest should be seen as core priorities in respect to the district’s Green Infrastructure futures. Reconciling such enhancements with the agricultural economics will be likely to remain challenging.

The Magnesian Limestone geology of large parts of the district gives rise to a very sparse occurrence of surface water features or habitats. Most open water features, such as Pebley Reservoir, the ‘Doe Lea Ponds’ and Tibshelf Ponds are man made or relate to former minerals operations, but their importance is elevated because of their rarity in the local context. A Green Infrastructure enhancement strategy should seek to address opportunities to increase areas of surface water and wetlands across the district which can be of significant biodiversity importance and recreational value, but care should be taken in respect to landscape character considerations where water bodies would not otherwise be typical.

The M1 motorway is a prominent feature through the southern and western fringe of the district which presents a significant detractor and physical barrier to a linked Green Infrastructure network. As with any major road its impacts are visual, audible, physical and perceptual, with the scale of its impacts proportionate to its importance as the spine of the English motorway network. It is also a barrier to species movement and presents a major interruption and moving detractor in the landscape. The motorway, and its movement of vehicles are very prominent from much of the Limestone Escarpment. Development is being attracted to areas around junctions 28 and 29, and the new Junction 29A and Markham Employment Growth Zone will further exacerbate these impacts, and focused efforts at enhancing Green Infrastructure through that development have been prioritised and secured. Motorway widening proposals between Junctions 29 and 28 propose to
lower the carriageway surface (Highways Agency), and this may serve to lessen its impact upon the Hardwick concentration of Green Infrastructure assets. Elsewhere strategic landscaping of the motorway has become mature and often effective in masking its worst impacts, as well as becoming a linear habitat asset. This resource should be managed for long term value, and Natural England and the National Forest are actively championing enhancements to off-site planting to further ameliorate the effects of the ongoing widening program through the north of the region. Such aspirations also encompass the provision of ‘green bridges to facilitate biodiversity movement and recreation access in the more sensitive areas of the motorway, such as around Hardwick Hall. However it is probably unrealistic to expect any measures to significantly off-set the impact of the motorway in the medium term.

The industrial and mining heritage of the area presents some significant detractors to the environmental quality of the district and consequently its Green Infrastructure network.

**Landscape Detractors across Bolsover**

- Markham Colliery site and regeneration scheme.
- Coal depot at Stanfree.
- Bolsover Moor Quarry.
- Erosion of character as a consequence of intensive arable agriculture.
- The M1 corridor.

However, this industrial legacy also presents significant opportunities in respect to restoration and positive after-uses of currently degraded or ‘eyesore’ sites, as already examined in respect to the former railway network. There are good examples of such measures at Pleasley, Langwith, Creswell and Blackwell, amongst others, through the creation of Country Parks, new habitat interest and ‘conservation areas’. These assets present a strong model upon which further works can be developed in order to enhance Green Infrastructure across the district and particularly those detractor sites listed above. They will often be associated with the creation of ‘new’ landscape character, as there is no historic precedence for the relief and vegetation - often heath like character of landscaped spoil heaps and colliery yards. This is not to underplay the importance of such programmes which add a further dimension to the Green Infrastructure of the district as well as presenting an opportunity to ‘read’ the industrial heritage of Bolsover through its landscapes in the future.
The Historic Environment

Historic environment and cultural heritage assets across Bolsover can be seen as being a complementary but slightly separate area to the focus of this study. Generally, definitions of Green Infrastructure are inconsistent with regards to historic assets, but most do not promote historic assets as core Green Infrastructure components. However there are clear cross-overs between the two areas, and many elements of the historic environment play an important Green Infrastructure role, even where primary management objectives may be focused on appropriate conservation and educational roles. The Historic Environment and Cultural Heritage of the district can relate closely to some of the roles played by Green Infrastructure, particularly in respect to the opportunities they offer for recreation and enjoyment, and the significant value they may have as habitat space and landscape influences.

Across the district there are key Green Infrastructure assets which have very significant historic importance. The Hardwick Hall estate presents perhaps the single most important single component of Green Infrastructure in Bolsover, whilst being a building of the highest historical importance and integrity. The estate as a whole presents a critically important historic asset, its historic gardens, grounds and parklands, as well as the estate farms present some of the most attractive landscape and informal recreation space in the district, presenting significant Green Infrastructure value. Whilst administrative boundaries have little relevance to public enjoyment of Green Infrastructure, its location at the centre of the district suggests a pivotal or Green Infrastructure ‘hub’ role for the estate within the wider district network.

Bolsover Castle also plays an important role as a landscape feature and place of high quality open space within the town itself. Creswell Crags is of international archaeological significance, particularly in respect to its cave art, and is the focal point on a rich archaeological resource across the Magnesian Limestone plateau in the north and east of the district. The ‘Archaeological Way’, a way-marked footpath zigzagging through the north east of the district, explores and compliments the ancient historical importance of the area as a focus for a significant recreational asset, although is currently subject to remedial plans for repair of its poor condition in places.
All landscapes have historical importance and can be ‘read’ to varying extents as to their evolution to their current character and condition. The historical importance of the landscape is therefore of considerable value in a Green Infrastructure context, and the work of English heritage and the County Council in this respect may have important influences on a detailed Green Infrastructure strategy.

Nature Conservation and Habitat Connectivity.

The importance of biodiversity and a functional habitat network to a robust Green Infrastructure resource is paramount. A strong network of habitats which allows species to move between them and find appropriate habitat and climate space would tend to suggest that other elements of Green Infrastructure, such as landscape and wider inter-connectivity are also strong.

Bolsover falls under the coverage of the Lowland Derbyshire Biodiversity Action Plan which sets out the key characteristics and conservation objectives for habitats and species outside the Peak District. Building on its content, Bolsover District Council adopted its district level Biodiversity Action Plan, entitled ‘A Greenprint For Bolsover’ in May 2006, adding locally specific actions and priorities at the district level. Within this local biodiversity action plan a ‘Vision’ for the Bolsover District is set out, which includes aspirations for the Bolsover District to be a place where green wildlife corridors connect areas of valuable habitat, where people can learn about the natural environment and where everyone has easy access to an area of natural greenspace. These are fundamental principles of Green Infrastructure.

The district lies at a transitional area of wider habitat types. It lies across parts of the Coal Measures and Southern Magnesian Limestone ‘Natural Areas’ and is more widely bounded by Sherwood, the Humberhead Levels, the Trent Valley and rises and the Derbyshire Peak Fringe/Lower Derwent Character Areas. It lies at a cross-roads between lowland south and eastern England, and the uplands of the north. This is demonstrated by the regional importance of the Doe Lea corridor as migratory habitat corridor. It contains an extensive series (over 200) of Registered ‘Local Wildlife Sites’ – areas which are locally important for biodiversity, and are widely scattered across Bolsover, but most often reflecting the distribution of woodlands, unimproved grasslands and surface water, particularly the semi-ancient woodlands which are some of the largest and most important in Derbyshire. Only two of these sites are designated as Local Nature Reserves however, – Rowthorne Trail and the Doe Lea LNRs. The limestone grasslands of the Southern Magnesian limestone represent a significant aspect of this nationally important wider habitat type which extends northwards towards Doncaster. Derbyshire Wildlife Trust monitors and manages a number of these sites, but frequently these tend to be in ‘unfavourable’ or ‘declining’ habitat condition, although many others are in good or improving condition. Insufficient resources for appropriate management, neglect and insensitive agricultural practice which further reduces extent and connectivity of these sites are the primary causes of such decline.

