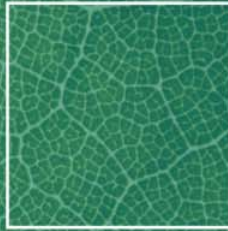


Rugby Borough Council

Green Infrastructure Study

Final Report

June 2009



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Green Infrastructure Study

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Executive Summary

Background

Rugby Borough Council commissioned Entec in February 2009 to undertake a Green Infrastructure (GI) study of the Borough. Planning Policy Statement (PPS) 12 defines GI as:

“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.”

In effect, GI comprises the totality of our outdoor environment. It provides a very diverse range of functions which in turn delivers a variety of social, economic and environmental benefits, reflecting the multi-functionality of GI.

National and regional guidance and policies on GI emphasise the importance of local authorities addressing GI requirements when preparing their Local Development Frameworks (LDFs). In accordance with this guidance, the findings of this GI study will form part of the evidence-base that is used to inform the Core Strategy and other Local Development Documents which will make up the LDF for Rugby Borough.

Approach and evidence base

The study has adopted a hierarchical approach to planning for GI, which differentiates between the strategic GI network (which contributes to achieving a sustainable community at a Borough-wide level) and local GI networks (which contributes to delivering sustainable communities at the local level).

To inform the definition of these networks and the development of a GI vision and strategy for the Borough, the following GI assets have been identified and mapped (reflecting the PPS 12 definition of GI):

- assets that support natural processes;
- assets that support ecological processes; and
- assets that are integral to the health and quality of life (the latter covering access and recreation, historic environment, biodiversity and landscape features).

Strategies and documents of relevance to GI planning (including Rugby Borough Council’s Open Space Audit, and various hydrological, biodiversity, landscape and historic studies and initiatives, together with adjacent local authorities’ GI studies) were reviewed to determine strategically important GI resources, GI needs and opportunities, and neighbouring authorities’ GI networks. In addition, to inform the definition of GI needs and opportunities, Natural England’s Accessible Natural Greenspace Standards were used to assist in identifying priority areas for the provision of new areas of accessible greenspace.

GI networks

Drawing on an analysis of the information about assets, needs and opportunities, the strategic GI network for the Borough has been defined as including:

- rivers and associated GI assets,
- canals and associated GI assets,
- disused railways and associated GI assets,
- the cluster of woodlands in the Princethorpe area; and
- the largest accessible natural greenspace sites in the Borough.

Local GI networks are not defined as part of the study but criteria are provided that should be used to define such networks.

GI vision and strategy

For the Borough as a whole, the GI vision and strategy (see Figures 8.1 and 8.2) encourage the development of the strategic and local GI networks. For the strategic GI network, the key drivers underpinning the strategy are outlined, strategic objectives are identified and the main mechanisms relating to the delivery of the objectives are described. For local GI networks, standards for new and existing developments are identified together with the main delivery mechanisms.

The Borough's emerging Core Strategy which identifies the major areas of development in the Borough over the next 20 years as being two proposed urban extension areas, to the north and east of the town. It also identifies a long term growth direction for the town. These areas offer significant opportunities to contribute to the strategy's objectives through the creation of new GI assets and the enhancement of retained GI. Consequently the application of the GI strategy has been looked at in greater detail for these areas, with the findings providing a starting point for more detailed site-specific master-planning (see Figures 8.4, 8.6 and 8.8).

The delivery of the strategy's objectives relating to new development, whether or not part of the urban extensions and long term growth direction, will rely on the use of the planning system. This will require the inclusion of robust policies in the Core Strategy and other Local Development Documents (LDDs), and close liaison between the Council and developers to ensure master-plans adequately address GI needs and opportunities, and that these are delivered.

Partnership with others (e.g. local communities, parish councils, the Warwickshire Wildlife Trust, British Waterways etc.) will be important in delivering other strategic objectives, as will the securing of funding. GI outcomes should be monitored and the results of the monitoring, and changes in policies, environmental information etc., should inform future reviews of the strategy.

Contents

1.	Introduction	1
1.1	The study	1
1.2	The study area	1
1.3	Study drivers	2
1.4	Structure of the report	4
2.	What is GI?	5
2.1	Definitions	5
2.2	GI functions	6
2.3	GI benefits	7
3.	Policy context	9
3.1	National policy context	9
3.2	Regional policy context	10
3.3	Local policy context	11
4.	Study approach and methodology	13
4.1	Approach	13
4.1.1	Hierarchical approach to GI planning in Rugby Borough	13
4.1.2	The basis for identifying the areas that make up GI networks	14
4.1.3	Developing the GI strategy and policy	15
4.2	Methodology	16
5.	Evidence base: GI assets	19
5.1	Assets that support natural processes	20
5.2	Assets that support ecological processes	20
5.3	Assets that are integral to health and quality of life	22

6.	Evidence base: Strategies and other documents	25
6.1	Natural processes	25
6.1.1	Sources of information	25
6.1.2	Relevance to the GI study	27
6.2	Ecological processes	28
6.2.1	Sources of information	28
6.2.2	Relevance to the GI study	35
6.3	Health and quality of life	36
6.3.1	Sources of information	36
6.3.2	Relevance to the GI study	41
6.4	Neighbouring strategic GI networks	42
7.	The strategic and local GI networks	43
7.1	Identification of Rugby's strategic GI network	43
7.2	Description of the strategic GI network	45
7.3	Local GI networks	47
8.	The GI vision and strategy	49
8.1	GI vision	49
8.2	GI strategy	50
8.2.1	Context	50
8.2.2	Developing the strategic GI network	50
8.2.3	Developing local GI networks	57
8.2.4	Application of the strategy to the potential areas of growth	60
8.3	Implementation of the GI strategy	64
8.3.1	Delivering GI	64
8.4	Review of the GI strategy	66
9.	GI policy recommendations	67
9.1	Policy recommendations and justification	67
9.1.1	Recommendations	67

9.1.2	Justification for policy recommendations	68
9.2	Supporting policies in the core strategy	69
9.3	Monitoring the implementation of GI policy	70
9.4	Links with other LDF documents and strategies	71

Table 5.1	GI assets and data source	19
Table 6.1	Habitat opportunities of most relevance to this study	34
Table 6.2	Landscape character areas and types within Rugby Borough	38
Table 6.3	Historic Landscape Character Types of relevance to the GI study	39
Table 8.1	Urban extension 1 - GI assets and application of the GI strategy	61
Table 8.2	Urban extension 2 - GI assets and application of the GI strategy	62
Table 8.3	Long Term Growth Direction - GI assets and application of the GI strategy	63
Table 9.1	Supporting GI policy through the Core Strategy	69

Figure 1.1	Location of Rugby and Rugby Borough	2
------------	-------------------------------------	---

Figure 5.1	Natural processes	After Page 24
Figure 5.2	Natural processes	After Page 24
Figure 5.3	Ecological processes	After Page 24
Figure 5.4	Ecological processes	After Page 24
Figure 5.5	Access and recreation	After Page 24
Figure 5.6	Access and recreation	After Page 24
Figure 5.7	Historic environment	After Page 24
Figure 5.8	Historic environment	After Page 24
Figure 6.1	Relevant information derived from neighbouring authorities' GI strategies	After Page 42
Figure 7.1	Strategic GI network	After Page 48
Figure 8.1	GI strategy – Borough wide map	After Page 66
Figure 8.2	GI strategy – Rugby town map	After Page 66
Figure 8.3	Potential area for growth - Urban extension 1 GI assets (as derived from available information)	After Page 66
Figure 8.4	Potential area for growth - Urban extension 1 Application of the GI strategy	After Page 66
Figure 8.5	Potential area for growth - Urban extension 2 GI assets (as derived from available information)	After Page 66
Figure 8.6	Potential area for growth - Urban extension 2 Application of the GI strategy	After Page 66
Figure 8.7	Potential area for growth - Long Term Growth Direction GI assets (as derived from available info)	After Page 66
Figure 8.8	Potential area for growth - Long Term Growth Direction Application of the GI strategy	After Page 66

Appendix A	Accessible Natural Greenspace Standards	
Figure A1.1	ANGSt 300m Buffer Map, Rugby Borough Map	
Figure A1.2	ANGSt 300m Buffer Map, Rugby Town Map	
Figure A2.1	ANGSt 2km Buffer Map, Rugby Borough Map	
Figure A2.2	ANGSt 2km Buffer Map, Rugby Town Map	
Figure A3.1	ANGSt 5km Buffer Map, Rugby Borough Map	
Figure A3.2	ANGSt 5km Buffer Map, Rugby Town Map	
Figure A4.1	ANGSt 10km Buffer Map, Rugby Borough Map	

1. Introduction

1.1 The study

Rugby Borough Council commissioned Entec in February 2009 to undertake a Green Infrastructure (GI) study of the Borough. The study's objectives are to:

- bring together existing data on GI sites (including both publicly accessible and non-accessible greenspace) and map out existing greenspace provision and deficiencies;
- identify future greenspace needs of the growing population, looking forward at least twenty years, within the context of a changing climate;
- identify opportunities for GI within and adjacent to major development sites, embracing and developing the work being carried out by Rugby Borough Council through its Local Development Framework (LDF) and work being carried out within the Landscapes for Living project, of which Rugby Borough Council is a partner;
- carry out a general, Borough-wide analysis identifying opportunities and future projects and consider linkages across the local authority boundary where appropriate;
- develop the analysis into a bold and imaginative Borough-wide strategy which builds upon current and future initiatives, and identifies key issues, including those relating to biodiversity and geodiversity, landscape, sustainable water management, rights of way and the historic environment;
- propose an implementation strategy, funding mechanisms and a framework for the longer-term management and maintenance of any future assets created;
- identify indicators and targets to monitor progress in the creation of the GI network; and
- identify possible Core Strategy policies for delivering GI.

1.2 The study area

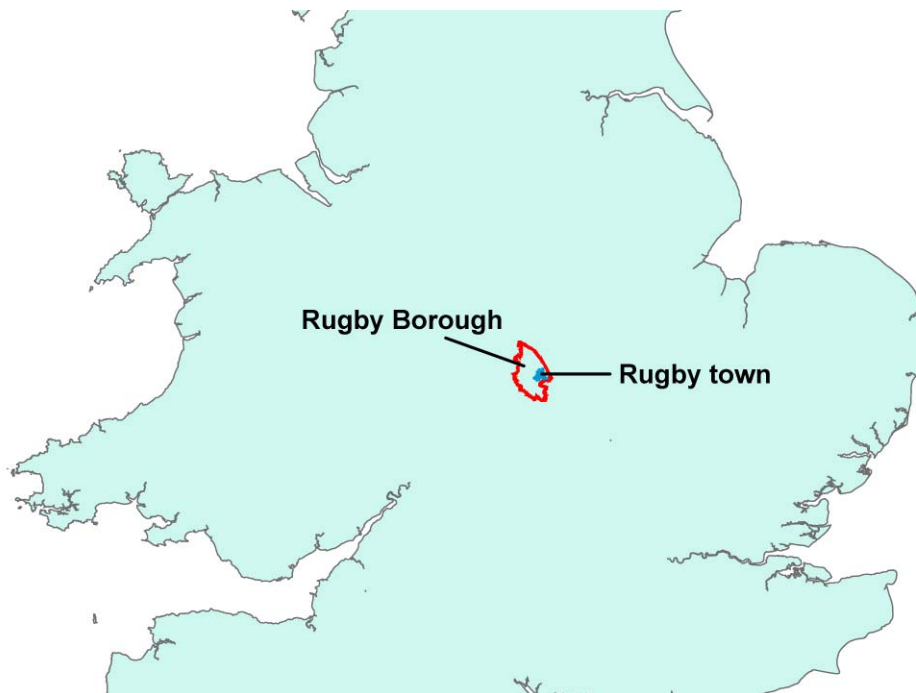
The Borough of Rugby, which covers an area of 138 square miles, is located in central England, within the county of Warwickshire. The Borough is on the eastern edge of the West Midlands region, bordering directly on to the counties of Northamptonshire and Leicestershire, both of which are in the East Midlands region. The Borough comprises 39 parishes.

The only town within the Borough is Rugby. Two thirds of the Borough's 91,600 residents live in the town, with the remainder residing in the rural area, where settlements range in size up to 3,000 people. The City of Coventry

abuts the western edge of the Borough, with there being a large swath of Green Belt (forming part of the strategic West Midlands Green Belt) between Coventry and the western boundary of the town of Rugby.

The Borough has good connections to the motorway network, with the M6 and the M45 running through the Borough and the M1 running just to the east of the Borough. The west coast mainline railway (between London and the north-west/Scotland) runs through the Borough, with a station located in the town of Rugby.

Figure 1.1 Location of Rugby and Rugby Borough



1.3 Study drivers

The case for GI as part of planning for existing and new communities has been well and widely made and is embodied in national initiatives and guidance, as well as emerging regional policy. Examples of national initiatives include the Sustainable Communities agenda, which has embraced the idea of GI, and Natural England and its

predecessor bodies, which, for many years, have highlighted how high quality, accessible natural greenspace¹ can enhance the quality of life through benefits for health and well-being (e.g. through the provision of improved recreational facilities and contact with nature), as well as enhancing biodiversity and the landscape.

Looking forward there is a major challenge for the Borough of Rugby in relation to the growth agenda set out in the Draft Regional Spatial Strategy², which requires the Borough to deliver at least 10,800 new homes up to 2026. Some of these dwellings have already been built whilst others have either been permitted or allocated in existing plans. On this basis, approximately 7,500 further dwellings will have to be accommodated through allocations in the emerging Core Strategy. The *Local Development Framework Core Strategy Preferred Options Paper*³ identifies two 'urban extensions', which would meet this requirement. However, as the target number of new homes is yet to be finalised and could exceed 7,500 dwellings, the Options Paper includes an additional long term option for further growth (referred to as the 'Long Term Growth Direction').

The scale of development that is needed reflects the fact that the Borough has been identified as a settlement of 'Significant Development' where new development will be focused. This designation reflects, at least in part, the fact that the Borough occupies a key strategic point on the national road and rail networks, with the west coast mainline and the M1, M6, M69 and the A14 providing excellent linkages within the region and beyond, notwithstanding the wider qualities of the Borough relating to quality of life, and its schools, hospital and other attributes.

In this context, there is a need to protect and, where possible enhance, key environmental assets that form part of the Borough's GI to ensure they are not damaged by new growth. It is also recognised that new GI assets should be created in relation to the proposed urban extensions to the north and east of the town, as well as in relation to the long term growth direction for the town.

¹ e.g. see English Nature (2003). *Providing Accessible Natural Greenspace in Towns and Cities*. English Nature, Peterborough.

² West Midlands Regional Assembly (2007). *West Midlands Regional Spatial Strategy (RSS), Phase Two Revision Draft Preferred Option*. West Midlands Regional Assembly, Birmingham.

³ Rugby Borough Council (1998). *Local Development Framework Core Strategy Preferred Options Paper 2008*. Rugby Borough Council, Rugby.

1.4 Structure of the report

The phrase 'Green Infrastructure' (GI) is increasingly being used in planning and environmental circles but is not yet in common parlance. For this reason, the second chapter of this report sets out a definition of GI and explores the functions and benefits of GI. The remainder of the report is subdivided as follows:

- chapter 3 outlines the policy context to GI;
- chapter 4 outlines the methodology that has been adopted for the study;
- chapter 5 illustrates the GI assets across the Borough;
- chapter 6 reviews strategies and documents of relevance to GI planning
- chapter 7 explores strategic and local GI networks;
- chapter 8 sets out the GI strategy; and
- chapter 9 includes a draft GI policy.

2. What is GI?

2.1 Definitions

There are numerous definitions of GI but, for this study, use has been made of the definitions from *PPS12* and *Green Infrastructure - A prospectus for the West Midlands Region*, which was prepared on behalf of the West Midlands Regional Assembly.

- *“Green Infrastructure is 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.”*⁴
- *Green Infrastructure is the network of green spaces and natural elements that intersperse and connect our cities, towns and villages. It is the open spaces, waterways, gardens, woodlands, green corridors, wildlife habitats, street trees, natural heritage and open countryside. Green Infrastructure provides multiple benefits for the economy, the environment and people.*⁵

These two definitions complement each other, with the first, from PPS12, setting out, at a high level, what is GI and what are its main functions, whilst the West Midlands definition provides a more detailed description of the diversity of greenspaces that make up GI and outlines the benefits that GI delivers. GI’s functions and benefits are described in more detail below.

