North Northamptonshire
Green Infrastructure

Strategic Framework Study - Part 1
01 September 2005

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<td>01 September 2005</td>
<td>Final Draft for Consultation</td>
</tr>
<tr>
<td>1 (final)</td>
<td>17 June 2005</td>
<td>Final Draft</td>
</tr>
<tr>
<td>1 (final)</td>
<td>28 April 2005</td>
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This document has been prepared and checked in accordance with BS EN ISO 9001 : 2000
Foreword

This document sets out the vision and process for establishing a strategic green infrastructure framework within North Northamptonshire (Rockingham Forest area) and the River Nene Regional Park.

Green Infrastructure (GI) comprises a network of multi-functional greenspace set within, and contributing to a high quality natural and built environment. It is considered to be an essential requirement for the enhancement of quality of life, for existing and future generations, and an integral element in the delivery of ‘liveability’ for sustainable communities. Its provision, and importantly, its connectivity is relevant at every level from county wide rural landscapes down to a local level within the larger urban as well as small rural settlements. It also provides the framework for supporting a wide range of ‘environmental processes’.

The concept and importance of green infrastructure is endorsed in the Milton Keynes and South Midlands Sub-Regional Strategy. This statutory document is committed to the provision of GI as an integral part of the planned development and growth within the Sub-Region ensuring that the new and expanding communities can access and enjoy the benefits of a network of green space from doorstep to countryside.

‘Planning Sustainable Communities: A Green Infrastructure Guide for Milton Keynes and the South Midlands’ sets the standard and principles for delivery of GI across the region and represents an important benchmark for the delivery of environment and quality of life initiatives across the Sub-Region.

The River Nene Regional Park Initiative has been the principal driver in promoting the positive contribution that a network of interconnecting green spaces and places will make to the quality of life for those that live, work and visit the Northamptonshire. To meet these regional aspirations, the River Nene Regional Park Initiative in partnership with local authorities in the county, and statutory agencies, has commissioned a study of green infrastructure provision across the county, with Phase 1 focusing on the North Northamptonshire LDV (Rockingham Forest area) and its growth settlements, and the project area identified for the proposed River Nene Regional Park. During Phase 1, a parallel study for the development of Green Infrastructure at a local level has also been undertaken, focusing on Corby as a pilot area. The intention of this two tier approach has been to provide the basis for working methodologies to be concurrently developed and tested at both the strategic and local level. Following the completion of this phase of work, it is intended that strategic and local level Green Infrastructure Frameworks will be developed for the remaining area of the Regional Park within West Northamptonshire, and growth settlements of Kettering, Wellingborough, Northampton, Daventry and Towcester.

The strategic green infrastructure framework also presents the opportunity for integration with the Core Spatial Strategy and Plan for Northamptonshire Together, the Local Delivery Vehicle for North Northamptonshire, and the emerging Local Development Frameworks.


The timescale for the delivery of an integrated GI network for the County has been set at 25 - 30 years. The content of this study is therefore aspirational in its nature and also subject to review as changing circumstances dictate.
Acknowledgements

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Project Development and Delivery: LDA Design

The Project Steering Group Members are listed below. LDA Design acknowledges with thanks their guidance and support throughout the preparation of this study.

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Sue Bateman  Wellingborough Borough Council
Terry Smithson  The Wildlife Trust BCNP

Thanks are also extended to the participants at the Corby Pilot Study Workshops (whose input also contributed to the strategic study), and to the many individuals who gave their time and valuable contributions at individual meetings, and through telephone discussions and correspondence.

LDA Design also acknowledges with thanks Northamptonshire County Council for the provision of geographic data.
1.0 Introduction

1.1 Purpose of Project
The principal purpose of the Northamptonshire Green Infrastructure Project is to provide a framework which meets regional and sub-regional aspirations with regard to the provision of Green Infrastructure within the county, and in particular in the context of the growth settlements. It will also act as a demonstrator project for green infrastructure provision in the wider Milton Keynes & South Midlands (MKSM) growth area, and develop methodologies that are applicable to both rural and urban areas.

The overarching strategic green infrastructure framework will link existing and planned communities through a connected, accessible green space network. This framework will respect the character and diversity of the landscape, ecological and cultural heritage, and will promote local distinctiveness. The project will act as an ‘enabler’ to help raise the overall quality of development, and identify areas for infrastructure enhancement, improved connectivity and the creation of new green infrastructure in areas of low provision. It will form an integral part of the process of planned growth, development and regeneration that is underway within the county as part of the MKSM growth area.