There are relatively few nationally important habitat sites designated as SSSIs. Of seven SSSIs in Bolsover four are habitat focused, the others being of geological interest. Several significant habitats areas owe their existence to former industrial sites and workings, and such value should be recognised and built upon when addressing regeneration and development opportunities. Habitat creation and particularly reconnection so as to facilitate species ‘creep’ in the light of climate change, should always be underpinning considerations and objectives for any Green Infrastructure enhancement proposals, however small scale.
A number of RIGS and geological SSSIs are present within the district and form important points of interest within the Green Infrastructure network. Primary amongst these is the historic Creswell Crags site and visitor centre, a major asset for the district as a site of international importance.

Non-typical surface water habitats on the Limestone plateau – Pond at Pebley Reservoir.

A fuller description of the habitat resource of Bolsover is set out at Appendix 2. Figure 5 sets out broadly where habitat value and connectivity is particularly strong or weak across Bolsover.
External linkages – ‘Green Infrastructure Bridges and Corridors’

Administrative boundaries are generally insignificant in respect to public recreation and public enjoyment of the environment, and to wildlife movements and species migration. It is therefore important to recognise the significant linkages and opportunities for the network of habitats, trails and Public Rights of Way to be better related to important Green Infrastructure assets outside the district. There are several good linkages already established, particularly in respect to the trails network, where several extend from Bolsover into neighbouring districts, such as the Meden Trail and the Pleasley Trails. Further opportunities to enhance such linkages are evident at:

- Trail links between Barlborough and the Trans-Pennine Trail/Cuckoo Way and Renishaw hall in the north west.
- Extension of the Stockley Trail and Clowne Linear Park to Poolsbrook Country Park in Chesterfield Borough Council area.
- Green linkages from MEGZ to Poolsbrook Country Park.
- Enhanced recreational and habitat linkages from the Bolsover woodlands and grasslands to the woodlands and lakes of Welbeck Park and the Cuckney Woodlands in Bassetlaw.
- Create green linkages and improved public access between the Hardwick Landscape Area and the reclaimed Silverhill colliery site in Ashfield.
- Make open space connection between open land south of South Normanton to the Erewash Trail and Cromford Canal.

It is important to consider opportunities for Green Infrastructure management and improvement within a wider context, and partnership working with adjacent authorities and organisations will help facilitate a more robust and multi-functional network of Green Infrastructure. The key opportunities for Bolsover in this respect are illustrated in figure 6.

The Markham Employment Growth Zone (‘MEGZ’) close to Bolsover is a clear example where cross-boundary masterplanning can coordinate the interconnection of Green Infrastructure assets and routes between local authority areas in an integral way and maximising the opportunities presented by strategic scale development and partnership working. In this case linkages between Bolsover’s Doe Lea Corridor and North East Derbyshire’s Pools Brook and the Poolsbrook Country Park are made, extending and mutually enhancing the Green Infrastructure resource in both areas. This is a model where further improvements to linkages may be secured where strategic level development comes forward, such as to the east of Shirebrook.
Part 4
Strategic Green Infrastructure Priorities in Bolsover

A Green Infrastructure Strategy for Bolsover should seek to achieve three strategic objectives:

- **Protect from harm and secure sustainable management of the existing assets, especially the GICA.**

- **Address clear deficiencies in Green Infrastructure provision or accessibility, address important gaps in the network, and seek to remove detractors to the existing network.**

- **Pro-actively seek to enhance the Green Infrastructure network across the whole district area where opportunity arises, maximising multiple benefits afforded by the natural environment and other green spaces and connectors.**

This overarching strategic approach accords closely with the emerging internal policy for Green Infrastructure of Natural England (see Part 2 and Appendix 1).

A further strategic objective would be to co-ordinate and secure integrated management and promotional of the exiting and extended Green Infrastructure network, and securing community involvement therein. This aspect is critical to the longevity of the network and to securing its multiple social, economic and environmental benefits. These matters are however considered more appropriate to any future development of a Green Infrastructure Plan or Strategy which may take forward some or all of the recommendations of this Study.

Safeguarding Bolsover’s Green Infrastructure Assets

Part 3 of this study set out the key Green Infrastructure assets of the district of Bolsover. In summary they are:

- A small but important group of strategically important sites and features – the Green Infrastructure core assets ‘GICA’:-
  - Creswell Craggs and the wider Heritage Area
  - Bolsover Castle
  - Hardwick Hall and estate
  - The Magnesian Limestone escarpment
  - The limestone gorges
  - The extensive multi-user trails network.
  - The ‘Bolsover woodlands and grasslands’, including the Country Parks
  - Doe Lea corridor of habitats, reserves and reclaimed minerals sites.

- Extensive rural hinterlands to most settlements, often with good accessibility and relatively little transitional or harmful urban fringe uses.

- Rich rights of way networks around most settlements

- Areas of attractive landscape, particularly across the northern fringe of the district and around the Hardwick Hall estate.

- Important remnants of grassland habitats on the Southern Magnesian Limestone and pockets of smaller woodlands, particularly across the northern and western fringes of the district.
Connectivity, or potential for connectivity to other important Green Infrastructure assets outside the district, for example:-

- The Trans-Pennine Trail
- Renishaw Hall and Park
- Poolsbrook Country Park
- Welbeck Park and estate and Sherwood area
- Cuckney woodlands
- Silverhill Park
- Erewash Trail
- Cromford Canal

It has been established that the concept of Green Infrastructure is not a precise science. Therefore despite a sound framework of assets, it is not possible to conclude that the Green Infrastructure network and resources across Bolsover are sufficient in quantity or quality or adequately robust enough to sustainably meet its communities’ and natural systems’ future needs. This is particularly so in the light of growth forecasts and the priorities of securing more sustainable forms of recreation, achieving healthier lifestyles and strengthening natural systems and habitat functionality. However it is possible to conclude that there is a fundamentally sound framework of Green Infrastructure assets across the district on which to build and strengthen. These core environmental and public access assets are very positive contributors to the quality of life across Bolsover, and present a firm foundation on which build a stronger Green Infrastructure network and secure their wider sustainability benefits.

This is a relatively obvious approach - to preserve the best of the existing resource, but one which nevertheless should be emphasised and established in all relevant policy formulation and decision making. Certain elements of these environmental assets enjoy very strong levels of protection from harm as a consequence of their national designation status. However other less specific elements, such as the level of accessibility to open countryside from the main settlements are not discrete entities which can be ‘designated’ and their erosion and loss of amenity value may be affected by small scale but cumulative impacts of insensitive development or land management. Hence consideration of, and how to protect wider Green Infrastructure resources must be brought into the relevant decision making processes and agendas as promoted in Priority 1.

Pro-active planning should be allied with protective measures in respect to the district’s Green Infrastructure in order to secure the wider acknowledged sustainability benefits it affords. Hence, as a starting point the ‘Green Infrastructure Core Assets’ (‘GICA’) should be established as priority considerations across all council and stakeholder activity.

At the strategic district-wide scale, the connectivity and linkages between the GICA should be recognised, protected and enhanced (see below). Direct linkages between these assets are limited and in some cases their inter-relationships less critical to protect or enhance than others, for example linkages between Bolsover Castle and open countryside. However, as a general principle,
connectivity between GICA by way of green networks, paths and trails or semi-natural spaces is desirable in respect of amenity, habitat and species movement and landscape character, and will serve to enhance the value of the network to a level greater than the sum of its parts.