In effect, GI comprises the totality of our outdoor environment, whether comprising land or water, undeveloped or previously developed land, and even the outdoor environment that is associated with built development (e.g. green roofs). However, not all of the total GI resource is of equal importance, with some areas being of greater value than others, for example by virtue of their intrinsic interest (e.g. in historic environment terms or for biodiversity), their potential value (e.g. for habitat creation, management of the historic environment assets or landscape enhancement), their location or because of the use that is made of them. In this report, those parts of the GI resource that are of particular importance for one or more of these reasons are referred to as ‘GI assets’.

⁴ Department for Communities and Local Government (2008). *Planning Policy Statement 12: Creating strong safe prosperous communities through Local Spatial Planning*. The Stationery Office, Norwich.

⁵ West Midlands Regional Assembly’s Environment Partnership (2007). *Green Infrastructure - A prospectus for the West Midlands Region*. West Midlands Regional Assembly, Birmingham
(available at <http://www.growingourfuture.org/wmwff/taskgroups/gip/prospectus.pdf>)

2.2 GI functions

As reflected in the PPS12 definition, GI is a network of greenspace that is ‘multi-functional’ - that is, it delivers more than one function of public benefit in relation to natural and ecological processes, or the health and quality of life of sustainable communities. This does not mean that every part of this network has to have two or more functions, although this will often be the case - rather it is the network as a whole that is multi-functional.

GI’s functions are very diverse but have been summarised in *Green Infrastructure Strategies - An introduction for local authorities and their partners*⁶ as follows.

- helping areas cope with the impacts of climate change;
- providing flood storage space in times of flood;
- providing a place for wildlife to live;
- providing recreational space for healthy exercise and a relatively tranquil environment;
- contributing an attractive green element to the image of an area;
- raising the quality of people’s every day living and working environments;
- providing areas for local food production; and
- providing a transport corridor for walkers and cyclists.

The Oxford Canal in Rugby is a good example of how GI can be multi-functional. It provides a valued semi-natural habitat for wildlife and its connectivity to the wider canal network and proximity to other areas of GI (e.g. in places it is close to the River Avon and numerous designated and proposed sites of nature conservation value) facilitates the movement of species. In some cases this may enable an interchange of individuals between separate populations, thereby reducing the risk of small isolated populations dying out. It may also help species to cope with the impacts of climate change (e.g. as new species move into the Borough from the south of England as temperatures warm). The canal also delivers a range of quality of life benefits to the Borough’s residents. For example, by providing contact with nature, a link to the historic environment, a recreational resource conducive to healthy exercise, a sustainable transport corridor, and connectivity between the urban and rural environs. Furthermore, the canal provides an attractive green element which shapes the town’s morphology, character and

⁶ Forestry Commission and Natural England (2008). *Green Infrastructure Strategies - An introduction for local authorities and their partners*. Natural England, Sheffield.
(available at <http://naturalengland.etraderstores.com/NaturalEnglandShop/Product.aspx?ProductID=a591832d-5c96-4903-a51c-683ad71f2fc8>)

setting as well as local landscape character, thereby contributing to the quality of people’s everyday living and working environments. With this diversity of functions, the Oxford Canal stands out as one of the key GI assets in the Borough.

2.3 GI benefits

The benefits associated with the functions that GI provides, are far reaching, as illustrated in Box 1, which subdivides these benefits under social, economic and environmental themes.

Box 1	Benefits of GI
Economic benefits	<ul style="list-style-type: none"> • Provides climate change mitigation and adaptation, for example flood alleviation and micro-climate attenuation • Increases property and land values • Helps attract and retain people ensuring stable populations and labour supply • Provides opportunities for education and training, including lifelong learning for adults • Delivers urban and rural policy, renaissance and regeneration objectives through robust and cost-effective means • Sustains environmental tourism providing employment opportunities and boosting local economies • Provides an inspiring setting for economic growth and investment
Social benefits	<ul style="list-style-type: none"> • Facilitates community cohesion, helping to reach across traditional social barriers • Enables essential contact between people and nature • Provides opportunities to maintain or enhance people's physical health and mental well-being • Helps protect and promote the Region's rich cultural heritage • Provides opportunities for reflection and a tranquil respite from the often hectic urban environment • Provides opportunities to reinforce feelings of local pride and a sense of ownership and belonging
Environmental benefits	<ul style="list-style-type: none"> • Provides a framework and encouragement for the use of sustainable transport such as walking and cycling • Protects, restores and de-fragments habitats that support priority species currently threatened by agricultural intensification, urban sprawl and climate change • Supports environmental processes and natural resource remediation (air, soil and water) • Reinforces and enhances landscape character and local distinctiveness • Supports wildlife 'reservoirs' and provides a refuge/buffer from anthropogenic pressures (human disturbance, pollution, invasive/domestic species, etc.) • Protects and enhances the Region's historic assets
<p>Source: Green Infrastructure - A prospectus for the West Midlands Region⁵</p>	

3. Policy context

A key objective of this study is to inform the preparation of the Borough's Core Strategy, which was in preparation at the time of writing this report. The GI study will also form part of the evidence-base that is used to inform other Local Development Documents that will make up the Local Development Framework (LDF) for the Borough. The remainder of this chapter sets out the national, regional and local policy context to GI being addressed in the Borough's LDF.

3.1 National policy context

The requirement for planning policy documents to address GI needs is set down in *Planning Policy Statement (PPS) 12: Local Spatial Planning*, paragraph 4.8; which states the following.

“The core strategy should be supported by evidence of what physical, social and green infrastructure is needed to enable the amount of development proposed for the area, taking account of its type and distribution. This evidence should cover who will provide the infrastructure and when it will be provided. The core strategy should draw on and in parallel influence any strategies and investment plans of the local authority and other organisations.”

This requirement should be seen within the wider context of *PPS1 Delivering Sustainable Development*, which sets out the Government's overarching planning policies on the delivery of sustainable development through the planning system. Paragraph 36 outlines the need to ensure that developments:

- *“optimise the potential of the site to accommodate development, create and sustain an appropriate mix of uses (including incorporation of green and other public space as part of developments) and support local facilities and transport networks;*
- *respond to their local context and create or reinforce local distinctiveness”.*

The *Planning and Climate Change Supplement* to PPS1 states, within paragraph 24, that, when selecting land for development sites, planning authorities should take into account:

“the contribution to be made from existing and new opportunities for open space and green infrastructure to urban cooling, sustainable drainage systems, and conserving and enhancing biodiversity.”

Other national planning policies that are relevant to GI, reflecting the multi-functionality of GI include: *PPS3 Housing; PPS6 Planning for Town Centres; PPS7 Sustainable Development in Rural Areas; PPS9 Biodiversity and Geological Conservation; PPS11: Regional Spatial Strategies; Planning Policy Guidance (PPG) 15 Planning and the Historic Environment; PPG16 Archaeology and Planning; PPG17 Planning for Open Space, Sport and*

Recreation; PPS22 Renewable Energy; and PPS25: Planning and Flood Risk. These policies are relevant as they consider the management of attributes which contribute to or have the potential to contribute to GI.

3.2 Regional policy context

At a regional level, the *West Midlands Regional Spatial Strategy (RSS), Phase Two Revision Draft Preferred Option* specifies that locations for new development should support essential services including “*a network of green infrastructure to promote healthy living*”. It goes on to state that sustainable communities should include “*opportunities to improve health and increase physical activity levels through a network of green infrastructure provision*”. This approach to GI is reflected in Policy SR2, which states that, in creating sustainable communities, there is a requirement:

“for a comprehensive green infrastructure network that provides the full range of environmental services, including mitigation and adaptation to a changing climate, accessible greenspace for walking and cycling, sport and recreation, health and wellbeing and protects, consolidates and enhances biodiversity and geodiversity, especially the Region’s European sites, and its historic assets and landscape character”.

To be effective, this network must be planned strategically and delivered in an integrated way across the whole Sub-Region and at all spatial planning levels.

There is a variety of regional planning policies of relevance to GI, reflecting its multi-functional characteristics. These include: Policy QE1 - Conserving and Enhancing the Environment; Policy QE2 - Restoring Degraded Areas and Managing and Creating High Quality New Environments; Policy QE3 - Creating a High Quality Built Environment For All; Policy QE4 - Greenery, Urban Greenspace and Public Spaces; Policy QE5 - Protection and Enhancement of the Historic Environment; Policy QE6 - The Conservation, Enhancement and Restoration of the Region’s Landscape; Policy QE7 - Protecting, Managing and Enhancing the Region’s Biodiversity and Nature Conservation Resources; Policy QE8 - Forestry and Woodlands; and Policy QE9 - The Water Environment. Again these policies are relevant as they consider the management of attributes which contribute to or have the potential to contribute to GI.

The Phase Three Revision Draft of the *Regional Spatial Strategy* was in preparation at the time of writing this report, however a Project Plan and an Options Consultation has been published. The Project Plan for the Phase Three Revision states that one of its tasks is “*To establish a set of criteria or principles for guiding the protection, conservation, enhancement and management of the Region’s environmental assets, including its green infrastructure, its landscape and tranquillity assets and the quality of its built environment, in terms of their current status, condition and future potential, and the wider social and economic benefits that the environmental assets are capable of delivering.*”

The Phase Three Revision Options Consultation indicates Policy QE4 - Greenery, Urban Greenspace and Public Spaces will be re-titled 'Green Infrastructure' and the policy will include "*a requirement for local authorities to produce GI strategies*"

3.3 Local policy context

At the local level, Rugby Borough Council's *Local Development Framework Core Strategy Preferred Options Paper 2008*⁷ sets out a 'Spatial Vision' to guide future development in the Borough. To achieve this vision, a series of economic, social and environmental objectives have been developed. Objective 10, which is set out below, specifically deals with the need to create a GI network throughout the Borough.

"To deliver the benefits of good quality open spaces to people and wildlife by creating a green infrastructure network throughout the Borough, creating a slice of the countryside in our urban areas."

⁷ Rugby Borough Council (1998). *Local Development Framework Core Strategy Preferred Options Paper 2008*. Rugby Borough Council, Rugby.

4. Study approach and methodology

4.1 Approach

4.1.1 Hierarchical approach to GI planning in Rugby Borough

As part of the core strategy, it is important to define which parts of the Borough's total GI resource are sufficiently interconnected and multi-functional in the support that they provide, at a Borough-wide level, for natural and ecological processes, and/or for the health and quality of life of people's lives (as set out in the PPS12 definition), that they should be highlighted as priorities for delivering a sustainable community within the Borough as a whole. These areas of GI make up what is referred to in this report as the 'strategic GI network'.

Although the strategic GI network provides the right basis for Borough-wide planning, it will not, on its own, deliver sustainable communities at a more local level. Such communities rely on a much wider range of the Borough's GI resource. In this report, the network that is specific to a community that lives within an area of development, however defined (e.g. a new urban extension, an individual ward within Rugby or a village) is called a 'local GI network'; this may or may not include part of the strategic GI network. Local GI networks will comprise those GI assets that are of particular value for the relevant local communities.

For existing communities, the local GI network may comprise, for example, canals, disused railways, parks, street trees and allotments, all of which contribute to the quality of people's lives as well as natural and ecological processes. The priority for these existing local networks will be to protect the most valuable GI resources in the face of development pressures (e.g. infill development resulting in the loss of allotments or large gardens) and to deliver enhancement to these resources (e.g. where areas of bland amenity grassland can be improved as a resource for people and wildlife).

For new communities, for example associated with the proposed urban extensions, new local GI networks will need to be 'fashioned', as part of the master-planning process, ideally incorporating links to the strategic GI network. By starting from scratch, in terms of GI planning, such developments provide a great opportunity to create multi-functional GI networks, which have the potential to deliver a much wider range of benefits than it is often possible to achieve in association with existing communities.

This high level study does not identify the local GI networks that exist throughout the Borough. However, guidance is provided on the types of GI assets that make up local GI networks and the standards that should be applied in defining such networks.

The remaining areas of GI in the Borough (i.e. that do not form part of the strategic or local GI networks) include much of the Borough's agricultural land with its associated rights of way, hedgerow networks, flora and fauna, as well as specific GI assets (e.g. designated sites of historic or nature conservation importance) and all but very large gardens. These resources also make a vital contribution to natural and ecological processes within the Borough and to the quality of life of those who live and work in the Borough (e.g. in terms of their contribution to the character of the landscape).

4.1.2 The basis for identifying the areas that make up GI networks

The PPS12 definition of GI (see section 2.1) has been used in this study to provide a framework for informing the definition of the strategic and local GI networks, all of which are multi-functional. The definition includes three broad attributes of GI, specific aspects of which have been used to inform the definition of the strategic and local GI networks, as set out below.

- Support **natural processes** - GI can support a variety of natural processes including the hydrological, carbon and nitrogen cycles together with geological and geomorphological processes. Of these processes, it is those relating to hydrology, geology and geomorphology that are most relevant to identifying GI networks, with hydrological processes being of particular significance at the strategic level. This reflects the distribution and connectivity of rivers and their floodplains across the Borough.
- Support **ecological processes** - GI can support ecological processes by providing a place for wildlife to live and facilitating species movement between habitats as well as assisting species movement in response to climate change. At the strategic level, it is appropriate to highlight any areas where there is a concentration of important wildlife sites, especially where these show a high level of connectivity. Also important are long linear corridors with a high proportion of semi-natural habitats, which provide routes that can be used for species movements. Valuable sites that are associated with these corridors should also be incorporated into the strategic network. Other valuable sites, less extensive or lower value habitat corridors (e.g. hedgerows) and notable species populations should be incorporated into local networks.
- Be integral to the **health and quality of life** of sustainable communities - GI can positively contribute to people's health and quality of life by providing accessible GI (of various types and sizes including allotments) that can be used for outdoor recreation or food production. GI can also support the conservation of historic environment, biodiversity and landscapes features that contribute to people's quality of life. Large GI assets that provide a high quality resource for informal recreation are important at a strategic level, because they attract users from an extensive area, in some cases extending well outside the Borough. Such sites, which for this study have been taken to be 20ha or larger, have been included in the strategic network. Smaller accessible sites should be incorporated into local GI networks, as should other areas such as allotments, and landscape and historic environment features (notwithstanding where these have been included in the strategic GI network for other reasons).

As well as considering these three attributes, the identification of the strategic GI network has been informed by the strategic networks that have been identified through GI studies for neighbouring local authority areas. In some cases, adjacent GI studies have identified strategically important GI assets within Rugby Borough. These were also considered in the identification of Rugby Borough's strategic GI network.

4.1.3 Developing the GI strategy and policy

The next stage of our approach was to identify both current and future GI needs and opportunities in the Borough recognising that these, as well as existing GI assets, have a role in shaping the GI vision and strategy.

In developing the vision and strategy, careful consideration was given to the emerging Core Strategy which identifies development changes within the Borough over the next 20 years. As a consequence, in addition to developing a vision and strategy for the whole Borough, the strategy focuses upon the proposed urban extensions and long term growth direction identified in the emerging Core Strategy. These areas provide the most significant opportunities in the Borough relating to the enhancement and the creation of new GI assets.

The success of the GI strategy is dependent upon effective delivery. As such, potential delivery mechanisms and funding opportunities are explored and GI planning policy recommendations are presented. These policy recommendations will seek to ensure that GI, as with other infrastructure such as transport and sewage networks, is recognised as an essential 'must have' rather than an optional 'nice to have'.

4.2 Methodology

The five tasks undertaken as part of the study are summarised in Box 2.