The Northamptonshire Green Infrastructure Project is a first step towards the vision for the River Nene Regional Park (RNRP) within the county as set out in the RNRP Feasibility Study (June 2004). The GI project is considered to be a critical mechanism for delivering the regional park vision of improved economic and social as well as environmental improvements within the context of the proposed growth settlements and wider county.

It is also well timed to inform the preparation of the emerging Spatial Plan for the North Northamptonshire LDV initially, and also to provide a methodology and process that can be applied to West Northamptonshire in due course.

**WHAT IS GREEN INFRASTRUCTURE (GI)?**

Green Infrastructure comprises a network of multi-functional greenspace that contributes to the high quality natural and built environment required for existing and new sustainable communities in the future. It consists of both public and private assets, with and without public access, and in both urban and rural locations, together with those new assets needed to create a coherent ecologically robust linked network of greenspace - ‘the outdoor environment of habitats, public access areas, formal and informal recreation facilities, historic sites and areas, woodlands and landscapes’.
INTRODUCTION

1.2 Scope of the Northamptonshire Green Infrastructure Project
The Northamptonshire Green Infrastructure Project has been undertaken in two separate phases.

1.2.1 Phase 1
Phase 1 has comprised the development of a Strategic Green Infrastructure (GI) Framework for North Northamptonshire, focusing on the Regional Park and growth settlements. In parallel with this strategic study, a local level GI Pilot Study for Corby and its immediate setting has been undertaken, with the findings presented in a separate but complementary report (see Corby Green Infrastructure: Local Framework Pilot Study, June 2005).

1.2.2 Phase 2
These interlinked studies which comprise Phase 1 provide green infrastructure working methodologies which, subject to review, will be rolled out in Phase 2 for the preparation of Local Green Infrastructure Framework studies for the remaining growth settlements of Kettering, Wellingborough, Northampton, Daventry and Towcester. During this stage, the strategic work for the remaining areas of the proposed regional park within West Northamptonshire will be undertaken, subject to partner funding.

1.3 Study Background and Planning Context
The Northamptonshire GI Project is intended to be a wide reaching response to a number of interrelated initiatives underway within the County, as noted in Section 1.1 above.

Appendix 1 of this study sets out the relevance of this study to these initiatives in further detail, and provides information on the planning context of GI from a national level downwards as well as in relation to other GI studies and inter-regional influences.

Figure 1 illustrates the structure of the North Northamptonshire LDV, key local GI delivery partners; Figure 2 is a flow diagram showing the proposed linkage between the GI project outputs and the emerging planning framework of the LDV.
1.4 Study Approach
A fundamental challenge of the Northamptonshire GI Project has been to develop working methodologies applicable to the study context. The methodologies and approaches used in previous GI studies for other growth areas, such as those undertaken for the Thames Gateway, have addressed predominately urban contexts. The resultant GI frameworks have therefore been constrained by the existing pattern and use of the land resource, and often limited in terms of their ability to deliver multi-functional environmental infrastructure. By contrast, the Northamptonshire GI Project considers, for the first time, how sub-regional and local GI can be proposed within a largely rural study area, and as such has provided the the opportunity to consider how issues of ‘multi-functionality’ can be more effectively addressed and delivered.

The core premise of the Northamptonshire approach has therefore been to develop a GI framework for North Northamptonshire, using transparent and accountable working processes that deliver truly multi-functional working landscapes of the future. This has required collaborative working between the Project Team and key stakeholders, through the Project Steering Group (PSG), to enable consensus to be reached on the broad methodology for the study as well as more innovative working methodologies for specific subject areas.

In broad terms the study entailed a rigorous assessment of a wide range of baseline information considered under a range of Strategic Themes, for example Biodiversity, or Access and Movement. The aim was to establish where the existing GI resource for each theme is found in North Northamptonshire; its relative significance; and whether there were ‘gaps’. The next step was then to propose how to fill the gaps identified in a resource in order to deliver a connected network - a key requirement of GI, and with provision of a resource tested against nationally or regionally GI targets or standards for provision. The final stage of the study then entailed the production of a suite of GI outputs, comprising a GI ‘planning toolkit’ to assist decision makers in the delivery of GI in North Northamptonshire. A critical output of this stage was the production of the GI framework plan. This was developed through an overlay process using strategic theme mapping. Correlations between mapped datasets formed the basis of the emerging GI framework plan, which in essence represents a ‘best fit’ between the different themes identified as central to GI in the County.
1.5 **Study Methodology**

The key work stages of the strategic study are set out below, and illustrated in the Flow Diagram shown in Figure 3.