### Priorities for Green Infrastructure in Bolsover 2.

**Protecting and Enhancing Connectivity of the GICA.**

Policy formulation and decision making across all sectors with an influence on land use and land management should, where appropriate, seek to have full regard to the settings and wider context of the Green Infrastructure Core Assets, resist loss of connectivity and promote positive reconnection within that core network. In doing so, the underpinning structure and functionality of Bolsover’s Green Infrastructure network should be enhanced and secured.

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**A Focus for Green Infrastructure Priorities in Bolsover – Grasping Opportunities and Addressing Deficiencies.**

Following on from the principles set out for the protection of existing Green Infrastructure assets, it is necessary to examine how the network may be expanded, strengthened and enhanced in the most effective and multi-beneficial ways.

This report has recognised the considerable strengths of the Green Infrastructure network across Bolsover, but there are also demonstrable weaknesses, gaps, detractors and constraints on the network’s optimal functionality and securing its maximum social value. Furthermore, there are clear opportunities for an enhancement of Green Infrastructure assets across the district, even where there may be a relatively rich resource at present. It is reasonable to suggest that there will always be potential benefits to arise from enhancing the Green Infrastructure network, and as such opportunities should be pursued as resources allow. Enhancing Green Infrastructure provision can be seen as a ‘no regret’ or ‘low regret’ option in almost all scenarios.

This report does not present a formal strategy for the Green Infrastructure Network in Bolsover, and does not investigate feasibility in terms of capital or management finance or ownership issues, the core constraints on enhancing the network. This study recognises that securing resources for capital investment and the on-going maintenance and management of existing and new Green Infrastructure is a significant problem for all stakeholders involved in access, conservation, recreation and all other elements of Green Infrastructure. Resource availability for such investment and management will vary over time, and this further disadvantages a long-term approach to Green Infrastructure planning and management which this study sees as necessary for Green Infrastructure to be a sustainable element of future communities in Bolsover. Clearly, partnership working and the thorough examination of and bidding for external grant aid will be required by key stakeholders if Green infrastructure aspirations are to be realised, exploiting opportunities for grant assistance and match-funding from European, Regional and Local sources. The continued work of the voluntary sector on local scale projects will also be critical to enhance the wider resource beyond the GICA in Bolsover.

### Prioritising Actions

Notwithstanding the above limitations on the implementation of Green Infrastructure aspirations, the study presents the following key areas of focus for the future spatial planning and land management priorities for Bolsover’s Green Infrastructure. The following proposals are afforded ‘Priority’ or ‘Secondary’ status to, based
upon the expected range and accessibility of benefits delivered and their capacity to strengthen the linkages between the GICA. These are provisional prioritisations, based upon consultants’ judgement rather than any more sophisticated modelling tools. They are not made on assessment of deliverability, but instead are made as high level strategic aspirations. A future Green Infrastructure strategy may seek to more formally present a delivery framework and programme for such aspirations.

Priority Enhancements: Green Infrastructure Opportunities and Proposals across Bolsover

The Trails Network – Closing the Gaps.

As set out above, the extensive network of multi-user trails across Bolsover represents a significant element of the district’s GICA and provides perhaps the widest multi-functional benefits of all Green Infrastructure components.

Although the work of Derbyshire County Council in association with Bolsover Countryside Partnership and other bodies have established an outstanding Green Infrastructure resource, there are a number of possible opportunities to further expand the network and enhance its linkages to settlements inside and outside Bolsover and thus maximising its community, environmental and economic value.

Key areas for possible enhancement are recognised as:

- **Between the M1 and the Trans-Pennine Trail near Killamarsh.** A disused railway bed stretches from the western side of the M1 in a north west direction to meet the established trail network in North East Derbyshire and into South Yorkshire. This trackbed would otherwise link into the network within Bolsover, through Clowne Linear Park, but the motorway has clearly presented a very significant barrier to this linkage being established. The trackbed here is partially missing in the vicinity of Park Hall Farm (Hotel), but is otherwise clearly used informally as a recreation asset. This proposal is not recognised within Derbyshire County council’s infrastructure development objectives, but this study considers it a long term opportunity for further enhancement of public access to multi-user rails in the north of the district.

- **From Clowne Linear Park towards Poolsbrook Countryside Park.** A partially disused rail bed lies between these two sites, potentially linking Bolsover’s network with that in North East Derbyshire and the important Green Infrastructure of Poolsbrook Country Park and the Cuckoo Way/Trans Pennine Trail – creating a significant loop with the above proposal. The final stretch between the Country Park and the Oxcroft Junction appears to be in operative use by mineral freight trains, servicing Stanfree Coal Depot. Should the depot be operative in the long term, an alternative route to link to Poolsbrook Country Park would need to be considered.

- **Between Pleasley and Clowne.** There is an opportunity to utilise the remnant trackbed between the northern fringe of Shirebrook and Scarcliffe to the west. Here the track bed ends and a multi-user...
standard route would need to be established along the line of the existing footpath between Hillstown and Scarcliffe. The amenity value of this link would be significant given its mainly wooded character between Scarcliffe and Shirebrook, transecting Langwith Wood and lying close to links with the Archaeological Way.

• From the southern end of the Westhouses-Pleasley trail to the Blackwell Trail. This short section of track bed presents a potentially significant link between the trails network in the southern part of the district. Some minerals operations within the vicinity have presented a physical barrier to this linkage, although that use is likely to be temporary and in the medium term this should be viewed as a relatively cost effective opportunity for an important strategic linkage between multi-user routes.

• Hardwick to the Five Pits Trail. This proposal does not benefit from an exiting track bed on which to base a route. However there is a strategic absence of linkages between the north and central areas of the district with the southern area which, because of settlement distribution, the transport infrastructure network and convoluted shape of the district boundary, is poorly connected to the rest of Bolsover and its more extensive Green Infrastructure assets. A clear barrier to establishing a new linkage in this area is the M1 corridor. However options which utilise the bridge on Deep Lane near Hardstoft should be examined such that appropriate multi-user traffic management can be established. The establishment of such a link would be potentially the most significant enhancement of an interconnected network of multi-user trails in the district, and should be set out as a long term priority project.

• A ‘Castle Ridge Way’. One of Bolsover district’s most significant landscape features is the Magnesian Limestone escarpment which runs generally north to south from Clowne to Hardwick, and on which Bolsover town, and its prominent castle stand proud. The marked scarp slope rises to the east from the Doe Lea valley and the M1 corridor to a highest point of around 180 metres above sea level south of Bolsover. It is characterised by its ridgeline marking the edge of the limestone plateau. The escarpment and ridge are significant Green Infrastructure assets in their own right, but it is apparent that its amenity value is not maximised. Rights of way along the ridge, particularly to the north of Bolsover are limited to on-road routes,
particularly Oxcroft Lane which is narrow and sometimes winding. A footpath runs from the south of Bolsover to Glapwell which generally follows the ridgeline but is restricted to pedestrian traffic. Links from the ridge into the Doe Lea valley are also scarce particularly between Bolsover and Glapwell, where access to the Stockley Trail would be of strategic significance. A Green Infrastructure strategy for Bolsover should seek to address this missed opportunity and establish a new multi-user route between Clowne and Glapwell, and the short distance onwards to the Hardwick Park area. At the southern extent of the route a direct link should be investigated to the Stockley Trail which utilises the now well wooded former rail bed between which follows the Strickle Brook, west of Glapwell. In doing so a very significant Green Infrastructure resource would be secured which would serve to provide both an immediately accessible, relatively level local amenity asset, but also serve to strengthen the strategic Green Infrastructure network along the spine of the district and again linking into Hardwick area as Bolsover’s Green Infrastructure ‘hub’.