Box 2	Study Tasks
	<p>Task 1 - Identification of GI assets</p> <p>The GI assets that could contribute to the strategic and local GI networks were identified and, where available, digitised boundary data were obtained for these assets, allowing them to be mapped on a Geographic Information System (GIS). In some cases digitised boundary data were not available or represented too fine a level of detail to inform the strategy. The findings of Task 1 are set out in section 5.</p> <p>Task 2 - Review of strategies and documents of relevance to GI planning</p> <p>GI strategies for neighbouring local authority areas, and studies of relevance to Rugby's GI were collated and reviewed, to determine neighbouring authorities' GI networks, strategically important GI resources within the Borough, and GI needs and opportunities. The findings of this task are set out in section 6.</p> <p>Task 3 - Identification of the strategic and local GI networks</p> <p>The findings of Tasks 1 and 2 were used to identify the strategic GI network and standards for defining local GI networks. An initial strategic GI network was developed in advance of a stakeholder meeting, following which the network was revised to respond to comments received at the meeting and information that was provided subsequently, notably by the Warwickshire Wildlife Trust. The findings of Task 3 are set out in section 7.</p> <p>Task 4 - Development of a GI 'vision' and strategy</p> <p>The preparation of the vision and strategy were informed by the work that was carried out under the preceding tasks, the stakeholder meeting and discussions with staff at the Borough Council. The findings of this task are set out in section 8.</p> <p>Task 5 - Preparation of GI policy recommendations</p> <p>In response to the vision and strategy, GI policy recommendations were prepared for consideration by Rugby Borough Council in formulating its core strategy. The findings of this task are set out in section 9.</p>

As part of Task 2, the study was informed by emerging guidance and best practice on GI planning across the country and more particularly for the West Midlands. The key documents to which reference was made are outlined below.



Natural England (2009). *Green Infrastructure Guidance*. Natural England, Sheffield. (Available at <http://www.naturalengland.org.uk/ourwork/planningtransportlocalgov/greeninfrastructure/default.aspx>).

This guidance articulates the importance of early planning for green infrastructure and integrating green infrastructure strategies within spatial planning.

(It should be noted that although this guidance was published after much of the work on this study had been undertaken)



Green infrastructure strategies

An introduction for local authorities and their partners

www.naturalengland.gov.uk



Forestry Commission and Natural England (2008). *Green Infrastructure Strategies - An introduction for local authorities and their partners*. Natural England, Sheffield. (Available at <http://naturalengland.etraderstores.com/NaturalEnglandShop/Product.aspx?ProductID=a591832d-5c96-4903-a51c-683ad71f2fc8>).

This provides an introduction to GI in terms of why GI is needed and what it should achieve. It sets out the functions of GI, outlines the planning and implementation of GI, and the role of GI strategies.



eco-towns green infrastructure worksheet

TCPA, Department for Communities and Local Government and Natural England (2008). *The essential role of Green Infrastructure: Eco-towns Green Infrastructure Worksheet Advice to Promoters and Planners*. (available at http://www.tcpa.org.uk/ecotowns/20081020_ET-WS_Green_Infrastructure.pdf)

This worksheet provides guidance on the application of GI to eco-town planning and development. Although it has been specifically written for eco-towns, much of what is said is more widely applicable



West Midlands Regional Assembly's Environment Partnership (2007). *Green Infrastructure - A prospectus for the West Midlands Region*. West Midlands Regional Assembly, Birmingham.

The prospectus sets out what GI is, why there is a need to invest in GI and a regional GI vision.

It is understood that at the time of writing, the planning team at English Heritage's West Midland's office was in the process of drafting a guidance note to highlight the importance of the historic environment in GI studies. This was not available at the time of this study.

As part of Task 3, the study was informed by a stakeholder workshop⁸ that was held on 13 March 2009. Many of these stakeholders also provided data about environmental resources within the Borough, which were used in Task 1 and subsequent tasks.

⁸ Attended by Rugby Borough Council (planning and public realm officers), Warwickshire County Council (senior ecologist and landscape archaeologist), Warwickshire Wildlife Trust, Natural England, Forestry Commission, and British Waterways.

5. Evidence base: GI assets

The datasets set out in Table 5.1 were used to map GI assets.

Table 5.1 GI assets and data source

GI asset and data source	Assets that support natural processes (excluding ecological processes)	Assets that support ecological processes	Assets that are integral to peoples health and quality of life
Rivers - including their headwaters and floodplains (taken from the Strategic Flood Risk Assessment [SFRA] provided by Rugby Borough Council)			
Regionally Important Geological Sites (provided by Rugby Borough Council)			
Sites of Special Scientific Interest (www.magic.gov.uk)	*		
Local Nature Reserves (www.magic.gov.uk)			
Ancient Woodland (www.magic.gov.uk)			
Wildlife Trust Reserves (Warwickshire Wildlife Trust)			
Canals (taken from the Strategic Flood Risk Assessment [SFRA] provided by Rugby Borough Council)			
Disused railways lines (derived from the Historic Landscape Characterisation data provided by Warwickshire County Council)			
Other valued semi natural habitats (provided by Rugby Borough Council)			
Open Spaces (taken from the Open Space Audit provided by Rugby Borough Council)			
Countryside Sites (Warwickshire County Council)			
Country Parks (www.magic.gov.uk)			
Countryside Rights of Way Act access land (www.magic.gov.uk)			
Scheduled Monuments (English Heritage)			
Registered Parks and Gardens (English Heritage)			
Conservation Areas (provided by Rugby Borough Council)			

* Geological SSSIs

5.1 Assets that support natural processes

Figures 5.1 and 5.2 (at the Borough and town level respectively) show the locations of rivers and any land within Flood Zones 3 and 3b as indicated within the strategic flood risk assessment (SFRA⁹) together with geological Sites of Special Scientific Interest (SSSI) and Regionally Important Geological Sites (RIGS) (i.e. assets which support geological/geomorphological processes).

The river network includes the ‘Main Rivers’¹⁰ of the River Avon which cuts through the middle of the Borough and passes in a westerly direction through Rugby town, and the River Swift which enters Rugby town from the north before joining the River Avon. The River Leam (including the tributaries of Birdingbury Brook and Millholme Brook) is another Main River, which cuts through the southern part of the Borough. The remaining Main Rivers within the Borough comprise: the River Itchen forming part of the Borough’s south-western boundary; Harrow Brook forming part of northern boundary of the Borough; Withy Brook to the west; and Sketchley Brook to the north.

Other rivers (termed Minor Rivers within the SFRA) include: Clifton Brook on the eastern fringe of Rugby town (a small part of the Clifton Brook is designated as a Main River); tributaries of the River Anker located to the north of the Borough (outside the Borough the River Anker is defined as a Main River); Rains Brook (a tributary of the Leam), which forms part of the south-east boundary of the Borough; and Smite Brook, which is located to the west of the Borough.

Flood Zones 3 and 3b within the SFRA are areas with a high probability of flooding and areas of functional floodplain. They are associated with a number of the rivers noted above. Flood Zones 1 and 2 within the SFRA have a low and moderate probability of flooding respectively and are not shown on Figures 5.1 or 5.2.

The Borough contains two geological SSSIs, namely Ryton and Brandon Gravel Pits and Wolston Gravel Pit. These are located to the west of the Borough. Two RIGS are present within the Borough; these are located within close proximity to Rugby town. One, a disused quarry, is located to the west of the town between New Bilton and the rail line; the other is located to the south-east of the town, associated with a railway cutting near Wharf Bridge.

5.2 Assets that support ecological processes

Figures 5.3 and 5.4 (at the Borough and town level respectively) show the location of sites of high biodiversity value. These include statutory and non-statutory sites of nature conservation importance together with ancient

⁹ *Strategic Flood Risk Assessment for Local Development Framework Level 1* (Rugby Borough Council, 2008).

¹⁰ As defined by the Environment Agency.

woodlands that also recognised as being of particular importance¹¹ (not all areas of ancient woodland in the Borough are designated as statutory or non-statutory sites of nature conservation importance). Canals and disused railways have also been mapped as they play an important role in facilitating species movement as do rivers (the latter are already mapped in Figures 5.1 and 5.2).

The Borough contains all, or parts of five biological SSSIs namely Brandon Marsh, Coombe Pool, Ryton Wood, Draycote Meadows, and Stockton Railway Cutting & Quarry. Of these, the first three are concentrated to the west of the Borough where the Borough adjoins the urban areas of Coventry. In addition to these SSSIs two further SSSIs, Herald Way Marsh (also known as Claybrookes Marsh) and Calcutt Locks Meadows, lie outside the Borough but immediately adjoin its boundary. None of the SSSIs within or adjoining the Borough are European wildlife sites.

Within, or immediately adjacent to the Borough, there are six Local Nature Reserves (LNRs), namely Ashlawn Cutting, Newbold Quarry Park, Swift Valley, Cock Robin Wood, Stockton Railway Cutting and Herald Way Marsh. The first four LNRs are located in and around Rugby town whilst the remaining two are located on the Borough's boundary. There are no National Nature Reserves within the Borough.

Located throughout the Borough there are 12 Sites of Importance for Nature Conservation (SINCs) namely Oxford Canal Meadows, Abbots Farm, Lime Kilns, Osier Meadow, Cawston Spinney, Wolvey Rush Pasture, Manor Farm Meadows, Home Farm Grasslands - Ansty, Hopsford Hall Pastures, Sally's Hole, Brandon Little Wood and Burton Hill Meadows. Of these, three are located in close proximity to the urban area of Rugby, namely Cawston Spinney (to the south-west of the town) together with the Oxford Canal Meadows and Abbots Farm (both located to the east of the town). Furthermore there are numerous other valued semi-natural habitats that have been identified throughout the Borough.

There is a concentration of large ancient woodlands located to west of the Borough, some of which are SSSIs or SINCs. These include Princethorpe Great Wood, Ryton and Shrubs Woods, Brandon Wood, New Close and Birchley Wood, Piles Coppice, and Bull and Butcher Wood. Closer to Rugby, there is a small concentration of ancient woodland to the south-west of the town, which encompasses Cawston Spinney and part of Fox Covert.

Warwickshire Wildlife Trust Reserves generally coincide with the above statutory and non-statutory sites or ancient woodlands. The only exception is Windmill Spinney Trust Reserve which is located within Rugby town (within the Bilton area).

The canal network in the Borough comprises: Oxford Canal which cuts through the middle of the Borough and passes through the northern part of Rugby Town; the Grand Union Canal which runs along the southern boundary of the Borough and links to the Oxford Canal; and Ashby Canal which passes through the northern tip of the

¹¹ *Planning Policy Statement 9: Biodiversity and Geological Conservation.*

Borough. The disused railway network is generally located to the east of the Borough, radiating out from Rugby town.

Data about notable species of fauna and flora were not collected as they represent too fine a grain of information for use in defining the strategic GI network, which was the main focus of this study. Although additional data on field boundaries were available digitally (as part of the Habitat Biodiversity Audit¹²) they also represented too fine a grain of information for use in this study. It is recognised however, that the presence of notable species and field boundaries is important when defining local GI networks.

5.3 Assets that are integral to health and quality of life

Biodiversity assets contribute to people's health and quality of life and have been identified above. Other resources which contribute to people's health and quality of life include:

- access and recreation;
- historic environment features; and
- landscape features.

Access and recreation

Figures 5.5 and 5.6 (at the Borough and town level respectively) show the locations of access and recreation resources within the Borough.

The national dataset of country parks (provisional data available from www.magic.gov.uk) and countryside site data (held by Warwickshire County Council), shows three country parks within the Borough: Coombe Abbey, Draycote Water and Ryton Pools. In addition to country parks the Borough's Open Space Audit¹³ has defined additional areas of open space.

Areas of open space above 20ha in size include: Draycote Water (incorporating the country park); a cluster of sites around the edge of Coventry (i.e. Coombe Country Park, Brandon Nature Reserve, Brandon Wood, New Close Wood, Piles Coppice, Brandon Wood Golf Course, Jubilee Pool and Ryton Pools Country Park); two sites on the

¹² Prepared in partnership by all the local authorities in the area, English Nature, the Environment Agency and the Warwickshire Wildlife Trust.

¹³ Halcrow and Alliance Planning (2008). *Rugby Open Space Audit*. Alliance Planning, Birmingham.

edge of or within Rugby town (Swift Valley Nature Reserve and Great Central Walk); and Newham Paddox Art Park.

There is a large concentration of smaller greenspaces in and around the urban area of Rugby, serving the urban as well as adjacent communities. Otherwise, smaller open spaces are scattered across the Borough, often associated with settlements. The Open Space Audit provides information as to the types of open spaces present, their quality and value.

The extent of open access land (as defined through the *Countryside and Rights of Way Act 2000*) is limited in the Borough to a small area at Stretton-on-Dunsmore.

It should be noted that digital data on public rights of way was not available and therefore these routes have not been mapped as GI assets. However public rights of way can be seen on 1:50 000 and 1:25 000 OS mapping and their importance particularly at the local level should be recognised.

Historic environment features

Figures 5.7 and 5.8 (at the Borough and town level respectively) show the locations of designated historic environment sites in the Borough.

Five Registered Parks and Gardens are located within the Borough (Coombe Abbey, Ryton House, Newnham Paddox, Bilton Grange and Dunchurch Lodge). The latter two are located close to the southern edge of Rugby town. Throughout the Borough there are 34 Scheduled Monuments and 18 designated Conservation Areas, eight of which lie within or in close proximity to the town.

Canals and disused railways are also recognised as historic environment features that contribute to people's quality of life (these are mapped on Figures 5.3 and 5.4). The Oxford Canal and several disused railways pass through Rugby town.

Data about historic environment records were not collected as they represent too fine a grain of information for use in defining the strategic GI network, which was the main focus of this study. It is however recognised that their presence is important specifically when defining local GI networks.

Landscape features

Landscape features and the character of the landscape more generally contribute to people's quality of life. Local character (as defined through landscape character assessments and historic landscape character work) is therefore important when considering local GI networks. It should be noted that there are no designated landscapes within the Borough.

6. Evidence base: Strategies and other documents

For each of the three high level functions of GI (derived from PPS12), this chapter outlines any strategically important areas of GI that have already been identified within the Borough, and key needs and opportunities that have been identified relating to GI. The relevance of the content of these documents to the GI study in terms of informing either the GI networks or the GI strategy is indicated. This section concludes with a review of the strategic GI that is identified in neighbouring local authorities' GI strategies. As the GI strategy is informed by these neighbouring strategies, there is a large degree of compatibility and linkages, and, as a consequence, potential conflicts are minimised.

6.1 Natural processes

6.1.1 Sources of information

In the context of planning at the Borough level, the main opportunity for GI to contribute to supporting natural processes is in relation to hydrological processes. The *Strategic Flood Risk Assessment for Local Development Framework Level 1* (Rugby Borough Council, 2008) identifies the following flood risk management policy considerations.

- Flood Risk Objective 1: To seek flood risk reduction through spatial planning and site design.
- Flood Risk Objective 2: To reduce surface water runoff from new developments and agricultural land.
- Flood Risk Objective 3: To enhance and restore the river corridor.
- Flood Risk Objective 4: To protect and promote areas for future flood alleviation schemes.
- Flood Risk Objective 5: To improve flood awareness and emergency planning.

These objectives are detailed in Box 3.

Box 3 Flood risk objectives

Flood Risk Objective 1: To seek flood risk reduction through spatial planning and site design:

- Use the Sequential Test to locate new development in least risky areas, giving highest priority to Flood Zone 1.
- Use the Sequential Test within development sites to inform site layout by locating the most vulnerable elements of a development in the lowest risk areas. For example, the use of low-lying ground in waterside areas for recreation, amenity and environmental purposes can provide an effective means of flood risk management as well as providing connected green spaces with consequent social and environmental benefits.
- Build resilience into a site's design (e.g. flood resistant or resilient design, raised floor levels).
- Identify long-term opportunities to remove development from the floodplain through land swapping.
- Ensure development is 'safe'. For residential developments to be classed as 'safe', dry pedestrian egress out of the floodplain and emergency vehicular access should be possible. The Environment Agency states that dry pedestrian access/egress should be possible for the 1 in 100 year return period event, and residual risk, i.e. the risks remaining after taking the sequential approach and taking mitigating actions, during the 1 in 1,000 year event, should also be 'safe'.

Flood Risk Objective 2: To reduce surface water runoff from new developments and agricultural land:

- SUDS required on all new development. As outlined in section 10.3 which outlines appropriate SUDS techniques for the District, infiltration systems should be the preferred means of surface water disposal, provided ground conditions are appropriate. Above ground attenuation, such as balancing ponds, should be considered in preference to below ground attenuation, due to the water quality and biodiversity benefits they offer.
- All sites require the following:
 - SUDS;
 - greenfield discharge rates with a minimum reduction of 20%, as required by the Environment Agency; and
 - 1 in 100 year on-site attenuation taking into account climate change.
- Space should be specifically set aside for SUDS and used to inform the overall site layout.
- Promote environmental stewardship schemes to reduce water and soil runoff from agricultural land.