**Stage 1**

Initial consultations with the PSG and data and information sourcing from key stakeholders, statutory and non statutory organisations, (refer to Appendices 1 and 2) including:

- Agreement of the strategy methodology, study areas, themed maps and programme with the PSG;
- Development of a Project Statement to inform/promote the project to the wider stakeholder group;
- The formulation of Preliminary Vision & Aims for Green Infrastructure in the county;
- One to one consultations with key stakeholders;
- Consultation with wider stakeholders, primarily by email and telephone; and
- Background research and information collation into Project Library;

**Stage 2**

Data collation, audit and mapping

- Collation of data sets into a comprehensive database system;
- Production of themed baseline maps in GIS format; and
- Verification of ‘baseline mapping’ by PSG and amendments as required.

**Stage 3**

Analysis and interpretation

- Desk based and written analysis of the resource, and identification of opportunities and constraints relevant to Green Infrastructure provision using ‘Strategic Themes’ as a framework for the approach;
- Identification of key existing resource assets and their mapping (termed key asset mapping), again using Strategic Themes as a framework;
- Further ‘interpretative mapping’ to identify potential ‘gaps’ in the resource and/or where there is potential for the existing Green Infrastructure network to be enhanced through proposed links/resource creation, as illustrated in GI ‘proposal plans’; and
- Overlay of interpretative mapping to steer the development of the basis of the emerging Strategic GI Framework Plan.

**Stage 4**

Drafting of Green Infrastructure Outputs

- Preparation of draft report; and
- Finalisation of supporting plans for inclusion with report

1.6 **Structure of the Report**

This report, Part 1 of the Strategic Framework Study, presents the proposals for a strategic GI framework. It is set out in four sections and supported by a series of Figures.

Section 1: comprising this section, introduces the project, and sets out its purpose and scope. It also makes reference to the study background and planning context and provides a brief overview of the study approach and methodology.
Section 2: summarises the baseline collation, analysis and interpretation stages of the study. Firstly, a description of the process by which information was gathered and collated for the study is provided. A short summary is then given of the key issues and opportunities identified as relevant to North Northamptonshire GI arising from the desk top exercise undertaken, followed by an explanation of how, using theme specific methodologies, ‘gaps’ or ‘missing links’ in the resource were identified. This critical stage in the analysis is supported through illustrative mapping techniques. The section ends with an explanation of how the GI Framework Plan for North Northamptonshire was arrived at using a process of overlaying information.

Section 3: explains the proposed Strategic Green Infrastructure Framework for North Northamptonshire and its supporting Strategic Theme Proposal Plans. Supporting written principles and guidance for GI is also provided. The findings of this section will, in particular, inform emerging spatial plans and provide guidance for local authorities, statutory agencies, and developers.

Section 4: explore how the GI vision for North Northamptonshire could be delivered over the longer term. It suggests what the roles and responsibilities of the key partners could be and their relative priorities for GI delivery. It also provides criteria for the consideration of GI proposals by funding partners. Finally, ball park costings for the proposed GI network are provided.

Part 2 of the study (bound under separate cover) provides the supporting information to the work contained in this document. To ensure clarity and transparency of process, it therefore includes full details of baseline, key asset and interpretative mapping along with detailed written analysis, work study methodologies and references.
2.0 Data Collection, Analysis and Interpretation

2.1 Introduction
The data collection stage of the study entailed a lengthy process of stakeholder engagement with both the PSG and a wider group of interested parties, and information gathering encompassing both spatial data and written information. The detail of this process is given in Appendix 2.

Due to the considerable volume of ‘hard copy’ and digital data amassed during the information gathering stage, data was considered under topic headings, termed ‘Strategic Themes’. Each of these Themes, which are listed below, are considered to have the potential to contribute to a multi-functional green network in North Northamptonshire.

- Environmental Character
- Natural Processes and Environmental Systems
- Biodiversity
- Heritage and Culture
- Sub-Regional Greenspace
- Access and Movement
- Leisure, Recreation and Tourism

Information under each Strategic Theme subsequently underwent a process of collation, analysis and interpretation which included both written and mapping exercises. The purpose of the collation stage of the project was to establish what the GI baseline resource was in North Northamptonshire. The outputs of this ‘baseline mapping’ exercise are included in Appendix 3.