Proposals for the strategic Trails Network are set out at Figure 7.

South Normanton and Pinxton Open Space Enhancements.

These two settlements are situated at the southern extreme of the district and are characterised by close proximity to a number of constraining features. The settlements are themselves relatively large by district standards, close to the M1 and A38 Trunk road corridors and Junction 28, and are further hemmed in by large scale extensive industrial, business and commercial developments at Wincobank Farm, Pinxton Castle site Brookhill and Clover Nook industrial estates and the expansive low density storage (firework manufacturing), distribution and business units north of Carnfield Hill. Industrial and warehouse parks outside the district, but close to Pinxton and South Normanton further exacerbate this problem. Together these surrounding sites and uses present a relatively poor Green Infrastructure context for these important settlements. Pinxton does however benefit from less concentrated urban form than South Normanton, with notable green wedges and parks within its built up limits. South Normanton however has a denser settlement form where open space is confined mainly to playing fields and school grounds.

A Green Infrastructure Strategy for the towns should seek to secure the provision of multi-functional and accessible green spaces in close proximity to the population concentrations. The primary opportunity to achieve this is at the former minerals workings which lies south of the A38 and west of Pinxton at Upper Birchwood. Here there is an existing ‘horseshoe’ of bridleway and footpath provision surrounding a large open site which slopes to the south and is part of an attractive valley landscape. The site lends itself to the creation of a Country or Community Park type space, where access is secured and enhanced, possibly via a new footbridge to South Normanton over the A38 and landscaping and land management can enhance its amenity and habitat value. Linkages from this site to Green Infrastructure assets to the south, outside the district, such as the Cromford Canal, might also be secured from such a proposal, hence enhancing wider sub-regional benefits.
Secondary Enhancements: Other Green Infrastructure Opportunities and Proposals across Bolsover

In addition to the enhancement of the trails network, there are needs and opportunities for other Green Infrastructure developments and enhancements across Bolsover. The scope of this study does not allow for the compilation of an exclusive list of opportunities, although major opportunities and shortfalls are set out. A ‘Phase 2’ Green Infrastructure study may present a more comprehensive list of potential Green Infrastructure management and investment projects. In the meantime strategic proposals are identified as:

- **A Whitwell Woods and Northern Fringe Access Network.** The northern fringe of the district, has been identified as having relatively strong landscape credentials, particularly around Pebley Reservoir, Bondhay Dyke and Whitwell Woods. This area has a very mixed public access provision and is an area which may benefit local communities from expansion, particularly in respect to growth potential at Clowne and Barlborough. North of the A619 between the M1 and the western fringe of the Steetley minerals site presents itself as an area of amenity value which is in parts very high value, but where connectivity is restricted. With the exception of Rotherham Road, there are no north-south strategic roads, and the network of country lanes and tracks with public access lends itself to the potential for a more co-ordinated ‘Quiet Lanes’ project, where pedestrian usage is promoted and enhanced through appropriate traffic restraint, calming and signing infrastructure. Walls Lane and Gipsyhill Lane would be the focus of this network. In addition an enhancement of access to Whitwell Woods, a GiCA, should be investigated. Presently access is focused to the southern edge by the A619. An extensive Rights of Way network exists, particularly to the east of Whitwell Woods, but access into the woods is limited, both in terms of points of access and because of restriction to horse riders and cyclists. It is acknowledged that this may be in part a consequence of the habitat management measures within the woods, and impacts upon its ecological value must be given full regard.

- **Wild Hill Viewpoint.** The summit of Wild Hill lies to the east of Tibshelf close to the M1 and Tibshelf motorway service station. In itself this is not a feature of high Green Infrastructure value, characterised...
by the communications mast, electricity transmission lines and pylons, and the influence of the M1. It does however offer significant vistas—in most directions but particularly to the west and the Peak District fringe, which are of potentially important local value for the communities of Tibshelf and Huthwaite (outside the district). A viewpoint feature, such as a piece of public art, and improved pathways and seats or benches would maximise the amenity value of the summit and provide a focus for walking routes in an area of the district with a less extensive Green Infrastructure resource. This could also present a model for modest local community scale enhancement projects elsewhere across Bolsover.

Vistas from Wild hill, Tibshelf.

- **Landscape Enhancement Initiatives.** Landscape is an important element of Green Infrastructure, and provides an underpinning context for the enjoyment of the outdoors, and the framework within which biodiversity can flourish and adapt to climate change and other pressures. Figure 4 presents an interpretation of where landscape quality (rather than character) is significant, or has been diminished or harmed by land management, land use or development, to such an extent that its amenity value is harmed. The industrial and mining heritage of the district has resulted in a significant number of sites where landscape amenity is reduced. Whilst a great deal has been achieved in the reclamation and landscaping of some of these sites—where public benefit will be enhanced with the passage of time as schemes mature and naturalise, others remain as scars on the landscape. However there are still a number of sites where enhancement will be possible in the long term, such as the former coalfield infrastructure to the north west of Bolsover. As is already established practice, after-use proposals for such sites should be developed, encouraged and funded so that landscape character, and its public amenity value is restored or even newly created for the first time in many years on the most despoiled sites. The objectives of the County Landscape Character Assessment should underpin those proposals and actions.

At other locations, such as the M1 corridor, large scale warehousing and factory developments around Shirebrook and Pinxton, and the limestone works at Whitwell, landscape amenity is reduced by essential transport and economic activity which is on-going and important to the viability of the district and the region. In many cases the strategic impact of such sites is such that landscaping schemes can only soften overall harm caused. Such action should not be dismissed however, and opportunities to present strategic landscape screening or softening to these sites through development or regeneration proposals should be pursued at every opportunity, primarily through the Planning system. By doing so the overall amenity value of the district’s countryside can be improved, and with it likely enhancement of the biodiversity value.
Agricultural practice on the high quality soils of the Magnesian Limestone has seen a long term erosion of landscape quality, with the loss of hedgerows, limestone walling, unimproved grassland and woodlands. This is somewhat exacerbated by the relatively unremarkable topography once beyond the pockets of limestone gorges. Current food price inflation is likely to maintain a strong demand for intensive production across the plateau, and hence further stress the landscape. Despite this pressure, increases in take up of agri-environment schemes, and particularly the entry-level Farm Stewardship programme managed by Natural England in Bolsover presents the most likely sources of landscape protection, management and enhancement measures. Stakeholders should seek to work in partnership with the agricultural sector and Natural England to further embed local landscape objectives into Stewardship schemes. In addition ‘landscape fit’ should be a central consideration when development proposals come forward across the plateau, or any other area of the district outside the main settlements. Here scale, siting, design, materials, layout and landscaping should be managed such as to secure a net restoration in landscape character and amenity value in on and off-site locations as appropriate.

- **Enhancing Biodiversity and Habitat Connectivity.**
  
  The condition and functional connectivity of the district’s habitat network as presented in Part 3 may be seen as a strong barometer of the overall value and condition of a Green Infrastructure network. In May 2006 Bolsover District Council adopted its district level Biodiversity Action Plan, - ‘A Greenprint For Bolsover.’

  Within this a ‘Vision’ for Bolsover District is set out, which includes aspirations for the district to be a place where green wildlife corridors connect areas of valuable habitat, where people can learn about the natural environment and where everyone has easy access to an area of natural greenspace. These are fundamental principles of Green Infrastructure, are likely to give rise to wider social benefits and also further other regional and national policy objectives and integrated strategies.