Flood Risk Objective 3: To enhance and restore the river corridor:

- An assessment of the condition of existing assets (e.g. bridges, culverts, river walls) should be made. Refurbishment and/or renewal of the asset should ensure that the design life is commensurate with the design life of the development. Developer contributions should be sought for this purpose.
- Those proposing development should look for opportunities to undertake river restoration and enhancement as part of a development to make space for water. Enhancement opportunities should be sought when renewing assets (e.g. de-culverting, the use of bioengineered river walls, raising bridge soffits to take into account climate change).
- Avoid further culverting and building over of culverts. Where practical, all new developments with culverts running through their site should seek to de-culvert rivers for flood risk management and conservation benefit.
- Set development back from rivers, seeking an 8m wide undeveloped buffer strip for development by all watercourses including those where the Flood Zone does not exist. This is an Environment Agency requirement.

Flood Risk Objective 4: To protect and promote areas for future flood alleviation schemes

- Protect Greenfield functional floodplain from future development (our greatest flood risk management asset) and reinstate areas of functional floodplain which have been developed (e.g. reduce building footprints or relocate to lower flood risk zones).
- Develop appropriate flood risk management policies for the Brownfield functional floodplain, focusing on risk reduction.
- Identify sites where developer contributions could be used to fund future flood risk management schemes or can reduce risk for surrounding areas.
- Seek opportunities to make space for water to accommodate climate change.

Flood Risk Objective 5: To improve flood awareness and emergency planning

- Seek to improve the emergency planning process using the outputs from the SFRA.
- Encourage all those within Flood Zone 3a and 3b (residential and commercial occupiers) to sign up to Flood Warnings Direct service operated by the Environment Agency.
- Ensure robust emergency (evacuation) plans are implemented for new developments greater than 1ha in size.
- Source: verbatim extract from the Strategic Flood Risk Assessment for Local Development Framework Level 1 (Rugby Borough Council, 2008).

6.1.2 Relevance to the GI study

Strategic GI network

The SFRA highlights that the rivers and their associated flood plains are a strategic resource within the Borough. This needs to be considered when defining the strategic GI network.

GI strategy

The GI strategy should respond to the SFRA by promoting:

- the use of areas at risk of flooding for recreational and/or environmental purposes;
- the provision of sustainable drainage systems for all new development (these should be built into local GI networks);
- the reduction of soil and water run-off from new development by maximising the use of permeable surfaces;
- the environmental enhancement of rivers (e.g. to improve their biodiversity value);
- where rivers have been highly engineered, opportunities for river restoration work;
- the opening up of culverted sections of watercourse to allow natural hydrological processes;
- the provision of a GI buffer of at least 8m width along watercourses within new development
- the identification of sites where developer contributions can be used to fund future flood management schemes;
- the protection and, where appropriate, reinstatement of the functional floodplain; and
- opportunities to make space for water (responding to climate change).

6.2 Ecological processes

6.2.1 Sources of information

The following sources of information were reviewed to identify any existing GI networks and key GI needs and opportunities that are of relevance to ecological processes:

- *West Midland 50 Year Biodiversity Vision and Opportunity Map* (West Midlands Biodiversity Partnership, 2008);
- *Regional Biodiversity Map* (West Midlands Biodiversity Partnership, 2007)¹⁴;
- *Landscapes for Living* (West Midlands Biodiversity Partnership, 2008);
- *Woodland Opportunities Map Version 2* (Forestry Commission, 2007);
- Habitat Biodiversity Audit (HBA) dataset (Warwickshire County Council et al, 2006);
- Local Biodiversity Action Plan (LBAP) habitat analysis for Rugby (Warwickshire Wildlife Trust, 2009); and
- *Biodiversity Strategy* (Rugby Borough Council, 2006).

West Midland 50 Year Biodiversity Vision and Opportunity Map and Regional Biodiversity Map

The *West Midlands 50 Year Biodiversity Vision and Opportunity Map* (West Midlands Biodiversity Partnership, 2008) identifies ‘regional biodiversity opportunity areas’ that comprise a series of:

- landscape areas - areas considered to have the best opportunity to enhance biodiversity at a landscape scale over the next 50 years;
- strategic river corridors - these contain important wetland habitats, connect rural and urban landscapes and are important for supporting biodiversity and ecosystem services; and
- major urban areas - cities and towns include valuable biodiversity habitats and features, and play a vital role in providing greenspace for urban dwellers.

¹⁴ This map is contained within West Midlands Biodiversity Partnership (2008) *Enhancing Biodiversity Across the West Midlands*, available at http://www.wmbp.org/assets/userfiles/Enhancing_Biodiversity_Guidance.pdf

Within Rugby Borough, the following opportunities have been identified:

- Princethorpe Woodlands Landscape Area (hereafter referred to as the ‘Princethorpe Woodlands Biodiversity Opportunity Area’);
- a network of strategic river corridors - this includes the river network of all the major named rivers within the Borough (River Avon, River Swift, River Leam, Withy Brook, Sketchley Brook, Clifton Brook, River Anker and Smite Brook), their tributaries and floodplains; and
- Rugby urban area.

The *Regional Biodiversity Map* (West Midlands Biodiversity Partnership, 2007)¹⁵ classifies the West Midlands into a series of Zones as follows:

- Zone 1 - Large inter-connected landscapes, rich in biodiversity and providing life-supporting ecological networks.
- Zone 2 - Extensive areas of habitat linking and buffering other areas and supporting multiple needs.
- Zone 3 - Generally smaller, more isolated areas of habitat, often in highly modified landscapes, supporting mixed uses and providing ecosystem services.

Outside the Princethorpe Woodlands Landscape Area, which contains some large areas of Zone 1, the following sites fall into Zone 1:

- Draycote Water;
- Clifton Brook and Rugby Radio Station Site;
- River Avon;
- Smite Brook; and
- River Leam (lower reaches).

The remaining areas of the Borough fall into either Zones 2 or 3.

Landscapes for Living

The *Landscapes for Living* prospectus (West Midlands Biodiversity Partnership, 2008) has identified a 50 year vision for rebuilding biodiversity in the West Midlands as follows:

“Imagine... a vibrant, diverse and natural West Midlands, where we are connected to our wildlife and landscape; healthy, sustainable communities and local livelihoods, working with nature and securing the future...”

Four key principles have been identified for delivering the regional vision

- *“To improve the quality of life for people within our towns and cities and across the region through increasing the provision of more accessible, wildlife rich open space, providing greater opportunity for people to enjoy wildlife in their daily lives.*
- *To maintain the existing bio-diverse habitats across the region to provide the building blocks for landscape scale conservation.*
- *To restore habitat quality, expand habitat area and reconnect habitats to increase the extent, function and resilience of ecological networks and counter the effects of climate change.*
- *To re-create natural systems to support biodiversity and other land management objectives such as the delivery of sustainable farming and the restoration of river features and floodplain systems to alleviate flooding.”*

Woodland Opportunities Map

The *Woodland Opportunities Map Version 2* (Forestry Commission, 2007) identifies the areas with highest priority for woodland creation as ‘priority 1’. Many of these areas are characterised by a presence of a large area of woodland. Woodland creation is also promoted in ‘priority 2’ areas. However, woodland creation is not seen as a priority elsewhere. Within Rugby Borough, priority 1 areas occur around:

- Ansty;
- Coombe Abbey and Binley Woods;
- Bubbenhall/Princethorpe woodlands;
- Leamington Hastings/Stockton/Broadwell; and
- Clifton upon Dunsmore.

¹⁵ This map is the base layer information on the *West Midland 50 Year Biodiversity Vision and Opportunity Map*.

Habitat Biodiversity Audit

The Habitat Biodiversity Audit (HBA) is based upon a Phase 1 habitat survey of Warwickshire, Coventry and Solihull that was completed in 1999¹⁶. All land within this area was classified using the Phase 1 habitat codes, with data being held in GIS format in order to allow spatial analysis to be undertaken.

The data were mapped to show the distribution of semi-natural habitats throughout the Borough. This analysis highlighted that there are concentrations of semi-natural habitat:

- to the west of the Borough, capturing the clusters of habitat (including woodlands) coinciding with the Princethorpe Woodlands Biodiversity Opportunity Area that is identified within the Regional Biodiversity Opportunity Map;
- at Draycote Water and alongside the disused railway network, canals and river network;
- to the north-east of the Princethorpe Woodlands Biodiversity Opportunity Area; and
- to the north-east of Rugby town.

Local Biodiversity Action Plan habitat analysis for Rugby

The Warwickshire Wildlife Trust, as part of its work on the Warwickshire, Coventry and Solihull Local Biodiversity Action Plan (LBAP), has undertaken some initial work looking at the distribution of LBAP habitats (woodland, neutral grassland, standing water and running water) in Rugby Borough. This analysis showed that:

- to the west of Rugby Borough there is a cluster of woodlands and neutral grassland habitats coinciding with the Princethorpe Woodlands Biodiversity Opportunity Area;
- there are standing water habitats at Draycote Water and associated with the canal network;
- a network of woodlands and neutral grasslands is associated within the disused railway network, together with existing main transport routes such as the functioning railway and motorways;
- a network of rivers; and

¹⁶ While every effort has been made to ensure that the data are accurate in accordance with Phase 1 habitat survey standards the HBA project cannot guarantee the data's accuracy or accept responsibility for any changes to land use or habitats that may have occurred since the survey was undertaken.

- a cluster of neutral grasslands to the north-east of the Princethorpe Woodlands Biodiversity Opportunity Area, where there is a large number of agriculturally unimproved or semi-improved grasslands of high nature conservation value (in the vicinity of Withybrook village).

Biodiversity Strategy

Rugby Borough Council's *Biodiversity Strategy* (Rugby Borough Council, 2006) overall aim is to enhance, promote and restore the biodiversity of Rugby for the benefit of its wildlife and residents. In the context of this overall aim the strategy incorporates a 'Rugby Borough Biodiversity Action Plan' (RBC BAP) which identifies Warwickshire, Coventry and Solihull LBAP habitat conservation, enhancement and creation targets that are relevant to the Borough. The targets that are of most relevance to this study are set out below.

Arable

- Support the Warwickshire, Coventry and Solihull LBAP in achieving its target of establishing 40ha of new field margins per year in the sub-region.
- Applications for development in rural/edge of settlement areas where there is an impact on the field systems should seek to retain field margins and existing boundaries and encourage new planting of native hedgerows in landscaping schemes.
- Encourage hedgerow retention.
- Where appropriate, encourage new planting of native species-rich hedgerows, particularly where these will provide links between existing habitats including other hedgerows and woodland.

Grasslands

- Contribute to achieving the neutral grassland target in the Warwickshire, Coventry and Solihull LBAP of creating 25ha of neutral grassland over the sub-region by 2010.
- Encourage sympathetic maintenance of existing grassland sites.
- Encourage the restoration and creation of grasslands.

Urban

- Retain land for allotments and promote their use.

Woodland

- Support the Princethorpe Woods Project which looks at co-operative woodland management on a landscape and economic scale.
- Retain and enhance connectivity between woodlands to aid the movement of key species.

Water habitats

- Support the achievement of the Warwickshire, Coventry and Solihull LBAP's objectives to enhance water quality, maintain and enhance existing wetlands and create new wetland habitat.
- Ensure that the quality of water courses and their corridors does not deteriorate further.
- Protect ponds and lakes within development schemes.

Quarries and gravel pits

- Support the creation of new wildlife habitats within restoration proposals.

Other land use functions

- Create a major new space as part of the Rugby Station Area Development Framework.
- Enhance the biodiversity potential of key open spaces.
- Seek Green Flag Award Status for a range of flagship sites and initiate management plans for them.
- Identify potential sites for the creation of a network of green corridors in rural areas.
- Identify opportunities for the creation of new habitats in existing parks and open spaces.
- Increase the areas of key open space types.
- Increase tree cover thus improving amenity and increasing wildlife habitat value.
- Ensure the wildlife value of roadside verges is conserved.

Species Action Plans

- Safeguard the existing dormouse colony at Princethorpe woods through targeted management and encourage colonisation of nearby woodland through ensuring that habitat links are established and maintained
- Ensure mitigation measures are put in place to protect otter populations during development.

- Ensure habitats for bloody-nosed beetle are maintained through effective management of roadside verges.
- Ensure Newbold Quarry LNR is maintained effectively to promote the continuation of white-clawed crayfish.
- Promote the creation of new habitats for white-clawed crayfish within development schemes.

The Biodiversity Strategy goes on to identify a range of opportunities to conserve and enhance different habitat types (see Table 6.1).

Table 6.1 Habitat opportunities of most relevance to this study

Habitat	Opportunity
Arable field margins	Encourage good farming practice on Council-owned farmland
Hedgerows	Promote appropriate management and protection of species-rich hedgerows to maintain their quality and integrity
Grasslands	Where the opportunity allows, sympathetic management of existing and the creation of new grasslands should be encouraged
Urban - private gardens and allotments	Encourage the increase in the number of gardens and allotments that are managed for biodiversity in the Borough Encourage sustainable, wildlife-friendly methods for the management of gardens and allotment Encourage native planting Manage unused allotments to maximise biodiversity potential
Urban - churchyards and cemeteries	Maximise the biodiversity potential of the Borough's cemeteries
Post-industrial sites (including disused industrial land and railway land)	Encourage good management practice to maximise the biodiversity value of ecologically important industrial sites, derelict land and stretches of disused railway line
Woodland	To compensate for the deficit in woodland areas across the Borough, new woodlands should be encouraged
Wetland	Encourage the creation of new wetland habitats wherever possible
Canals	Encourage the enhancement of habitats that have suffered as a result of unsympathetic management
Ponds and lakes	Increase the area of open standing water
Parks and open spaces	Encourage an ongoing increase in the area of open space and enhance the biodiversity potential of all open space sites Encourage further use of sustainable management techniques
Amenity trees in urban and rural areas	Encourage appropriate tree planting wherever possible
Roadside verges	Encourage a more biodiversity-led approach to the management of Council grass-cutting regimes Where suitable sites exist, consideration should be given to the establishment of 'roadside nature reserves'

6.2.2 Relevance to the GI study

Strategic GI network

The Regional Biodiversity Map highlights that the river network, Draycote water, the Rugby Radio Station Site and the cluster of woodlands in the Princethorpe areas contribute to the strategic ecological network within the Borough. This needs to be considered when defining the strategic GI network.

GI strategy

The GI strategy should respond to the strategies reviewed by encouraging:

- the enhancement of biodiversity within the Princethorpe Woodlands Biodiversity Opportunity Area, and the identified Strategic River Corridors and Major Urban Areas¹⁷;
- an increase in the provision of more accessible, wildlife-rich open space close to urban areas;
- the conservation of existing valuable habitats, and, where appropriate, the enhancement of their quality;
- the expansion of habitat areas and the linking of habitats to increase the extent, function and resilience of ecological networks;
- the restoration of river features and floodplain systems to improve the biodiversity value of these areas (and alleviate flooding elsewhere);
- woodland creation in priority areas identified through the woodland opportunity mapping project; and
- the achievement of the relevant LBAP targets.

When developing the GI strategy consideration should also be given to the findings of the HBA mapping exercise and the work undertaken by Warwickshire Wildlife Trust in mapping the distribution of LBAP habitats.

¹⁷ Major Urban Areas as defined in the *West Midlands 50 Year Biodiversity Vision and Opportunity Map* (West Midlands Biodiversity Partnership, 2008).

6.3 Health and quality of life

6.3.1 Sources of information

The following sources of information were reviewed to identify any existing GI networks and key GI needs and opportunities that are of relevance to the health and quality of life of sustainable communities:

- *Providing Accessible Natural Greenspace Standards in Towns and Cites* (Natural England, 2002);
- *Landscape Assessment of the Borough of Rugby* (Warwickshire County Council, 2006);
- Historic Landscape Characterisation data (Warwickshire County Council, 2009);
- *Opens Space Audit* (Rugby Borough Council, 2008); and
- *Countryside Access and Rights of Way Improvement Plan*, (Warwickshire County Council, 2006).

Accessible Natural Greenspace Standards

Accessible Natural Greenspace (ANG) Standards were developed by English Nature¹⁸ with the objective of providing a basis for determining whether local communities have access to an appropriate range of areas of natural greenspace, of different sizes, to meet people's need for contact with nature and outdoor recreation. Where the standards are not being met, they can be used to define what additional areas of natural greenspace should be provided.