The purpose of the analysis and interpretation stage was to explore where there were ‘gaps’ or ‘missing links’ in the resource. It therefore entailed two parallel areas of work for each Strategic Theme: analysis of the baseline information through desk top research; and the interrogation of spatial datasets. Both exercises identified and prioritised the existing GI resources found within the county, in relation to each of the Strategic Themes and hence strategically important assets termed ‘key assets’. The key asset resource was then analysed further and where possible opportunities for protection, enhancement as well as creation of the strategic resource were identified, and which could be promoted or addressed through the GI Initiative. The findings of these exercises are included as Appendices 4 – 6, with Appendix 7 providing the detailed methodologies for the work undertaken.

2.2 Desk Top Research
The research undertaken for each strategic theme is included in Appendix 4. It includes a baseline summary of collated information and consultation feedback including principal references used during the written exercise, relevant consultations undertaken, a ‘thumbnail’ summary of the resource for ease of reference and key delivery targets or standards relevant to the theme, drawn down from strategic planning or sub-regional guidance documentation where available. The written exercise then focused on the identification of resource issues and opportunities and, where appropriate, potential conceptual corridors and patterns that may steer the framework development. Potential synergies and conflicts associated with the interaction of the strategic theme with other themes were also identified.

The key analysis findings and resource opportunities identified through this research and consultation process are summarised as follows:
Environmental Character Issues and Opportunities

- Urban, industrial and commercial development, including mineral extraction, has altered the character of the rural landscapes within the county, particularly during the 20th century. The effects of mineral extraction and road building, or the visual juxtaposition of industry / urban development in close association to rural landscapes, are particularly notable; impact is emphasised by the relatively low lying nature of the topography.

- Both 19th and 20th century urban development has been a dominant influence on townscape character throughout the principal settlements of Wellingborough, Kettering and Corby; however, the smaller villages have generally retained their compact form and vernacular character within the core of the settlements.

- The landscapes of the Rockingham Forest area, the River Nene and Welland river corridors are particularly important, not least because they are physically distinctive landscapes, and figure in the ‘collective consciousness’ of Northamptonshire’s communities; as such they should be celebrated and used to promote the county.

- Post war urban development is often poor, and because it is frequently evident within open views and from principal routeways, this leads to the perception, in some localities, that the county has poor character and environmental quality. In contrast, many parts of the Northamptonshire countryside are secluded and unspoilt and impart a quiet and tranquil character, associated with the pattern of farmland interspersed with small, deeply rural villages.

- There are notable landmarks and features within the study area associated not only with the historic and rural landscapes but also with prominent industrial and commercial features. The series of stone church spires, particularly in the Lower Nene Valley, are locally distinctive features, together with notable historic buildings such as the Triangular Lodge and Fotheringhay Church and Castle. The network of water towers on the higher land is also notable. Industrial and commercial development has also generated significant landmarks, such as the dominant ‘distribution sheds’ within the Nene Valley and the chimneys of the Corby Power Station on the northern perimeter of the county.

- Defra’s Environmental Stewardship (ES) scheme encourages a response to landscape and biodiversity character and has released broad guidance to farmers and landowners on the management options and potential enhancement works. The guidance relates to the Joint Character Area within which farmholdings are located. There are positive opportunities for farmers to enter into ES schemes that contribute to the wider network of green infrastructure and also respond to the principles of working in accordance with the inherent landscape character.

- High points provide opportunities for the creation of landmarks and celebration of views across the countryside; in contrast, the lower lying areas provide opportunities for local landmarking and waymarking.

- Vernacular architecture such as the use of banded ironstone and limestone and Collyweston Slate in domestic buildings is reference both to the use of available resources for construction and specific local building traditions. Such traditions are important aspects of the historic character of many settlements and inform local distinctiveness.
Natural Processes and Environmental Systems Issues and Opportunities

- The pattern of the underlying geology underpins local distinctiveness, through the influence on the topography, soils, land use, biodiversity and the overall landscape character.

- The network of rivers, and associated valley systems, ranging from the Nene to the smaller secondary tributaries all contribute to the landscape character of the study area, at a regional as well as a local level. The distinctiveness of these valley landscapes is reflected in the interplay of the topographical form and the pattern of land use and settlement.

- Flood Risk Management Strategies are in the process of development across the catchment and will offer opportunities to establish creative solutions; lower lying areas are at risk of flooding and will be subject to appropriate management proposals arising from the recommendations set out in the Strategic Flood Risk Assessments. Opportunities should be sought to ensure broader ‘gains’ are achieved for GI through this process.