  A rich biodiversity resource cannot exist long-term in small isolated pockets such as the designated sites. Plants and animals require networks of suitable semi-natural spaces to be able to move between habitats that serve a range of functions such as breeding, feeding and hibernation. A network is also necessary to enable juveniles to disperse to wider populations, thus protecting the genetic diversity of a species. To preserve areas as reserves for nature is fundamental to the maintenance of our biodiversity, but to leave such sites isolated renders them doomed to long term failure. In maintaining, developing and enhancing a multifunctional network of Green Infrastructure across the District of Bolsover and beyond, the needs of local biodiversity should inform and be a significant influence over the location and design of these green networks.

  **Green Infrastructure Objectives for ‘Growth Settlements’ and development sites.**

  Provision of a robust and expanded Green Infrastructure network should become a core objective and key consideration for all land management and spatial planning activity and decision making across Bolsover (see part 5 on Spatial...
Planning policy). It is a fundamentally sustainable concept, and as noted ordinarily a ‘no-regret’ or ‘low-regret’ action. The concept, and need for positive and co-ordinated action, supported by funding from public and private sources will however be particularly important in and around those settlements which are likely to experience growth in population and employment expansion under the provisions of future development plans, reflecting the growth agenda of national and regional policy.

All development proposals in and around the main settlements, and particularly those which are of a strategically significant scale in the context of the district should be brought forward having had full regard to the ‘Priorities for Green Infrastructure in Bolsover’ 1 and 2 as set out above, which seek to protect existing assets and enhance the inter-connectivity thereof.

However, it is suggested that developers, land managers and decision making authorities should particularly seek to ensure that new development:

- Avoids a net loss in sites or routes which are of recognised Green Infrastructure value, as set out within this study. In short land which has public amenity value, is important for wildlife, whether designated or not, is of landscape value or offers opportunity for non-motorised transport value should be identified and fully accounted for in all decision making.

- Should harm or loss to Green Infrastructure assets be unavoidable or otherwise justified, full and appropriate provision of new Green Infrastructure space, routes or resources should be provided – resourced through the development so as to make good the original loss wherever possible also present a net gain in the overall resource. This should in part reflect the proportionate increase in urbanisation, population and use of the site as a consequence of the development. All Green Infrastructure enhancement measures should seek to enhance connectivity of amenity and biodiversity space as far as possible.

- All new development and land management plans should be expected to integrate Green Infrastructure planning and provision from the outset. Whilst it has been seen that the standard and level of Green Infrastructure resource across the district varies, it will always be appropriate to look to enhance that resource, particularly in areas close to or likely to affected by population growth. Opportunities to further the key opportunities as set out above should normally be prioritised where appropriate.

- Major housing or employment sites will be located within or close to existing main settlements, as a consequence of national policy and employing sound sustainability principles. Consequently there will often be opportunities to enhance new urban-rural interfaces, and creating a better ‘landscape fit’ for new development. This will necessarily demand the consideration of urban fringe
land uses, management and design. Multi-functional and multi-beneficial outcomes should be core objectives for dealing with the land around such developments and within them. Enhancing landscape fit for new development is established practice within land use planning, and remains a valid objective. However it is appropriate that the wider social and environmental aspirations of a sound Green Infrastructure network be identified as core objectives for edge of settlement sites.

- Green Infrastructure is a concept affecting both urban and rural sites. Where urban regeneration is proposed across Bolsover, masterplanning should seek to maximise a development’s potential to provide or enhance linkages to other urban green spaces and the countryside around towns, and with its rights of way network. Urban development, through provision of well designed public and private space can make a major contribution towards achieving a robust Green Infrastructure network, particularly in respect to linked amenity space for local people, sustainable urban drainage schemes and enhancing the permeability of towns to biodiversity, with mutual wildlife and social benefits.

- Reclamation of former industrial and minerals sites right across the district, but particularly those concentrated in the Carr Vale and Doe Lea valley area have presented the district with an enhanced Green Infrastructure resource where once there were spoil heaps and harsh industrial landscapes. However other sites remain across the district where landscape impact and barriers to community amenity and quality of life remain. As the County Council and its partners primarily lead on the restoration and decontamination of those sites, plans should have full regard to Green Infrastructure principles, as indeed they have done in the past, albeit without reference to the term itself. Particular recognition of the often specialist habitats which occur on such sites, such as wetlands and carr habitats, and public accessibility to them should be embedded within restoration plans.

The main elements of these recommendations for an enhancement of the Green infrastructure network across Bolsover are set out as a masterplan at figure 8.
A Strategic Green Infrastructure Study for Bolsover 2008

Figure 8

Bolsover Green Infrastructure Study 2008
Strategic Improvements Overview

- The Trails Network - Closing the Gaps
  1. Between Barborough and the Trans-Pennine Trail near Kilmarsh
  2. From Clowne Linear Park towards Peckibrook Country Park
  3. A 'Castle Ridge Way'
  4. Pleasley to Clowne
  5. Shirebrook to Bolsover Link
  6. Hardwick to the Five Hills Trail
  7. Southam and of the Westhouses-Pleasley Trail to the Blackwell Trail

Other Green Infrastructure Opportunities

- Northern Finge access enhancement and ‘quiet lanes’ opportunity
- Site specific opportunities
- Wild Hill viewpoint
- South Normanton and Finston Country Park opportunity
- Landscape, Rights of Way and Biodiversity enhancement focus on the Bolsover Plateau
Implementation of Proposals and Principles – Barriers, Opportunities and the need for a detailed Green infrastructure Strategy.

The preceding proposals and principles are presented as a series of strategic measures and objectives which this study suggests would serve to protect, strengthen and improve the Green Infrastructure network across Bolsover and into its neighbouring areas, and hence secure lasting and multi-functional benefits. It is by definition an aspirational report looking at opportunity presented by the current extent and location of assets, rather than looking in detail about deliverability. This study is not a detailed ‘implementation plan’ and it is clear that physical proposals alone would not be likely to maximise those benefits.

Many other elements would need to be considered in developing a more focused implementation strategy for the protection and enhancement of Green Infrastructure in Bolsover. Important aspects which it is beyond the scope of this report to address are:

- Finance - Capital and Maintenance
- Land assembly
- Identification of implementation and management partnerships
- Land management agreements
- Accessibility
- Social Inclusion
- User Health and Safety
- Publicity and Marketing
- Community and User-group engagement
- Monitoring of use and condition.

Most of these matters have been, or are on-going concerns in the provision of existing and new Green Infrastructure assets. Much experience has been gained by the main players in Green Infrastructure provision in these respects, such as the Bolsover Countryside Partnership and the District Council. A more focused approach to the issue of Green Infrastructure should however embrace a more holistic approach to its provision and upkeep and such matters may be best addressed within a more detailed Green Infrastructure Strategy. The district Council should, in the light of government support consider the merits of instigating such a project, utilising this study as a framework for action.
Part 5.
Towards a Local Development Framework Policy for Green Infrastructure.

There are many influences on the quality and extent of the Green Infrastructure resource across Bolsover. This study recognises the roles, achievements and opportunities presented by strategies and programmes of other agencies and bodies relevant to Green Infrastructure in Bolsover, for example the County Council’s Rights of Way Improvement Plan and site restoration initiatives, the Derbyshire Wildlife Trusts management and monitoring of local sites, the LBAP, environmental work of Groundwork, DEFRA’s agri-environment schemes alongside many locally managed projects at the village and parish scale.