The ANG standards recommend that people living in towns and cities should have:

- an accessible natural greenspace of at least 2ha in size, no more than 300m (5 minutes walk) from home;
- at least one accessible 20ha site within 2km of home;
- one accessible 100ha site within 5km of home; and
- one accessible 500ha site within 10km of home.

¹⁸ *Providing Accessible Natural Greenspace Standards in Towns and Cites* (Natural England, 2002).

It is widely recognised that these standards have significant limitations, especially in not addressing the quality of greenspace, whether from a nature conservation or an access perspective. Nevertheless, as long as the findings are not interpreted too literally, the ANG standards can provide a useful tool for pinpointing major areas of deficiency in terms of the provision of natural greenspace.

The findings of the ANG standards work that was undertaken for this study are set out in Appendix A. At the Borough-wide level they highlight:

- the important contribution to public access made by Coombe Abbey and Draycote Water, which are the only sites above 100ha in size for which an entrance fee is not payable (although there is a charge for parking);
- the importance of Brandon Marsh Nature Reserve, accessible woodlands in the Princethorpe Biodiversity Opportunity Area and the canals as resources serving a large urban population;
- the shortage of provision ANG of 100ha or more located to the east of the Borough, especially given the potential high demand associated with the proposed urban extensions as well as existing development (especially Brownsover); and
- the lack of any large (500ha and over) ANG sites present within 10km of the Borough.

Considering the application of the ANG standards in the area in and around Rugby town:

- there is good supply (in terms of extent) of small areas of natural greenspace;
- the Oxford Canal, Swift Valley Nature Reserve, Great Central Walk Nature Reserve (South) and Draycote Water are important resources above 20ha;
- the eastern side of the town, in the vicinity of a proposed urban extension, is not served by a large site (above 100ha); and
- there is a shortage of 20ha sites to the south-west of town.

Landscape Assessment of the Borough of Rugby

The *Warwickshire Landscape Guidelines* (Warwickshire County Council, 1993) identify specific conservation and enhancement measures for each landscape character type present within the Borough. This work has been updated through the *Landscape Assessment of the Borough of Rugby* (Warwickshire County Council, 2006). This identifies the key characteristic features of the Landscape Character Types (LCTs) within Rugby Borough, the sensitivity of the landscapes within these LCTs and the condition of the landscapes around Rugby's urban fringe. The Landscape Character Areas and LCTs present within Rugby Borough are set out in Table 6.2.

Table 6.2 Landscape character areas and types within Rugby Borough

Landscape Character Areas	Landscape Character Types
Dunsmore	Plateau Farmlands Plateau Fringe Dunsmore Parklands
Feldon	Ironstone Fringe Vale Farmlands Lias Village Farmlands Feldon Parklands
High Cross Plateau	Open Plateau Village Farmlands
Mease Lowlands	Estate Farmlands
Arden	Industrial Arden

The study reached the following conclusions, all of which highlight needs or opportunities in relation to Rugby's urban fringe.

- The landscape to the north of Rugby is in a particularly weak condition.
- To the south of the town, the importance of the southern escarpment cannot be overemphasised, being highly sensitive, and in strong condition.
- Within the urban fringe, there are some sites where the condition of the landscape is in decline, which would benefit from protection and enhancement measures to ensure their long-term benefits to future generations. They include: Hillmorton Locks; Newbold; Cosford; Newton; and the River Avon corridor.
- There are large areas to the east and west of the town where the condition of the landscape is also in decline but which are in less sensitive locations.
- There is nowhere within the urban fringe that is of low sensitivity¹⁹ to landscape change.

¹⁹ Overall sensitivity is mapped as low, moderate or high.

Historic Landscape Characterisation

The historic landscape characterisation study²⁰ undertaken by Warwickshire County Council identifies Historic Landscape Character (HLC) ‘Broad Types’ and ‘Types’ within Rugby Borough. On the recommendation of the HLC project officer, the HLC Types and Sub Types that are most relevant to this study are listed in Table 6.3.

Table 6.3 Historic Landscape Character Types of relevance to the GI study

HLC Broad Type	HLC Sub Type
Unimproved land	Heathland
	Other Commons
Woodland	Broad-leaved Ancient Woodland
	Mixed Ancient Woodland
	Replanted Ancient Woodland
	Broad-leaved Plantation
	Mixed Plantation
	Coniferous Plantation
	Other Plantation
Water and valley floor	Artificial Pond/Lake
	Floodplain
	Reservoir
	Natural Open Water
	Water Meadow
Designed landscape (ornamental, parkland, recreational)	Park/Garden
	Golf Course
	Sports Field
	Cemeteries
	Racecourse
	Public Open Space
	Deer Park

²⁰ It should be noted that the study has defined the typology present but that, at the time of writing this report, the HLC data has not been analysed to identify the quality or value of sites.

Transportation	Canal Lock/Basin
	Canal
	Disused Railway
Orchards and Allotments	Pre 1880's Orchard
	Post 1880's Orchard
	Pre 1955 Allotment
	Post 1955 Allotment

Analysis of the distribution of the HLC types list in Table 6.3 indicates that they are located:

- to the west of the Borough (a cluster of 'Woodland' 'Water and Valley Floor' 'Unimproved Land' 'Orchards and Allotments' and 'Designed Landscape' HLC types);
- at Draycote Water and alongside the river network (i.e. 'Water and Valley Floor' HLC type);
- north-east of Coombe Abbey (a cluster of small 'Woodland' HLC type and a large area of 'Designed Landscape' HLC Type associated with Newham Paddock); and
- along the key transport routes including the motorway network (M69, M6 and M45), existing and disused rail network and canal network.

Opens Space Audit

The Rugby *Opens Space Audit* (Rugby Borough Council, 2008) assesses the quality and quantity of open spaces in the Borough, and sets out the following recommendations for improving these spaces.

- There should be a strategic network of Borough-wide parks, sports and recreation grounds with countryside sites, complemented by neighbourhood and local play spaces serving specific areas of the Borough. The study defines green corridors (in particular the Oxford Canal, Great Central Walk and former railway lines) as component parts of this strategic network of open spaces. These corridors are illustrated at both the Borough and town scale, within the *Preferred Options Paper* (Rugby Borough Council, 2008).
- Rugby should have at least one Green Flag Park and every neighbourhood should have at least a neighbourhood park.
- Every dwelling should be within the distance threshold (as specified in the *Open Space Audit*) of at least one site in each open space typology which meets the open space quality standards and is of high value.
- Overall, the quantity of provision should at least match the open space standards (as specified in the *Open Space Audit*) on a Borough-wide basis, in both rural and urban areas. Where there is a shortfall, the Council should seek to provide new facilities in those areas with lowest provision.

Countryside Access and Rights of Way Improvement Plan (CAROWIP)

The *Countryside Access and Rights of Way Improvement Plan*, (CAROWIP) (Warwickshire County Council, 2006) identifies the following vision.

“Our vision is for a Warwickshire countryside which is well used in a sustainable way with a network of paths which connect with our parks, greenways and canals and which meets the needs of residents and visitors for both recreation and utility (for example, getting to and from school, shops etc.).”

Implementation of the CAROWIP will move towards a better rights of way network for all concerned that:

- provides better connectivity;
- provides a sustainable network which meets the needs of modern users;
- leads to a wider range of users and greater participation; and
- leads to responsible users who respect the countryside as a working environment and as an investment for our future.

6.3.2 Relevance to the GI study

Strategic GI network

The ANG standards mapping highlights the role that Coombe Abbey, Draycote Water, Brandon Marsh, the accessible woodlands in the Princethorpe area and the canals provide in terms of contributing to the strategic outdoor recreation network within the Borough. This needs to be considered when defining the strategic GI network.

GI strategy

The GI strategy should promote:

- the provision of new areas of accessible natural greenspace where there is a current deficiency, notably through the provision of a large (ideally c100ha) area to the east of Rugby town and a 20ha site to the south-west of the town);
- the safeguarding of all existing accessible natural greenspace sites;
- the provision of accessible natural greenspace in association with new development, with the extent of greenspace informed by reference to Natural England’s ANG standards;

- good access for the public (including new communities), by sustainable means, to accessible natural greenspaces;
- the delivery of GI enhancements and new GI that responds to the landscape guidelines and landscape sensitivity work set out in the Warwickshire Landscape Guidelines and Landscape Assessment of the Borough of Rugby;
- the use of the findings of the detailed landscape condition study set out in the Landscape Assessment of the Borough of Rugby when developing local GI networks for Rugby's urban-rural fringe;
- the use of the emerging findings of the Historic Landscape Characterisation work when developing local GI networks;
- the delivery of recommendations set out in the Open Space Strategy in particular the creation of a strategic network of open spaces within the Borough;
- appropriate delivery mechanisms for GI;
- the use of the findings of the HLC mapping exercise; and
- the delivery of the CAROWIP's vision by helping to provide a network of paths that connect with country parks, greenways and canals and that meet the needs of residents and visitors.

6.4 Neighbouring strategic GI networks

At the time of writing the following GI strategies were available for local authority areas that adjoin Rugby Borough:

- Faber Maunsell (2008). *Coventry Green Infrastructure Study Draft Report*. Faber Maunsell, Peterborough.
- LDA Design (unknown date). *A Strategic Green Infrastructure Framework for West Northamptonshire* (available at <http://www.rnrpenvironmentalcharacter.org.uk/>).
- TEP (2008). *A Green Infrastructure Strategy for Hinkley and Bosworth*. TEP, Warrington.
- The GI Strategy currently in development for the 6Cs Growth Point in the East Midlands <http://www.emgin.co.uk/default.asp?PageID=184>.

Figure 6.1 illustrates the strategic GI networks that are identified in these strategies. Links between these networks and GI within the Borough of Rugby are explored in section 7.1 where it is demonstrated that the strategic GI network defined in this study corresponds well with the strategic GI assets and networks identified in adjacent GI strategies. It should be noted that GI strategies have yet to be prepared for Warwick District, Nuneaton and Bedworth Borough and Stratford-on-Avon District Councils and hence there are no relevant strategic GI networks along the boundaries between Rugby Borough and these districts.

7. The strategic and local GI networks

7.1 Identification of Rugby's strategic GI network

The strategic GI network within the Borough of Rugby (see Figure 7.1) has been defined by drawing upon information from neighbouring GI strategies and by analysing the data on GI assets in the Borough that were collected as part of this study (see section 4.1). With reference to the three themes that are set out in the PPS12 definition of GI (see section 4.1.2), the following paragraphs identify the different elements that have been included in the Borough's strategic GI network

Natural processes

- Rivers and their floodplains: The rivers within the Borough form part of the wider network of rivers that perform a strategic hydrological function across the Midlands as demonstrated in the SFRA. Associated with these rivers are areas of floodplain, which play a role in flood control across the Borough. Adjoining strategies identify the Rivers Avon and Swift, and the Sketchley and Smite Brooks as part of their strategic GI networks.

Ecological processes

- Rivers, canals and disused railways: As well as their strategic role in relation to natural processes, the Borough's rivers form a strategic habitat network, reflecting the habitat continuity that they provide across the Borough and beyond. Canals and disused railways, which also extend outside the Borough, perform a similar function. The Ashby and Oxford Canals have been identified as part of the strategic GI networks of neighbouring Boroughs. Adjoining the Borough's rivers, canals and disused railways are numerous sites of high biodiversity value, some of which are designated as SSSIs, LNRs or SINC. These sites can be considered as 'nodes' or stepping stones along the linear habitat corridors, with these linear corridors facilitating species movement between the nodes, thereby contributing to the conservation of these sites. Furthermore, the combination of the nodes and corridors may assist species movements that are happening as a result of climate change. It should be noted, however, that there is no simple rule to define how close sites of high biodiversity value need to be located to the corridors in order for them to function as nodes. This is because the distance will vary between different species (e.g. some species of butterfly are stronger fliers than others and are therefore more likely to be travel longer distances between the nodes and the corridors). For this reason, Figure 7.1 shows the strategic GI including indicative strips of land to each side of the linear habitat corridors,

with the exception of minor rivers²¹. Nodal sites are likely to be at least partly located within these strips, although in some cases they may lie just beyond them.

It should be noted that the embankments of the west coast mainline, the M6 and M45, and, although, less extensive the verges and embankments associated with other roads, also support valuable linear habitats. However, none of these corridors are identified as part of the neighbouring authorities' strategic GI networks and they do not show such a strong relationship with designated sites of nature conservation as is shown by the rivers, canals and disused railways. For this reason, it was concluded that it would be more appropriate to include these, where appropriate, within local GI networks rather than the strategic GI network.

- Princethorpe/Ryton woodlands: There is a cluster of ancient woodlands, including some SSSIs and SINCs, located along part of the Borough's western boundary in the vicinity of Princethorpe and Ryton. Some of these sites (notably Brandon Wood and Piles Coppice) were identified as part of the strategic GI network in the Coventry GI study (see Figure 6.1). Due to the extent and concentration of these woodlands, it was concluded that it should form part of the strategic GI network.

Health and quality of life

- Strategic accessible greenspace sites: The adequate provision of accessible natural greenspace makes a very important contribution to the health and quality of life. All available sites can be considered to form a network, with the links between the sites being provided by Public Rights of Way (PROWs) and/or roads. Strategic sites (i.e. those sites that contribute to the strategic GI network) have been identified by considering site size in terms of area and site quality in terms of visitor experience and facilities. On this basis, the following sites have been selected as part of the network:
 - Country Parks/Sites and Parks: Draycote Water, Coombe Country Park, Ryton Pools Country Park and Newham Paddox Park;
 - Local Nature Reserves: Swift Valley Nature Reserve and Ashlawn Cutting Nature Reserve;
 - Wildlife Trust Reserves: Brandon Marsh;
 - Canals: Oxford, Grand Union and Ashby Canals; and
 - Accessible woodlands: New Close Wood, Brandon Wood and Piles Coppice.

²¹ Buffering the minor rivers makes the map very hard to read.

7.2 Description of the strategic GI network

A brief description of each of the elements of the strategic GI network, as set out above, is provided below.

River network and associated sites

Rivers form a natural interconnected network that, together with their floodplains and associated habitats, provide a range of functions relating to natural and ecological processes, as outlined above. The river network has also played an important role in shaping the morphology, character and setting of Rugby town as well as contributing to local landscape character in both urban and rural locations. Within the majority of the Borough, the river network generally has limited public access, with most access being limited to PRowWs that follow short sections of rivers or cross the rivers and to a small number of accessible sites, such as Brandon Marsh and Swift Valley Nature Reserve.



However within Rugby town, there is more extensive access to the river network as a result of a number of areas of accessible open space associated with the River Avon, Clifton Brook and Sow Brook.

Canal network and associated sites

The canals and nearby sites make an important contribution to ecological processes, as described above. They also provide a range of quality of life benefits. In part, these derive from the extensive towpath network, with the Oxford Canal and Grand Union Canal Walks being promoted as recreational routes. Large sections of the Oxford Canal Walk are within or close to Rugby town, providing good connectivity for pedestrians and, where permitted, cyclists to access rural areas (as well as linking to other urban areas e.g. Coventry, Leamington Spa and Daventry). Boating and fishing are further recreational activities provided by the network. Furthermore the Oxford Canal is important in shaping the morphology, character and setting of Rugby town as well as contributing to local landscape character in both urban and rural locations. The canals, with the associated bridges and buildings (e.g. as at Hillmorton Locks), are also important in heritage terms.



Disused railway network and associated sites

As with the canals, the disused railway network and associated sites make an important contribution to ecological processes. Within the immediate vicinity of Rugby, Ashlawn Cutting, which is part of the disused railway network, is of particularly high biodiversity value and provides an important recreational resource (one stretch is designated as an LNR). It also provides good connectivity between the urban and rural environs. Some other sections of disused railway routes also offer public access, including part of the disused railway route between Rugby and Leamington, which forms part of National Cycle Route 41

(another section of the disused railway route has been identified as a proposed extension to the national cycle network). Like the canal and river networks, the disused railways have played an important in shaping the morphology, character and setting of Rugby town as well as contributing to local landscape character in both urban and rural locations. The disused railways are also important in heritage terms.



Cluster of woodlands in the Princethorpe area

The cluster of ancient woodlands includes Ryton Wood, which is an SSSI, Princethorpe Great Wood, Brandon Wood, Piles Coppice, New Close Wood and Birchley Wood. Outside of the Borough but effectively part of the same cluster are a number of woodlands within Warwick District, including Wappenbury Wood and Bubbenhall Wood. Some of the woodlands are accessible by public rights of way; Piles Coppice has open public access. Ryton and Wappenbury Woods are Warwickshire Wildlife Trust reserves.



Strategic accessible natural greenspace

These sites play an important role in contributing to people's quality of life by providing publicly accessible areas of greenspace that can be utilised for outdoor recreational activities. Draycote Water, Coombe Country Park and Brandon Marsh are particularly significant sites due to both their extent and quality of visitor experience.



7.3 Local GI networks

As set out in section 4.1.1, this study does not attempt to identify the local GI networks that exist throughout the Borough; although it is possible to identify the broad criteria that should be used to define these networks.

The first criterion is that local networks should include those parts of the strategic GI network that are located in close proximity. GI assets that have been mapped as part of this study (e.g. sites of nature conservation value, designated historic environment sites, open space sites etc - see Figures 5.1-5.8) should also normally be included as part of local GI networks. Exceptionally, where such assets cannot be retained (e.g. because development needs outweigh the importance of conserving the assets), alternative provision should be made that delivers equivalent GI functions. It is good practice for any replacement areas to over-provide compared with what is to be lost.

In addition to the assets that are illustrated in Figures 5.1-5.8, the following resources should, wherever possible, be incorporated within local GI networks:

- hedgerows, rail and motorway embankments, and road verges that provide movement corridors and habitats for a range of wildlife (including legally protected and other notable species);
- notable species populations;
- woodlands, orchards and trees that play an important role in providing shading and contributing to the image of an area (as well as being valuable habitats);
- areas of historic value at the local scale (identified through analysis of historic environment records and the Historic Landscape Characterisation);
- areas of high landscape quality (identified through landscape character assessments);
- landscape, ecological and historic features that contribute to the local character and sense of place;
- ponds, which provide valuable wildlife habitats and may have a role in local drainage networks;
- public rights of way and permissive routes that may be important as sustainable movement corridors; and
- allotments.

In identifying local GI networks the opportunity to go beyond the status quo and seek opportunities for the creation of new GI assets, such as: new habitats; accessible greenspaces; movement routes for both people and species; and the creation of space that can help areas cope with climate change should be a major consideration.

8. The GI vision and strategy

8.1 GI vision

At a regional level, a ‘vision’ for the future of GI has been set out in *Green Infrastructure - A Prospectus for the West Midlands Region*. This vision, which is set out below, provides the context for developing a GI vision for Rugby Borough.

“In the next two decades, we will plan, deliver and manage Green Infrastructure to create a high quality environment which makes the West Midlands vibrant, prosperous and sustainable.”

The GI vision for the Borough has been informed by not only the regional vision but also the information gathered for this GI study concerning GI assets and the strategic and local GI networks. Of these, it is the needs and opportunities that provide the main focus of the vision, reflecting the fact that there is great potential for the GI resource within the Borough to be enhanced so as to provide enhanced multi-functionality and benefits. Over the next 20 years, much of this improvement will be delivered through the new development that is being planned through the emerging Core Strategy, reflecting the fact that existing GI resources within or in the vicinity of these developments will need to be greatly enhanced if they are to meet the needs of the growing population. These improvements together with other enhancements to the Borough’s GI will also contribute to helping the Borough play its part at the regional and even the national level in relation to climate change adaptation.

Rugby Borough Council’s GI vision for the next 20 years is set out in Box 4.

Box 4 A GI Vision for Rugby Borough

Over the next 20 years the existing strategic network of multi-functional GI will be developed to provide a better quality of life for those who live or work in the Borough, together with an enhanced biodiversity resource and improved flood control. This network will include more and higher quality GI ‘nodes’, focused on both existing and newly created GI assets. Where these assets are linked by linear or other areas of habitat or greenspace, the linkages will be strengthened to facilitate species movements between existing habitats and in response to climate change, and, where appropriate, improve flood control and public access provision.

Complementing the strategic GI network will be a series of local GI networks, focused on existing and new built-up areas, which will incorporate valued features of the historic environment, landscape features, habitats and species populations, together with high quality public access provision. Where possible, there will be links to other local GI networks and also to the strategic network both within the Borough and within adjacent local authority areas.

The strategic and local GI networks will sit within the wider network comprising the remainder of the Borough’s GI resource, which will be managed to conserve and, where appropriate, enhance its landscape and historic character, biodiversity and access provision.

By protecting and enhancing the functionality and extent of GI within the Borough, as well as creating new GI, the associated environmental, economic and social benefits to the Borough’s community will also increase.

8.2 GI strategy

8.2.1 Context

The purpose of the GI strategy is to deliver the GI vision. The strategy focuses on the delivery of multifunctional GI at strategic and local levels, with reference to the potential areas for growth of the town of Rugby. The conservation of the wider GI resource (i.e. outside of the strategic and local networks) is not specifically covered in this strategy as it is already addressed through specific legislation and planning good practice, which have long been promoted by the Borough Council through the town and country planning system.

8.2.2 Developing the strategic GI network

A major focus of the strategy is the conservation and enhancement of the strategic GI network that is illustrated in Figure 7.1. The enhanced network is illustrated in Figures 8.1 and 8.2. For each of the categories of GI that make up this enhanced network, the key drivers underpinning the strategy are outlined below together with a set of strategic objectives and the main mechanisms relating to the delivery of the objectives.

In plotting the strategic linear features on Figure 7.1, it was concluded that it was better to show an indicative corridor of associated GI to each side of the features rather than the precise extent of the features and their associated sites (or nodes). In this way, the Figure illustrates the general concept that there are valuable assets alongside the features (which in turn form part of the GI network) without being over complex. This same approach is taken in Figures 8.1 and 8.2.

River network

Drivers

The river network, as described in section 7.2, provides a variety of GI functions and benefits but its role in flood control and providing a strategic habitat network are key. The main drivers for the strategy relating to the river network, are the need to:

- conserve and where necessary restore the hydrological and geomorphological functions of both watercourses and floodplains;
- conserve, enhance and expand the network of habitats associated the watercourses and floodplains; and
- provide public access to watercourses.

Objectives

1. Maintain rivers and streams in a semi-natural condition or restore a semi-natural condition.
2. Conserve and, where there is the potential, enhance semi-natural habitats associated with watercourses.
3. Maintain and where possible enhance the flood storage capacity of floodplains.
4. Create new wetland habitats within floodplains (including wet grassland, wet woodland, reedbed and open water habitats – which may also provide a flood control function), whilst also ensuring that valued landscape character and historic environment features are conserved. Where possible, such habitat creation should build upon existing areas of wetland habitat.
5. Enhance existing and provide new public access to watercourses, where this can be achieved without having significant effects on biodiversity.

Main delivery mechanisms

The Council should work with developers to enhance the semi-natural condition of watercourses associated with new developments, whether through habitat creation or more major engineering work (e.g. the removal of culverts or river restoration projects), to create wetland habitats, to enhance flood storage (with potential flood control benefits for the development itself as well as for the Borough more widely) and, where appropriate, to improve public access along watercourses (e.g. through the creation of a riverside park or walk). Priority areas for wetland creation should be identified through consultation with the Environment Agency and via utilisation of the SFRA.

Focusing on these priority areas and existing wetland habitats, there is an opportunity for the Council to liaise with the Department for Environment, Food and Rural Affairs (Defra) to explore the possibility of it targeting these areas for the management of existing and the creation of new wetland habitats, under Environmental Stewardship.

The Council should, as opportunities arise, liaise with other organisations that are either landowners or influence the management of land (e.g. Public Realm Department of Rugby Borough Council, Warwickshire County Council, Natural England, Warwickshire Wildlife Trust and environmental community groups) and therefore may have a role in enhancing the function of the river network.

Canal network

Drivers

The canal network, as described in section 7.2, provides a variety of GI functions and benefits but its role in providing a strategic habitat network and contributing to people's quality of life is key. The main drivers for the strategy relating to the canal network, are the need to:

- conserve and enhance the network of habitats associated the canal network;
- conserve the canals' heritage value; and
- provide good access to the canal network.

Objectives

1. Conserve and where appropriate enhance habitats associated with or adjacent to the canals.
2. Conserve and appropriately manage the historic environment features that are associated with the canals.
3. Where new development is located close to canals, provide green links as part of the development to form ecological corridors between the canals and other habitat areas, and access from the development to the canals.

Main delivery mechanisms

The Council should work with British Waterways to seek habitat enhancement of the canal and, where appropriate, of adjacent land under British Waterways' control.

There is an opportunity for the Council to liaise with Defra to explore the possibility of it targeting habitat management and creation, protection of the historic environment and new access provision under Environmental Stewardship to land adjoining the canal network.

The Council should also work with developers, Sustrans and Warwickshire County Council to provide new access links to the canal network for both new and existing communities.

Disused railway network

Drivers

The railway network, as described in section 7.2, provides a variety of GI functions and benefits but its role in providing a strategic habitat network and contributing to people's quality of life is key. The main drivers for the strategy relating to the disused railway network, are the need to:

- conserve and enhance the network of habitats associated the disused railway network;
- conserve and expand the accessibility of the network to both existing and new communities; and
- conserve the disused railway network's heritage value.

Objectives

1. Conserve the existing network of disused railway lines that contribute to the strategic GI network, and conserve and, where appropriate, enhance their associated habitats, with a particular focus on areas of unimproved grassland, that are at risk from natural succession.
2. Maintain and where possible link up sections of publicly accessible routes along the disused railway lines - in some cases this may involve the creation of linking off-line routes where there is no immediate prospect of providing access along inaccessible sections or where certain sections need to be avoided because of ecological sensitivities.
3. Conserve and appropriately manage the historic environment features that are associated with disused railway lines.
4. Where new development is located close to disused railway lines, provide green links as part of the development to form ecological corridors between the railway lines and other habitat areas, and access from the development to accessible sections of the railway line.

Main delivery mechanisms

The Council can contribute to the delivery of these objectives by ensuring that sufficient resources are invested over the long term in the conservation management of sections of the disused railway network that it owns. The Council should also work with developers, Sustrans and Warwickshire County Council to provide new access links to existing rights of way along the disused railway network and to provide access along currently inaccessible lengths of the network.

There is also an opportunity for the Council to liaise with Defra to explore the possibility of it targeting new access provision under Environmental Stewardship to lengths of the disused railway where there is currently no public access; and to target the disused railway line for biodiversity and historic environment conservation work. Natural England's 'Access to Nature' grant may also be applicable in some circumstances.

Strategic accessible natural greenspaces

Drivers

Strategic accessible natural greenspace, as described in section 7.2, provides a variety of GI functions and benefits, but with accessibility being the common key function. The main drivers for the strategy relating to accessible greenspace are the need to:

- conserve and enhance existing accessible natural greenspace resources within the Borough;

- create new strategic accessible greenspace, particularly in response to the findings of the ANG standards analysis (areas of search are identified in Figures 8.1 and 8.2); and
- provide good access to accessible natural greenspace.

Objectives

1. Maintain and, where appropriate, enhance the recreational value of areas of strategic accessible natural greenspace - whilst also conserving and, where appropriate, enhancing their landscape, wildlife and historic value.
2. Develop a large area of accessible natural greenspace (ideally in the order of 100ha) to the north-east of the town of Rugby and a 20ha site to the south-west of the town.
3. Maintain and, where required, enhance footpath/bridleway/cycle access between residential areas and strategic accessible natural greenspaces - and provide high quality linkages between new development and these sites.

Main delivery mechanisms

The main opportunities for Rugby Borough Council to deliver these objectives are as follows.

1. Work with developers of urban extensions in and around the town, jointly to deliver new areas of accessible natural greenspace (c100ha and c20ha).
2. Work with developers throughout the Borough to deliver improvements in access provision between residential areas and strategic accessible natural greenspaces (with such improvements being incorporated into individual development's GI provision - see also sections 8.2.3 and 8.3).

There is also an opportunity for the Council to liaise with the following organisations to explore the possibility of improving public access provision between residential areas and areas of strategic accessible natural greenspace, where this access is currently inadequate:

- Defra - to explore the possibility of it targeting new access provision under Environmental Stewardship to areas of agricultural land that provide links between residential areas and strategic greenspace sites;
- Forestry Commission - to explore opportunities to provide access to Forestry Commission woodland; and
- Natural England - to explore opportunities to utilise the 'Access to Nature' grant scheme to provide better access to strategic greenspace sites.

The Council should, as opportunities arise, liaise with other landowners such as Severn Trent (Draycote Water) and the Warwickshire Wildlife Trust (Brandon Marsh) to maintain and, where appropriate, enhance the recreational value of these areas of strategic accessible natural greenspace.

Princethorpe Woodlands Regional Biodiversity Opportunity Area and northern extension area

Drivers

The cluster of ancient woodlands in the Princethorpe area is identified in the following documents as being of high value biodiversity as well as offering significant opportunities for biodiversity enhancement:

- *West Midlands 50 Year Biodiversity Vision and Opportunity Map* (West Midlands Biodiversity Partnership, 2008) - the area is considered to provide a significant opportunity to enhance biodiversity;
- *Regional Biodiversity Map* (West Midlands Biodiversity Partnership, 2007) - the area is identified as a large inter-connected landscape, rich in biodiversity and providing life-supporting ecological networks; and
- *Woodland Opportunities Map Version 2* (Forestry Commission, 2007) - the area is identified as a priority one area for woodland creation.

Work undertaken by the Wildlife Trust and data from the Warwickshire Habitat Biodiversity Audit (HBA) has led to the identification of a cluster of agriculturally unimproved or semi-improved grasslands of high nature conservation value in the vicinity of the Withybrook village. Geographically, this grassland habitat cluster is in close proximity to the Princethorpe Woodlands Biodiversity Opportunity Area. In addition, the mapping of Historic Landscape Character (HLC) Types that are most relevant to this study (see section 6.3) identifies the area to the north-east of Princethorpe Woodlands Biodiversity Opportunity Area as containing a cluster of small 'Woodland' HLC type and a large area of 'Designed Landscape' HLC Type associated with Newham Paddock.

The cluster of grasslands and woodlands presents an opportunity to define a broad corridor of land through the western side of the Borough, centred around the two habitat clusters, where habitat creation (including woodland and grassland, but also hedgerows and other habitats) as well as the retention of existing areas of value would create a much improved resource for biodiversity but would also create a strategic movement corridor for species in relation to climate change adaptation (as well as facilitating interchange between different sites within this corridor). In view of this potential, the northern cluster of grassland and the cluster of woodlands has been included as part of the GI strategy as an extension to the Princethorpe Woodlands Regional Biodiversity Opportunity Area.

The main drivers for the strategy relating to the Princethorpe Woodlands Regional Biodiversity Opportunity Area and northern extension area, is the need to:

- conserve, enhance and expand the network of woodland and unimproved or semi-improved grasslands; and
- conserve the historic environment features associated with this area.

Objectives

1. Maintain and, where appropriate, enhance the value of semi-natural woodlands and unimproved/semi-improved grasslands within this area as a resource for biodiversity, whilst also conserving their landscape and historic value, and their value as a resource for people. Enhance their landscape value and improve public access where this can be achieved without causing significant adverse effects on their biodiversity and historic interest.
2. Restore semi-natural woodland cover in areas of replanted ancient woodland.
3. Extend existing semi-natural woodlands (by natural regeneration or planting stock of local provenance) and create new linking woodlands and hedgerows between existing woodlands, ensuring that the woodland/hedgerow creation contributes to enhancing landscape character and does not damage valued historic environment features, and that, where possible, new public access provision is provided.
4. Create species-rich grasslands that link and/or extend existing areas of this habitat, where possible in association with existing or new woodland areas.
5. Enhance the condition of hedgerows, focusing on those that provide important links between areas of woodland.
6. Conserve and appropriately manage the historic environment features that are associated with this area.

It should be noted that the Princethorpe Woodlands Biodiversity Opportunity Area and northern extension area include areas of strategically accessible greenspace to which the objectives and delivery mechanisms set out for strategically accessible greenspace apply.

Main delivery mechanisms

The Council should work with developers to create woodland and hedgerows in association with new developments within this area with a view to contributing to the achievement of the objectives set out above. However, new development within this area will be limited and the main opportunities for delivering these objectives will be through partner organisations, which should be made aware of the GI strategy so that they can contribute to the achievement of the strategy's objectives. Specific opportunities for action by the Council in liaison with the West Midlands Biodiversity Partnership are set out below.