Nevertheless, Part 2 and Appendix 1 of this study makes it clear that some of the main drivers for the enhanced profile of Green Infrastructure are based in the spatial planning system. The Regional Spatial Strategy for the East Midlands now requires Green Infrastructure considerations to be embedded in the planning process at the local level. This means policy coverage within Local Development Frameworks.

As Bolsover’s LDF evolves, Green Infrastructure policy which is specific and appropriate to local considerations should be prepared, and embedded within Core Strategy policy, so that its profile and importance is suitably elevated and its influence filters across all other Development Plan Documents.

The findings of this study suggest that such Core Strategy spatial policy should:

- Seek to protect existing Green Infrastructure assets (especially the ‘GICA’);
- Seek to ensure enhanced connectivity between important Green Infrastructure spaces and features;
- Ensure that new development is delivered so as to strengthen the Green Infrastructure resource and to contribute towards meeting the demand for such spaces the new development will present;
- Specifically address the particular demands for enhanced Green Infrastructure in areas of focused growth.

In addition, policy should be:
- Locally specific and appropriate to local conditions;
- Based upon sound evidence; and
- Consistent with other development plan policy (RSS and LDF Core Strategy).

At this stage of the LDFs preparation (Spring 2008) a number of these variables are unavailable to the study, such as a confirmed spatial strategy identifying locations for development, or the framework of other environmental and public amenity orientated policy which would have an influence of the overall Green Infrastructure. Formal development of Green Infrastructure policy will have to take full regard of these considerations when drafted.

A significant problem with presenting a spatial policy framework for Green Infrastructure is that it is a concept which is by definition multi-facetted, and which overlaps with many other established elements of environmental, recreational and design policy. Green Infrastructure policy must therefore complement those other elements, and focus on the importance of it as a coherent, functional network rather than a collection of individual elements. Supporting text for a future policy would therefore need to set out clearly what is referred to within the Green Infrastructure policy itself, clearly distinguishing its purpose from those other areas of policy which would not be politically expedient to replace by an over-arching single Green infrastructure policy.
It is suggested that a draft Green Infrastructure Policy for the Bolsover Core Strategy might therefore read as:

‘Green Infrastructure

The Green Infrastructure network of the district will be recognised in all planning processes and decision making, with the overarching objective of conserving and enhancing its extent and multi-functionalitity in respect to:

- Connected, public amenity spaces;
- Quality green spaces in urban environments;
- Safe and convenient linkages from settlements to surrounding countryside;
- Healthy biodiversity and ecologically functional networks;
- Informal recreation opportunity;
- Environmental education benefits;
- Reinforced local distinctiveness, landscape amenity and character;
- Enhancing opportunity for non-motorised movement and access; and
- Fostering the ability of natural systems and processes to function unhindered.

Development proposals will only be permitted (where they are consistent with all development plan policy), and serve to maintain or enhance the district’s Green Infrastructure resource. Green Infrastructure planning will be an integral element of bringing forward development proposals across all but the smallest of scales.

Development proposals must not result in:

i) reduction in extent;

ii) fragmentation of individual sites;

iii) Reduction in connectivity of sites or features from the wider Green Infrastructure network through damage, disruption or removal of connecting features or corridors; or

iv) damage in quality or natural functionality

of open spaces, semi-natural places and linear or ‘stepping stone’ features which together form the Green Infrastructure network.

Where existing Green Infrastructure assets would be harmed by a proposed development, schemes will only be permitted where appropriate mitigation and compensation measures can be secured which result in a net enhancement of the Green Infrastructure network.

Development Proposals which would deliver new housing or employment space, whether on green field or previously developed sites, will be expected to extend and/or enhance the Green Infrastructure network, through additional provision or enhanced management of:

- New or expanded ‘Green’ undeveloped spaces with public access which affords multiple amenity value;
- Spaces and features which will enhance biodiversity and habitat creation, whether in urban or rural locations;
- Linear features which serve to improve green connectivity between green and semi-natural environmental assets, across settlements and into the surrounding countryside;
• New or improved connectivity of off-street trails and paths which present opportunities for non-motorised movement

Provision of enhancements to the Green Infrastructure network will be proportionate to the scale of the development, be directed to local features of importance of the Green Infrastructure network, and be supported by proposals for their long term management.

Green Infrastructure priorities will be guided by the findings of the Bolsover Green Infrastructure Strategy' [a 'phase 2' Green Infrastructure Strategy study].
Appendix 1.

Government Policy and Guidance

‘Green Spaces, Better Places’ – Final Report of the Urban Green Spaces Task Force (DTLR 2002). This document arose from the Urban White paper which discussed the need and opportunities for “urban renaissance”. Although it does not specifically use the term “Green Infrastructure” it includes sections on green space networks and how green spaces should be fully integrated within the public realm of streets, footpaths and Rights of Way. It recognises the key role that the planning system should play in delivering elements of green space strategies.

Sustainable Communities: Building for the Future (February 2003)
This policy statement seeks to foster and accommodate the economic success of London and the wider South East by increasing the housing supply, making home ownership more affordable, tackling transport and other infrastructure issues, addressing issues in the labour market and tackling deprivation and the need for urban renewal.

The plan also clarifies that where new or expanded communities are needed, that they should be sustainable, well-designed, high-quality and attractive places where people will choose to live and work. Although the Plan does not specifically mention the term “Green Infrastructure”, it does discuss the term “liveability” and the importance of parks and open spaces in achieving urban renaissance. At paragraph 4.12 it establishes the importance of publicly available green space networks within towns and cities. It also notes how green ‘corridors’ and green ‘wedges’ can provide protection to the natural environment.

Planning Policy Statements

Until the publication of PPS 12 ‘Creating strong, safe and prosperous communities through Local Spatial Planning’ (2008) [see part 2 for summary], none of the suite of Planning Policy Statements (PPS and predecessor PPGs) produced to date specifically mention the term “Green Infrastructure”, however several allude to the concept. For example, PPS1: Delivering Sustainable Development, in section 17 of the Protection and Enhancement of the Environment it states, “The Government is committed to protecting and enhancing the quality of the natural and historic environment, in both rural and urban areas. Planning policies should seek to protect and enhance the quality, character and amenity value of the countryside and urban areas as a whole.”

In section 27 it supports a general approach to, “Promote urban and rural regeneration to improve the well being of communities, improve facilities, promote high quality and safe development and create new opportunities for the people living in those communities. Policies should promote mixed use developments for locations that allow the creation of linkages between different uses and can thereby create more vibrant places.”

In PPS 3: Housing, paragraph 16 addresses design quality of housing development and lists considerations including the following: “- Provides, or enables good access to, community and green and open amenity and recreational space (including play space) as well as private outdoor space such as residential gardens, patios and balconies.”

Whilst PPS9: Biological and Geological Conservation does not specifically mention GI it does recommend the importance of enhancing ecological networks and corridors for wildlife. This is expanded in PPS9: A Guide to Good Practice (March 2006) where several references to Green Infrastructure are made. In particular, page 38 sets out a
checklist of biodiversity and geological issues which might be covered in LDF Core Strategies or other DPD policy. One bullet states “maintaining, restoring or adding to networks of natural habitats and other landscape features essential for the migration, dispersal and genetic exchange of species (incorporating this into a more broadly functioning “Green Infrastructure”).

Regional Policy and Guidance

Whilst not directly relevant to Bolsover, this Plan has been pivotal in the evolution of Green Infrastructure thinking in England. Prepared by the relevant Government Offices, the context for this Sub-Regional Strategy is set by the Government’s Sustainable Communities Plan (see above). Its purpose is to provide a clear agreed sub-regional strategy, embracing the objectives of the Government’s Sustainable Communities Plan.