1. Liaise with Defra to explore the possibility of it targeting the management of existing and the creation of new semi-natural grassland and hedgerows, under Environmental Stewardship, to the extended Princethorpe Woodlands Biodiversity Opportunity Area with a view to meeting the objectives set out above. The conservation of historic environment features can also be delivered via this mechanism.
2. Liaise with the Forestry Commission to explore the possibility of it targeting the management of existing and the creation of new woodland, under the English Woodland Grant Scheme, in the extended Princethorpe Woodlands Biodiversity Opportunity Area with a view to meeting the objectives set out above.

8.2.3 Developing local GI networks

Objectives

Local GI networks should be developed in relation to existing and new areas of development. They should be defined at a local level, drawing upon information about existing GI assets, as well as GI needs and opportunities, in accordance with the ‘standards’ set out below.

Standards for new developments

For new development the following standards should be applied in regard to GI planning. Retained, new and enhanced GI provision should be incorporated into local GI networks.

1. Unless planning policy states to the contrary, incorporate within the local GI network all sites of nature conservation value and sites of historic environment value, whether designated or not, and as much as possible of the following: woodlands, hedgerows, watercourses, other landscape features, sites which already have open public access, and public rights of way.
2. Where appropriate, enhance the retained GI resource (e.g. by opening up culverted watercourses or other habitat enhancement) so as to enhance the local GI network.
3. Where legally protected species occur on site, measures should be adopted to ensure compliance with legal requirements. This would normally involve populations being protected *in situ*. Every effort should be made to protect species of principal importance under section 41 of the *Natural Environment and Rural Communities (NERC) Act 2006*, BAP priority species and other notable species. In the case of faunal species that are to be protected, consideration will need to be given to conserving the areas where they breed and sufficient foraging habitat to support the population, together with ‘green links’ to enable interchange between these populations and off-site populations. These links should be of sufficient width to deliver the required ecological function.

4. Where the development site adjoins a valuable area of semi-natural habitat (e.g. a SINC), create an area of habitat in between that acts as a barrier to reduce potential adverse effects of the development on the adjoining land; this is referred to in section 8.2.4 as a 'GI buffer'.
5. Habitats/landscape features created as part of a local GI network should be designed to contribute to a sense of place, be appropriate to the site's landscape character, avoid damage to valued historic or natural features, and, where possible, link together isolated areas of retained GI (to benefit wildlife and/or public access) mitigate the visual impact of the development. Opportunities should be taken to contribute to the achievement of UK and Warwickshire, Coventry and Solihull LBAP targets (see section 6.2). Subject to these conditions, the extent of woodland and tree cover (including street trees) should be maximised in view of the climate change benefits of so doing.
6. Areas of floodplain within the site would normally not be built upon but would be a focus for wetland habitat creation, which may be linked to the development's SUDS, and the provision of public access. Such areas would make up part of the local GI network. Within the development, the use of permeable surfaces should be maximised to reduce run-off.
7. Provide new access links through the development, associated with areas of high quality natural greenspace, to ensure ready access to sufficient areas of accessible natural greenspace. In so doing, reference should be made to Natural England's ANG standards (although these need not be applied too literally). New access links, which will form part of the local GI network, may also meet other objectives; if this is the case, their width should reflect their multiple objectives.
8. Provide safe walking/cycling routes along green corridors that offer ready access to the main urban centre/local centres. As with the access links to accessible natural greenspace, these green corridors will form part of the local GI network and may also meet other objectives; if this is the case, their design and width should reflect their multiple objectives.
9. Existing GI networks that provide 'green links' between the urban area as a whole and the wider countryside should be maintained through the new development.
10. The local GI network should incorporate allotment provision enabling communities to produce their own food.
11. Ensure that an implementation and management plan is prepared for the land that makes up the local GI network, which addresses the full range of GI functions. A mechanism should be put in place to enable the plan to be implemented over the long term.

Gardens will form an important part of the GI resource associated with the development. However, given the fact that there will be no control over their management, they would not be part of the local GI network. The main opportunity to maximise the value of gardens in GI terms is to design their footprints with a view, where possible, to providing continuity between gardens and links to retained areas of habitat. This will increase their value for

biodiversity. Gardens may also deliver other benefits (such as growing food, reducing surface water run-off and contributing to the quality of life).

Standards for existing developments

For existing developments, the following standards should be applied in regard to GI planning.

1. Confirm the GI assets that exist within and in close proximity to the area of development. Analyse the extent to which Natural England's ANG standards are met and what is needed to improve adherence with the standards - mindful that it is not just the area of land that is important but also its quality.
2. For areas to which there is existing public access (including areas that may be some distance from the development but which contribute to the achievement of Natural England's standards), identify the ways in which the areas are currently used, constraints to their use (e.g. inadequate footpath links) and opportunities to enhance them as a resource for public access, and in terms of landscape, biodiversity, climate change adaptation and flood control.
3. Develop an action plan to deliver the identified opportunities.

Main delivery mechanisms

For new developments, the Council should work closely with the developer to ensure that the standards are met. As stated in section 4.1.1, as local GI networks are to be 'fashioned' through the master-planning process there is a great opportunity to create multi-functional GI networks, which deliver a wide range of benefits. In some cases, the local GI networks that are created may also deliver benefits for the residents of existing developments (reflecting the fact that the proposed growth areas are located close to existing development). The potential for new developments' GI to benefit the residents of other areas should be assessed during the process of master-planning the new developments.

Notwithstanding this opportunity, the GI standards for existing developments will not normally be met through the planning process. However, particularly in urban areas, the Council (through its Public Realm department) will be able to contribute to the delivery of the standards through the management of the GI assets that it owns. It is recommended that a pilot area be selected (e.g. focused on part of Bilton where there is a good network of open space along stream courses) to explore how the standards might be applied. This should be done working in close consultation with the local community.

In the rural areas of the Borough, an alternative approach could be to encourage parish councils to identify local GI networks, building on any existing parish maps (see <http://www.england-in-particular.info/parishmaps/m-list.html>). Again a pilot area could be selected to explore this approach (e.g. a parish for which parish maps were prepared in the 1990's) and, if successful, the lessons could be communicated to other parishes through the preparation of a simple guidance document and through the provision of advice through Council officers.

8.2.4 Application of the strategy to the potential areas of growth

Drivers

The two 'Urban Extensions' and the 'Long Term Growth Direction' as illustrated schematically on Figure 8.1 and 8.2, provide opportunities for proactive GI planning. The strategy for these areas will need to, where appropriate:

- protect existing GI;
- enhance the existing GI resource; and
- create new GI assets.

Objectives

The overriding objective for the new growth areas is to develop local GI networks that meet the needs of the residents of these areas as well as benefiting existing residents of Rugby. The networks should address as many as possible of the objectives set out above relating to developing the strategic GI network. It is recognised that, within these areas, some GI will be lost (for example agricultural land). However, the impact of this loss can be managed by protecting other assets that contribute to the strategic and local GI networks, enhancing the remaining GI provision and creating good quality multi-functional GI assets.

For the two proposed urban extensions and the identified long term growth direction, the GI standards for new development need to be applied through the master-planning process. To inform this process, key GI assets associated with each of the growth areas have been mapped. Drawing upon this information and the strategy for developing local GI networks (see section 8.2.3), the types of opportunities that exist in relation to planning the sites' local GI networks have been identified. These opportunities are described below.

As part of the master-planning process additional data (e.g. historic environment records, notable species records, field boundary records and tree preservation orders) should also be collated and used in tandem with other sources of GI information (e.g. Landscape Character Assessments and the Historic Landscape Characterisation) to inform the identification and creation of local GI networks.

Urban extension 1: Gateway Rugby

Urban extension 1 is located to the north of the town between the industrial estate at Cosford and residential area of Brownsover. Key GI assets associated with this site are identified in Figure 8.3. The application of the GI strategy to this site is illustrated Figure 8.4 and is described in Table 8.1.

Table 8.1 Urban extension 1 - GI assets and application of the GI strategy

GI assets	Application of the GI Strategy
Assets that are part of the strategic GI network	
<p>The western part of the urban extension contains:</p> <ul style="list-style-type: none"> - the River Swift and associated floodplains (part of the river network); and - a disused arm of the Oxford Canal (part of the canal network). 	<p>Conserve and enhance the existing strategic GI networks present within the boundary of the urban extension by identifying this area as a focus for wetland habitat creation and the provision of public access.</p>
<p>The western boundary of the urban extension adjoins:</p> <ul style="list-style-type: none"> - Swift Valley LNR (a strategically accessible natural greenspace). 	<p>Conserve and enhance the GI value of the Swift Valley Local Nature Reserve by identifying this area (and the canal - an existing valuable area of semi-natural habitat and recreational area) as a retained valued semi natural habitat together with an indicative GI buffer.</p>
Other GI assets	
<p>Other GI assets that have been mapped as part of this study and will contribute to the local GI network include:</p> <ul style="list-style-type: none"> - a conservation area (Old Brownsover) located on the southern boundary of the urban extension; - a Scheduled Monuments (shrunken village centred on Cosford Hall Farm) on the western boundary of the urban extension; and - areas of open space (Rugby Keswick Drive) located on the eastern boundary of the urban extension. 	<p>Conserve these GI assets by identifying them as areas of retained sites of historic environment value.</p> <hr/> <p>Identify broad movement corridors (for people and/or species) that link to GI networks and GI assets (including areas of open space) outside the urban extension area and provide a means for residents of nearby areas to access the GI assets that are associated with the urban extension.</p>
<p>Existing PRoWs within the urban extension site.</p>	<p>Conserve these GI assets by identifying them as areas of retained public rights of way.</p>

Urban extension 2: Rugby Radio Station Site

Urban extension 2 is located to the south-east of the town, east of Hillmorton. Key GI assets associated with this site are identified in Figure 8.5. The application of the GI strategy to this site is illustrated Figure 8.6 and is described in Table 8.2.

Table 8.2 Urban extension 2 - GI assets and application of the GI strategy

GI assets	Application of the GI Strategy
Assets that are part of the strategic GI network	
The northern and eastern part of the urban extension contains the Clifton Brook and associated floodplain (part of the river network).	Conserve and enhance the existing strategic GI networks present within the boundary of the urban extension by identifying this area as a focus for wetland habitat creation and the provision of public access. The latter is of particular relevance when considering the deficiency of accessible natural greenspace to this part of the Borough. A large area of new GI could fulfil an important role in relation to the residents of existing areas of development, especially in Hillmorton, as well as for new residents.
The western boundary of the urban extension adjoins the Oxford Canal (part of the canal network).	Conserve and enhance the GI value of the canal network by identifying an indicative GI buffer to the canal.
Other GI assets	
Other GI assets that have been mapped as part of this study and will contribute to the local GI network include:	
- a conservation area (Hillmorton Locks) located on the western boundary of the urban extension;	Conserve this GI asset by identifying it as an area of retained sites of historic environment value together with an indicative buffer.
- a SINC located on the western boundary of the urban extension; and	Conserve this GI asset by identifying it as an area of retained valued semi natural habitat together with an indicative GI buffer.
- an area of valued semi-natural grassland covering a large proportion of the urban extension site.	The majority of this area is identified as a focus for the creation of local GI networks that link to the strategic GI networks.
Existing PRoWs within the urban extension site.	Conserve these GI assets by identifying them as areas of retained public rights of way.
Existing PRoWs in close proximity to the urban extension site.	Identify broad movement corridors (for people and/or species) that link to GI networks and GI assets outside the urban extension area and provide a means for residents of nearby areas to access the GI assets that are associated with the urban extension.

Long term growth direction

This area is located to the south-west of the town, south of Cawston and west of Bilton. At present there are no plans to develop in this area. Key GI assets associated with this site have been identified in Figure 8.7. The application of the GI strategy to this site is illustrated Figure 8.8 and is described in Table 8.3.

Table 8.3 Long Term Growth Direction - GI assets and application of the GI strategy

GI assets	Application of the GI Strategy
Assets that are part of the strategic GI network	
The area contains part of the disused railway network.	Conserve and enhance the GI value of the disused railway network by identifying an indicative GI buffer to its route.
It also contains a small extent of a tributary of the River Avon and its associated floodplain (part of the river network).	Conserve and enhance the existing strategic GI networks present within the long term growth direction by identifying this area (part of a larger area covering a range of habitats) as a focus for habitat conservation and the provision of public access (the latter is of particular relevance given the identified deficiency of accessible natural greenspace to this part of the Borough). A large area of new GI could fulfil an important role in relation to the residents of existing areas of development, especially in Bilton, as well as for new residents.
Other GI assets	
Other GI assets that have been mapped as part of this study and will contribute to the local GI network include:	
- a conservation area (Dunchurch);	Conserve these GI assets by identifying them as areas of retained sites of historic environment value.
- a registered park and garden (Dunchurch Lodge);	
- an LNR (Cock Robin Wood);	Conserve this GI asset by identifying it as an area of retained valued semi natural habitat.
- a SINC (Cawston Spinney);	Conserve and enhance the existing GI assets present within the long term growth direction by identifying these sites, as part of a larger area, as a focus for habitat conservation and the provision of public access.
- ancient woodlands (Cawston Spinney and parts of Fox Covert);	
- areas of valued semi-natural habitat associated with Fox Covert, Cawston Spinney and Boat House Spinney; and	Provide connections with Cock Robin Wood and to retain local distinctiveness and sense of place associated with the settlement of Dunchurch, a further area of land is it identified as a focus for habitat creation and the provision of public access.
- areas of open space	Identify broad movement corridors (for people and/or species) that link to existing GI networks and GI assets (including areas of open space) outside the long term growth direction and provide a means for residents of nearby areas to access the GI assets that are associated with the long term growth direction.
Existing PRowS within the urban extension site.	Conserve these GI assets by identifying them as areas of retained public rights of way.

Main delivery mechanisms

The delivery mechanisms for the potential areas of growth are the same as for new developments (see section 8.2.3.). In particular there is a need to ensure that the Council liaises with the applicants within the urban extensions to ensure that the GI strategy informs the master-planning process and is, wherever possible, brought forward in advance of development.

8.3 Implementation of the GI strategy

8.3.1 Delivering GI

The need to plan and deliver GI as part of the planning process for existing and new communities is embodied in national guidance (specifically PPS12 but also other planning policy as set out in section 3.1) and emerging regional policy (namely SR2 together with other policies of relevance to GI, see section 3.2).

Competing demands on local authority budgets mean that a range of delivery and funding mechanisms need to be considered when delivering the Rugby GI strategy. This is illustrated by the delivery mechanisms identified in section 8.2, from which three key themes emerge:

- the use of the planning system;
- the availability of funding to deliver GI; and
- the role of partnerships.

Each of these is explored below. It should be recognised that any one of these, or a combination, could enable GI delivery for any given area (one solution will not fit all circumstances).

The use of the planning system

At both the strategic and local levels, many of the opportunities to progress the GI strategy will be delivered through the planning system in relation to new development. Box 5, which is taken directly from Natural England guidance, summarises the main planning mechanisms that are available to the Council in relation to the provision of GI. The choice of mechanism will need to be made on a case by case basis in response to site-specific considerations.

Box 5 Planning mechanisms

Planning conditions: Local authorities can require restoration or enhancement, or creation of greenspace, as part of the conditions of planning consent for a particular development. These are separately applied for each proposal, and are often supported by arrangements for funding and future adoption. As with planning obligations below, they must be necessary to allow the development to proceed, and must relate directly to the effects of the proposed development (e.g. to mitigate the development's environmental impact).

Planning obligations (section 106 agreements): In this case, the developer agrees with the local authority to fund provision and management of greenspace required by a specific development. They are separately negotiated for each development proposal. Section 106 agreements can be limited by the schedules of rates local authorities operate for maintenance. These may act as a barrier to creative greenspace design as it may be perceived as more costly to maintain.

There must be a strong evidence base to justify the need for green infrastructure in relation to other infrastructure requirements and planning obligations (e.g. affordable housing) of new development. For them to apply, the land must also be under the control of the applicant.

Roof taxes: This is where the local planning authority requires the developer to pay a standard tariff per new dwelling to fund essential supporting infrastructure, including green infrastructure.

Community Infrastructure Levy: A charge levied by local authorities on new developments, using formulae based on the size and character of the development, with proceeds to be spent on local or sub-regional infrastructure, including green infrastructure, required by the development plan(s).