The concept of Green Infrastructure has been endorsed by the MKSM Sub-Regional Strategy by including specific references to it as an integrated approach to masterplanning, design and development. It is clearly referred to in paragraph 52 where it states, “The provision of Green Infrastructure needs to be addressed in planning development throughout the Sub-Region so as to ensure a net gain to meet the needs generated by growth and, where relevant, help to address existing deficiencies. This may take the form of protection, enhancement or extension of existing resources, or the provision of new or replacement facilities.” ….. “A network of multi-functional green spaces in urban areas, the countryside in and around towns and the wider countryside needs to be established.”

East Midlands Regional Spatial Strategy - March 2005
This is the current regional planning policy guidance for the East Midlands and makes a number of specific references to Green Infrastructure, although these are all associated with the MKSM Sub-Area (above). For example, at paragraph 3.529 reference is made to a network of Green Infrastructure necessary to secure sustainable communities within the Nene Valley - followed up by Policy 13 ‘Spatial Priorities for Development in the Southern Sub Area’.

This document has developed the policy content regarding Green Infrastructure from the original RSS with a specific policy on Green Infrastructure:

Policy 27: Regional Priorities for Environmental and Green Infrastructure (and also policy 28: Priorities for Enhancing the Region’s Biodiversity)

‘Local Authorities, statutory environmental bodies and developers should work with the voluntary sector, landowners and local communities to ensure the delivery, protection and enhancement of Environmental Infrastructure across the Region. Such infrastructure should contribute to a high quality natural and built environment and to the delivery of sustainable communities. Local Authorities and those responsible for the planning and delivery of growth and environmental management across the Region should work together to:

• assess the capacity of existing Environment Infrastructure to accommodate change in order to inform decisions on the scale, location and phasing of new development. Account should be taken of current deficits and likely future demands,
including those likely to result from climate change, to identify any further needs or constraints;

- select appropriate indicators and targets to monitor the condition of Environmental Infrastructure and to ensure that its capacity to accommodate change is not breached;

- ensure that the provision and design of new Environmental Infrastructure is considered and its delivery planned through environmental capacity analysis at the same time as other infrastructure requirements;

- develop ‘Green Infrastructure’ plans based on character assessments of existing natural, cultural and landscape assets and the identification of new assets required to meet the needs of existing and expanding communities;

- increase access to green space that can be used for formal and informal recreation, educational purposes and to promote healthy lifestyles; and

- identify delivery and funding mechanisms for the creation and future management of Green Infrastructure, including from the planning system and other funding sources such as EU funded Environmental Stewardship Schemes.


The Panel report makes recommendations on the Draft Review of the EMRSS (as above). It recommends that the form of the natural and cultural heritage policies need not be changed.

With regard to Policy 27: Green Infrastructure and Biodiversity – the Panel recognised that it is paramount that Green Infrastructure plans are seen as part of the integrated approach to spatial planning which Local Development Frameworks encompass. The addition of, “within Local Development Plans” in the fourth bullet point of Policy 27 serves to emphasise this point.

The Panel also supported the insertion of a map of the areas most likely to benefit from Green Infrastructure. The map recommended was the Map 31A of Core Document ENV13 “Combined Multiple Public Benefit arising from Green Infrastructure delivery”. (see below)

East Midlands Green Infrastructure Phase 1 - Scoping Study September 2005.

The East Midlands Regional Assembly Integrated Regional Strategy identified the provision of environmental infrastructure as a priority action to encourage the sustainable use of resources in the region. A key component of environmental infrastructure is Green Infrastructure. Consultants prepared a scoping study of Green Infrastructure in the region to identify priority areas for action.

Green Infrastructure in the East Midlands - a Public Benefit Mapping Project.

Following on from the above document this study provides the region with an overall picture of the key locations across the region in terms of the multiple public benefits that can be accrued from investments in Green Infrastructure delivery.

The Integrated Regional Strategy (IRS) outlines 17 key objectives for the region across social, economic and environmental themes. The provision or enhancement of Green Infrastructure can contribute significantly to the achievement of most of these. Using Geographical Information Systems (GIS) 27 public benefit maps were produced, each relating to a separate theme of the IRS (e.g. health, housing, cultural assets etc), to identify where there is greatest need and/or opportunity for Green Infrastructure to contribute to IRS objectives.
As a result of this exercise the following was concluded:

- Greatest opportunity for social uplift occurs within the Three Cities Area, the Derbyshire and North Nottinghamshire coalfields, the Lincolnshire coast and the Northamptonshire Growth Areas.
- Greatest opportunity for ‘environmental uplift’ occurs around assets of existing environmental value (particularly around Strategic River Corridors) and in areas of poor environmental quality.
- Greatest opportunity for economic uplift occurs mainly within the Three Cities Area and around strategic economic gateways.

Northampton, the Lincolnshire Coast, some rural areas and key natural assets also show potential for tourism and environmental economy benefits.

The study showed that it is possible to map the potential public benefit Green Infrastructure can bring, and to provide a firm evidence base for strategic investment in Green Infrastructure to deliver regional objectives in an integrated manner. A Green Infrastructure Network (GIN) has been established which will help form the basis of coordinated delivery of Green Infrastructure across the region.

Natural England Policy and Guidance.


This Guide was produced on behalf of the Milton Keynes & South Midlands Environment and Quality of Life Sub-Group which includes a wide range of environmental groups and organisations including Natural England’s predecessors English Nature and the Countryside Agency.

The purpose of the guide was to assist local authorities and other organisations in addressing the Green Infrastructure planning and delivery needs as set out in the MKSMA Sub-Regional Strategy, by providing:

- A check list of Green Infrastructure planning and delivery principles
- Relevant best practice case studies
- Signposting further resources and information.

To secure a net gain in Green Infrastructure the Guide recommends applying the following sequence of actions:

1. Protect and enhance all existing natural and historic assets wherever possible

2. Significantly improve the management of existing Green Infrastructure

3. Provide for the creation and management of new Green Infrastructure assets to meet identified needs

If Green Infrastructure is created as compensation for the loss or damage of an existing asset, the aim must be at least to create an equivalent asset. However it must be recognised that some assets are irreplaceable.


(NB this is a pre-scoping paper and has not been adopted as NE policy)

The paper identifies three areas where Natural England could make a substantive influence upon future national policy and delivery in respect to the growth agenda, these are:

- A review of Green Belt policy.
- Within that review to seek an initiative “greening the green belt”
- Extension of this idea by introducing the idea of Green Infrastructure – a network of...
green spaces – throughout the built environment and its surroundings.

The paper then discusses the different aspects that a functional Green Infrastructure network should:

- Be able to be delivered through the spatial planning system.
- Deliver a broad range of ecosystem services and social benefits – such as enhancing physical and mental well-being, offer educational value, assist in climate change adaptation and mitigation measures.
- Include all urban green spaces, both private and public.
- Be multifunctional, an efficient and sustainable use and management of available green space.
- Have physical and functional connectivity.
- Benefits from co-ordinated planning, management and delivery across administrative boundaries.
- Be shaped by local distinctiveness, such as BAPs and LCA and townscape studies.
- Mutually benefits those strategies and objectives.
- Recognises the biodiversity and amenity value of post-industrial sites, and
- Is a permanent, but flexible resource, maintained, resourced, managed to high standards, with very-long term management horizons and available for as wide a range of uses as possible without presenting a threat to its long term sustainability.

**Other Influences**

**North Northamptonshire Core Spatial Strategy**

The nationally stimulated focus for growth in the Milton Keynes and South Midlands Growth Area stimulated some ground breaking study and planning of Green Infrastructure across the county. Of significance is ‘Investing in the Environment – Northamptonshire’s Environmental Character and Green Infrastructure suite’ (2006), and the focused ‘Creating Successful Green Infrastructure Plans – Best practice from the East Midlands and the river Nene Regional Park’ (2007).

One of the first core strategies to include a detailed policy and approach to Green Infrastructure. It includes a Green Infrastructure framework which links in with the wider network of the county as a whole. New development will be located within this framework and will be expected to contribute towards enhancing it.

**TCPA, Biodiversity By Design 2004.**
Guidance on incorporating Green Infrastructure into masterplanning with case studies.

**Sustainable Development**

Although the concept of sustainable development is not directly an antecedent to Green Infrastructure the concept and language of sustainable development sets the context for sound environmental planning. Green Infrastructure should be seen in the context of initiatives that aim to secure more sustainable futures.
Appendix 2.

Ecological characteristics of the Bolsover district

The District of Bolsover is divided into two distinct habitat types, which are influenced by their underlying geology. Southern Magnesian Limestone influences the eastern half of the district, which historically has provided a rich mix of biodiversity as a result of the specific dry conditions that enable more specialist plants to thrive and in turn support the more specialist fauna that rely upon limestone habitats. The Coal Measures form the western half of the district, where distinctive underlying geology of this half of the district is based upon the presence of coal, which is formed from ancient peat. The coal layers are folded and uplifted between layers of sandstone, shale and mudstone.

The important habitats of the Magnesian Limestone include woodlands of oak, ash and lime, over an understorey and ground flora of limestone specialists. Magnesian Limestone Grassland is a rare but diverse habitat type, restricted to areas of limestone with a range of uncommon plant species such as greater knapweed, wild thyme lady’s bedstraw and a number of vetches and orchids. Calcareous grassland provides a rich display of flowers that in turn attract invertebrate specialists such as the glow worm beetle and brown Argus butterfly.

The Bolsover District is influenced by two main elements; industry and agriculture. The landscape of gentle undulations across the Coal Measures is inter-dispersed with urbanised areas, which are linked to the traditional coal mining areas of the District. The higher plateau of the limestone outcrop in the east has similarly been altered by excavation, with quarrying for limestone. The quarries and settlements are in the main surrounded by agricultural land, which has been influenced by the well-drained limestone soils.

While woodland represents an important habitat type across the district as a whole, the limestone plateau is the most important area for ancient semi-natural woodland. Remaining pockets of ancient semi-natural woodland have the potential for greater expanse when areas of previously semi-natural woodland that have been subjected to replanting are included. The latter sites can be reverted back to their former habitat types to a large extent, and in many cases are beginning to naturally revert to more biologically diverse woodlands as management practices reduce in intensity. The remaining seed banks in the soils of these previously replanted woodlands are able to provide the seeds necessary to regenerate the previous ground flora, understorey species and eventually the more typical broadleaved tree species. Whitwell Wood is a prime example of this, where a mixture of broadleaved and planted tree species remain, but the ground flora of this extensive woodland is notably diverse and includes some rare species of importance to local biodiversity. The rare Wild Service Tree is also found within the woods at Whitwell.

Along the limestone area the grasslands of biodiversity value lie within woodlands such as at Whitwell, or around wooded areas such as at Creswell Crags, or within local wildlife reserves such as at Rowthorne. Further areas with indicative limestone flora are also found along transport infrastructure routes, such as road verges or disused railway lines. Areas of less improved agricultural land also hold some limestone flora, but intensification and neglect threaten these grasslands.

Characteristic of the Magnesian Limestone natural area is its river worn limestone gorges, and whilst these are more dramatic outside the district and to the north, this feature is represented within Bolsover at Markham Grips, which as a Site of Special Scientific Interest. River habitats around Scarcliffe provide important...
corridors out from the woodland habitat core.

Within the Coal Measures natural area woodlands are also important as a biodiversity feature, but here it is the parklands that provide key wildlife habitats, namely at the former Balborough Hall in the north and most importantly at Hardwick Hall further south. Around Balborough Hall a well connected network links the parkland with wider sites such as Pebley Woodlands and Reservoir, High Wood and the wider countryside of linkages via wooded streamlines and the less intensive agricultural land in this location. It is at the key woodland and parkland sites within the Bolsover District that the public can experience wildlife close at hand, as well as important reserves such as Doe Lea and Rowthorne.

Although localised, wetlands are also important within the Coalfields area, and industry has created interesting areas such as fen habitats where land has sunk as a result of mining subsidence. Further south in the Coalfields area the River Doe Lea provides a key wildlife corridor, part of which is designated as a Site of Special Scientific Interest. The Doe Lea area extends northwards from Hardwick and creates a substantial belt of favourable wildlife habitat.

**Areas of high and low connectivity**

Dividing the district into four areas provides the easiest way to describe the biodiversity elements of the district at an overarching and strategic level. The main body of the district lies north of Hardwick, and this can be divided into an east, west and central belt. The fourth part of the district lies below Hardwick.

The most eastern belt of the Bolsover district, high on the limestone plateau has important woodland areas, and a few significant woodland blocks that provide a key focus for ensuring adequate habitat connections radiating out from these core wildlife areas. These woodlands include Whitwell, Scarcliffe and Langwith, with smaller and more linear woodlands following valley and stream lines. Alkaline flushes at the northern end of Whitwell Wood provide excellent connections to wider habitats north of the district.

This western belt again includes some important biodiversity areas, and some have high connectivity such as in the north west where Pebley, Balborough Hall and High Wood are well connected and provide a range of habitat types. The southern end of this belt, just to the north of Hardwick, lies Doe Lea, which again is an important biodiversity area with wetland and woodland habitats and recognised as a SSSI. The areas between these northerly and southerly parts of the western belt are less connected, and areas of regenerating reclaimed coal mining and spoil areas dominate the landscape. Whilst these areas remain somewhat barren, they will still be providing localised and specialist habitat niches. Furthermore, there is the potential for infrastructure creation to be focused upon these sites. Connections out into the wider agricultural landscape of this western belt would be beneficial with much of the agricultural land outside the urban and formerly industrial areas being relatively connected with smaller and less expansive field patterns and consequently the potential for good hedge and field margin connectivity.

The potential for urban connections should particularly be considered along the western edge of Bolsover, where habitat along the river could be enhanced, and better connections created to the north and south, as well as out of the district to the west.

The central belt, with the B6417 as its spine, is comparatively devoid of wildlife infrastructure, and is therefore the main area where infrastructure creation and expansion should be focused. Initial priorities should be the creation of infrastructure spanning out from existing wildlife sites, and the connections between small isolated areas of biodiversity value. Survey work on the ground throughout his central belt would be beneficial to determine whether any
key biodiversity areas or connections exist, in order to build upon any remnant areas of importance.

The southern section of the district south of Hardwick, in comparison to the northern sections, generally benefits from greater habitat connectivity, with stream line and valley woodlands winding through the area, and connecting with features in a generally more intimate and sympathetic agricultural landscape. This southern section also benefits from numerous linear connections via rail lines. A key corridor for protection and enhancement lies between the urban areas of South Normanton and Pinxton.

Hardwick Hall, parkland and wider landscape is a notable biodiversity asset. It provides an expansive area of wildlife habitat, and also provides a number of fingers of habitat out into the wider area both to the north east and south west, where the district extends to each side of Hardwick.