Source: extracted verbatim from *Green Infrastructure Guidance* (Natural England, 2009).

Funding

The planning mechanisms set out above can address funding requirements in relation to GI provision associated with new development. However, for other GI provision, funding must be sought from elsewhere. Rugby is not eligible for Growth Area or Point Funding, which some eligible local authorities are utilising to fund the delivery of GI. However, there are other funds and grants that are available for the delivery of GI in the Borough. The most significant of these are outlined in Box 6, which is taken directly from Natural England guidance.

Box 6 Grant funding

Safer and Stronger Communities Fund (SSCF): This consolidates DCLG and Home Office funding streams available to local authorities, aimed at tackling crime and anti-social behaviour, empowering communities, and improving the condition of streets and public spaces, particularly in disadvantaged neighbourhoods. The fund was created in 2005 and is scheduled to run to 2010.

Heritage Lottery Fund (HLF) and Big Lottery Fund grant initiatives: Parks for People is one of the HLF grant schemes, supporting capital and revenue projects to improve public parks, including historic parks and designed landscapes. It also creates opportunities for communities to learn about the natural environment. Big Lottery Fund programmes such as Access to Nature (administered by Natural England) which aims to encourage people from all backgrounds to understand, access and enjoy our natural environment, can be used creatively to involve people in their local greenspace, for example through monitoring of biodiversity.

Environmental Stewardship schemes: Higher Level Stewardship (HLS) schemes can support projects to enhance the landscape quality, natural resources, biodiversity, historic environment and public accessibility and understanding of farmland in private ownership.

English Woodland Grant Scheme: This supports projects to create new woodlands and enhance the management of existing ones for public benefit, on farmland in private ownership. Separate grant schemes are available for planting of new woodlands and for bringing existing ones into management, as well as for regeneration and improvement of existing woodland plantings. Grants could apply to large scale woodland planting in relation to urban extensions, where visual mitigation is required.

Aggregates Levy Sustainability Fund: This supports projects mitigating the effects of aggregate extraction on local communities and the natural environment. SITA Trust offers Enriching Nature and Enhancing Communities grants, for projects around qualifying waste processing and landfill sites.

Source: extracted verbatim from *Green Infrastructure Guidance* (Natural England, 2009).

Partnerships

The development of effective partnerships, for example with relevant local authorities, government organisations and other delivery agents (such as Natural England, Defra, Forestry Commission and Wildlife Trusts) and other land owners such as British Waterways, Severn Trent Water, Rugby Borough Council and neighbouring local authorities will be critical in GI delivery. Furthermore the importance of involving local communities is paramount to the delivery of GI that they value and use.

8.4 Review of the GI strategy

The evidence base used to inform the GI strategy was based on the best data available at the time of preparation. However the evidence base will inevitably change overtime. Furthermore GI methodologies and planning policy are subject to future change. As such there will be a need to review the GI strategy from time to time. Specific elements that will require review are:

- **Planning policy** - national policy is subject to change and the Regional Spatial Strategy is not yet finalised.
- **GI guidance and best practice** - as indicated in section 4.2, new guidance is emerging (i.e. English Heritage's guidance note on the importance of the historic environment in GI planning), and other guidance and best practice will continue to evolve.
- **Evidence base: GI assets** - data may become outdated for example new sites may be designated as being of biodiversity or historic importance, or land use or habitat changes may have occurred leading to the loss of potential GI assets.
- **Evidence base: strategies and other documents** - this will inevitably change as time progresses. Adjacent local authority GI strategies will continue to emerge.
- **Funding and delivery mechanisms** - as time progresses funding and delivery mechanisms will inevitably change

The risks associated with such changes are potentially limited when considering the strategic GI network, assuming emerging adjacent local authority GI strategies are broadly compatible with the Rugby GI strategy. However at the level of local GI networks the element of risk increases because of the more detailed scale at which such networks need to be defined and because relevant GI assets are more likely to change. The application of the strategy at the local level should therefore always be informed by more detailed site work together with further information such as up-to-date historic environment records, Phase 1 survey and protected species survey data.

9. GI policy recommendations

Rugby Borough Council proposes to include one or more GI policy in the Submission version of its Core Strategy. This chapter presents policy recommendations, which have been prepared by Entec for consideration by the Council. The recommendations have been informed by earlier sections of this report and by a review of other core strategies that make a policy commitment to GI. Further drafting suggestions are provided on how improvements to, and delivery of, GI can best be secured through complementary policies in the Core Strategy. Finally, proposals for monitoring the implementation of the policy/policies are outlined together with linkages between GI and other LDF documents and Borough strategies.

9.1 Policy recommendations and justification

9.1.1 Recommendations

Entec recommends that the GI policy/policies in the Core Strategy should seek to achieve the following objectives.

- Existing GI of strategic and local importance should be protected and, where appropriate, enhanced.
- New areas of greenspace should be sought that promote a range of functions, including recreation and tourism, public access, environmental education, biodiversity, water management, protection and enhancement of historic environment assets, and mitigation of the impacts of climate change.
- New development - through its siting, layout and design - should be expected to respond positively to the location of GI and contribute towards the provision of additional GI within the Borough.
- New development should enable the conservation, improvement and management of GI in order to enhance the quality and character of the environment, and help to secure the delivery of sustainable communities.
- New development should, in enhancing existing GI, seek to establish physical/functional linkages between different elements of GI and introduce appropriate multi-functional uses of greenspaces and linkages that help to broaden the existing network of accessible areas. Where possible, new and/or improved links to the open countryside should be established.
- For all new development, on-site GI provision and/or contributions to off-site GI should be sought. Such provision should be in accordance with other adopted policies and strategies, including those relating to open space, biodiversity, landscape and the historic environment.
- Where new development will compromise, degrade or reduce the quality and/or function of existing GI, the development should not be permitted unless replacement provision is made that is of equal or

greater value to that which will be lost through development. Development which compromises the strategic or local GI networks should not be permitted.

- All outline and detailed planning applications should demonstrate consideration of the development's potential impact upon the existing GI network

GI policy/policies should be applied in combination with the requirements of the following policies in the Core Strategy: Open Space; Natural Environment; Climate Change; Creating Sustainable Communities; Tourism Related Development; Flood Risk; Historic Environment; Landscape, and Infrastructure and Delivery. Furthermore the Borough Council should

- liaise with neighbouring local authorities, including County Councils, to ensure that potential linkages between the Borough's strategic and local GI networks and those in neighbouring authorities' areas are recognised in the development of specific proposals; and
- ensure legal agreements are entered into where this is necessary to secure GI provision, or to ensure the long term sustainable management of GI

9.1.2 Justification for policy recommendations

The policy recommendations listed above set out the approach towards the protection and enhancement of existing GI across the Borough, and the creation of new GI assets.

GI is a multi-functional network of greenspaces which provides benefits for the environment, people and the economy. The network includes all areas of undeveloped land, as well as water bodies, irrespective of how natural they are or whether they are publicly accessible. The network supports a wealth of wildlife, maintains natural and ecological processes, sustains air and water resources, and contributes to the physical health and mental well-being of people and their overall quality of life. These functions can be delivered in both urban and rural settings. GI also has an increasing role to play in helping society and the natural world adapt to the impacts of climate change by, amongst other things, helping moderate urban temperatures and storing excess rainfall. GI spans administrative and political boundaries.

The long-term vision for GI in the Borough, outlined in section 8.1, is an enhanced existing strategic GI network offering improved public access and recreational opportunities, enhanced biodiversity, with more and higher quality 'nodes' focused on existing and newly created wildlife-rich sites along the network. This will be complemented by a series of local GI networks located within established and planned new communities across the Borough, which connect, where possible, to the strategic network.

The enhanced strategic network of GI is identified in Figures 8.1 and 8.2 and includes the following:

- the river network and associated sites;
- the canal network and associated sites;

- the disused railway network and associated sites;
- strategic accessible natural greenspace sites; and
- the Princethorpe Woodland Biodiversity Opportunity Area and northern extension.

This strategic network comprises the most important GI assets at the Borough level, providing a framework within which a series of existing interconnecting local GI networks can be identified and new networks created.

The overall aim of the policy recommendations is to ensure that the strategic and local GI networks meet the day to day needs of the Borough’s residents in relation to access to greenspace and quality of life more generally, and provide the context for inward investment and economic growth, whilst at the same time supporting the natural and ecological processes that are vital for future generations as well as the Borough’s biodiversity. To achieve this, there needs to be a net increase in GI, targeted to those areas that are recognised as being deficient.

The growth proposed in the Borough, and in particular the planned urban extensions to Rugby, will make a very important contribution to this increase, delivering GI in just the same way as other forms of infrastructure. Consequently, the provision of GI should be viewed as a critical element in the determination of planning applications, with new developments being expected to contribute towards enhancing both the strategic and local GI networks.

9.2 Supporting policies in the core strategy

The achievement of the GI strategy’s objectives will depend upon the implementation of not only the GI policy/policies but also other policies in the Core Strategy that influence future development that could affect GI. Table 9.1 outlines ways in which typical sections within a core strategy could support the GI policy/policies.

Table 9.1 Supporting GI policy through the Core Strategy

Section/topic area	Drafting recommendations
Spatial Objectives	The Core Strategy will include a vision for the Borough. To realise this vision, the Core Strategy will also include a number of spatial objectives. It is recommended that at least one objective should make reference to the importance of both maintaining and enhancing GI and, where possible, achieving a net gain in GI.
The Spatial Strategy	It is recommended that a figure is included that illustrates the GI strategy within the Borough. An additional figure highlighting the indicative location of local GI networks associated with the proposed urban extensions may also be included in the Core Strategy or should direct the reader to equivalent figures in the GI study.
Building Sustainable Communities	The core strategy should include a policy which sets out the principles for achieving sustainable development; one of the principles should make reference to GI and the GI strategy. Policy 13 in North Northamptonshire’s Core Spatial Strategy provides a good example of this approach. Crucially for the Borough Council, the core strategy should also include a policy which specifically sets out the

	criteria by which masterplans for planned urban extensions to the town of Rugby will be considered. One of the criteria should address the provision of GI in the new development (with reference to the standards that are set out in section 8.2.3). Policy 16 in North Northamptonshire's Core Spatial Strategy provides an example of this approach.
Infrastructure Delivery/ Developer Contributions for Infrastructure	<p>The mechanisms that will be employed in order to deliver the Core Strategy should also include reference to GI. This could simply be a statement that, where appropriate and in accordance with adopted standards, the Council will seek to secure provision for the future management and/or maintenance of green infrastructure via planning obligations.</p> <p>The delivery of infrastructure, including GI, is dependent upon partnership-working between a variety of public and private sector agencies; this should also be acknowledged in the Core Strategy.</p> <p>Because multiple land ownership may present obstacles in bringing forward land for GI, the Council may want to state in the Core Strategy that it may be required to use its Compulsory Purchase powers to aid delivery. Coventry City Council in the Proposed Submission version of its Core Strategy (Paragraph 10.24) makes such a statement.</p>
Glossary/Definition	A definition of GI should be included.

9.3 Monitoring the implementation of GI policy

It is recommended that the most appropriate way of monitoring the implementation of the policy/policies is to collect data solely in relation to new development with the exception of information about the area of GI under different grant schemes and National Indicator 197 relating to the management of SINCs, both of which should be readily available.

In order to achieve an appropriate balance between demonstrating the progress made in implementing the GI policy/policies whilst not putting undue onus on local authority officers, data on the following indicators could be used to monitor the implementation of GI policies.

- Amount of new GI provided - measures include:
 - area of new accessible natural greenspace created;
 - area of new accessible natural greenspace that contributes to the achieving ANG standards (by type);
 - area of new semi-natural habitats created (by broad habitat type);
 - area of new habitat that contributes to Warwickshire, Coventry and Solihull LBAP targets;
 - length of new public rights of way (by type i.e. footpath, bridleway, cycle way); and
 - percentage of development site that is part of the local GI network (excluding gardens).
- Amount of GI lost - measures include:

- area of new accessible natural greenspace lost;
- area of habitats lost (by broad habitat type);
- length of public rights of way lost (by type i.e. footpath, bridleway, cycle way); and
- area of floodplain that are lost.

Wherever possible the indicators seek to utilise data/information that is either already, or can easily be, collated by the Council.

9.4 Links with other LDF documents and strategies

As GI is a multi-functional resource, the GI Study has the potential to link with, support and complement many other LDF documents and strategies. The following list identifies documents and strategies that are specific to the Borough of Rugby or the sub-region and are considered particularly relevant to GI as a concept:

- Rugby Borough *Sustainable Community Strategy*;
- Rugby Borough *Open Space Audit*;
- *Landscape Assessment of the Borough of Rugby*;
- Rugby Borough *Strategic Flood Risk Assessment*;
- Warwickshire *Local Biodiversity Action Plan* and Rugby Borough *Biodiversity Strategy*;
- Warwickshire County Council *Local Transport Plan*;
- Rugby *Air Quality Action Plan*; and
- Rugby *Sustainable Design and Construction Supplementary Planning Document*.

Appendix A Accessible Natural Greenspace Standards

Accessible Natural Greenspace

Accessible Natural Greenspace Standards (ANGSt) were developed by English Nature and seek to ensure local communities have access to an appropriate mix of greenspaces providing for a range of recreational needs. These standards recommend that people living in towns and cities should have:

- an accessible natural greenspace of at least 2ha in size, no more than 300m (5 minutes walk) from home;
- at least one accessible 20ha site within 2km of home;
- one accessible 100ha site within 5km of home; and
- one accessible 500ha site within 10km of home.

Methodology

In applying the ANGSt, it has been assumed that the following GI assets provide accessible natural greenspace:

- country parks;
- countryside sites;
- Local Nature Reserves;
- canals;
- Countryside Rights of Way Act access land; and
- the following sites identified in Rugby's Open Space Audit: green corridors, natural/semi natural greenspace, amenity greenspace and parks and gardens.

(The following sites were not used in the ANGSt as they are not 'natural greenspace' and/or not continuously available for public use: sports facilities; educational land; children and young people facilities; civic space; churchyards and cemeteries; allotments and community gardens.)



It should be noted that the application of the 300m buffer considered all accessible natural greenspace as derived from above and was not limited to greenspace above 2ha. Furthermore, sites within a 10km buffer of Rugby were considered to ensure that accessible natural greenspace outside of the Borough, but serving the Borough residents, were not missed.

There are limitations to the ANGSt that are important to consider. The standards:

- only consider straight line distance and therefore do not account for ‘real world’ accessibility - there may be natural or man made barriers to accessibility (including entrance fees);
- does not consider the quality of these resources; and
- does not consider sites that are very close to each another and therefore form a larger site

Findings

The application of these standards to existing areas of accessible greenspace is illustrated on the following figures:

- A1.1 and A1.2 show a 300m buffer around all accessible natural greenspace (Borough-wide and Rugby Town centred map);
- A2.1 and A2.2 show a 2km buffer around accessible natural greenspace greater than 20ha in size (Borough-wide and Rugby Town centred map);
- A3.1 and A3.2 show a 5km buffer around accessible natural greenspace greater than 100ha in size (Borough-wide and Rugby Town centred map); and
- A4.1 shows a 10km buffer around accessible natural greenspace greater than 500ha in size (Borough wide map).

The findings of the work indicate at a Borough-wide:

- the important contribution to public access made by Coombe Abbey and Draycote Water, which are the only sites above 100ha in size for which an entrance fee is not payable (although there is a charge for parking);
- the importance of Brandon Marsh Nature Reserve, accessible woodlands in the Princethorpe Biodiversity Opportunity Area and the canals as resources serving a large urban population;
- the shortage of provision of ANG of at least 100ha to the east of the Borough, especially given the potential high demand associated with the proposed urban extensions as well as existing development (especially Brownsover); and
- the lack of any large (500ha and over) ANG sites present within 10km of the Borough.



Considering the application of the ANG standards to the area in and around Rugby town:

- there is good supply (in terms of extent) of small areas of natural greenspace;
- the Oxford Canal, Swift Valley Nature Reserve, Great Central Walk Nature Reserve (South) and Draycote Water are important resources above 20ha;
- the eastern side of the town, in the vicinity of a proposed urban extension, is not served by a large site (above 100ha); and
- there is a shortage of 20ha sites to the south-west of town.



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