- All new developments have the potential to explore opportunities and demonstrate the minimisation of surface water run off through the installation of SUDs, and other features such as green roofs, and porous paving. The GI framework should support the realisation of these objectives.

- Access to the rivers, both for active and passive recreation provides the potential for closer association with ‘natural systems’ and engendering a greater sense of well being. The GI framework should support the realisation of these objectives.

- River valleys will have a key role in the defining and strengthening the environmental infrastructure to balance the effects of new as well as existing development.

- There are educational, cultural and recreational benefits arising from the potential for interpretation of geological features, as well as the links to the historic and cultural legacy.
Biodiversity Issues and Opportunities

- The protection of key wildlife sites, incorporating all statutory designated sites and County Wildlife Sites must be a priority.

- Priority must also be given to the reduction of fragmentation processes occurring in the locality through habitat restoration and creation with further priority given to areas that will provide the most benefit (in terms of habitat fragmentation) combined with the highest chance of achieving a high standard of restoration as determined by technical issues, such as past and current land-use, land ownership, soils and planned development.

- Key targets for restoration and creation for Northamptonshire as a whole have been developed by Denton Wood Associates on behalf of English Nature in ‘Environmental Assets and Opportunities’, 2003.

- For some habitats such as veteran trees, ancient and species-rich hedgerows, reedbeds, rivers and streams there is insufficient data to set targets at this time. The identification of strategic plans for these key habitats must be based on good reliable survey data.

- Priority should be given for restoration of ancient woodland sites planted with coniferous woodland.

- There are opportunities arising from changing forestry practice and objectives.

- Implementation of legislation and planning policy: There are two strands to this mechanism, one is the protection of key assets and the second is using the planning system to deliver creation and restoration targets. Planning should ensure the protection of all designated sites, including County Wildlife Sites, protected species and species of importance for conservation as described by the CROW Act 2000.

- There are opportunities associated with new development and planning gain to help deliver nature conservation enhancement including the setting up of financial endowments for management.

- The effects of mineral extraction should be borne in mind; and opportunities associated with site restoration.

- Development of Defra’s new High and Entry Level Environmental Stewardship Scheme, and integrated funding co-ordinating both agri-environment and forestry grants, may bring new opportunities and priorities. In addition to woodland management, restoration and creation, it would be beneficial to target Stewardship grants on calcareous grassland, veteran trees, lowland hay meadows, reedbeds and hedgerows.

- There is a need for training and information provision, including promotion of strategic biodiversity objectives to private land owners.

- There are possibilities for tapping into a further range of funding opportunities covering local authority and central government grant schemes, grants from statutory agencies and EU funding. Business Sponsorship should also be considered.

- Habitat creation may be limited by technical feasibility and land ownership constraints.
Heritage and Culture Issues and Opportunities

- There is often poor interpretation of sites and monuments of historic or archaeological importance and the heritage environment generally. A low level of appreciation or understanding represents a missed opportunity for education and threatens both the county’s and North Northamptonshire’s heritage resource.

- Scheduled monuments, listed buildings and other forms of heritage designation represent only a small proportion of known heritage assets within North Northamptonshire and as such the vast majority of sites, monuments and structures are afforded little statutory protection. This is highlighted by Rockingham Forest Trust’s HLCA which has demonstrated the richness of this resource within the Forest Area. Known heritage assets themselves represent a sub set of surviving assets, and recognition of the heritage resource as finite and non-replaceable is important.

- Despite a wealth of assets many of the heritage assets are in private ownership with limited public access. There may be improved mechanisms for opening up public access into part of the sites through Defra’s Environmental Stewardship Scheme / former Countryside Stewardship.

- A number of heritage projects have been the subject of Lottery Bids, eg Chester House Farm Complex at the Irchester Heritage Site (SAM), which is considered to have the potential of becoming a centre of regional and national significance. The site also has considerable potential for integration with GI objectives. The project has been re-submitted in the second round of bids for ODPM Growth Area funding.

- Many wildlife sites within North Northamptonshire exist within or adjacent to monuments and landscapes of heritage interest. Opportunities to maximise wildlife and biodiversity benefit by tailored management of heritage sites and their surroundings should be exploited but not to the detriment of the resource itself.

- Key heritage sites within the county and North Northamptonshire are often located in the wider agricultural landscape and represent ‘islands’ of heritage in a wider ‘modern’ farmed landscape. Opportunities to manage the landscape surrounding these assets should be exploited to aid the interpretation of a site in the wider heritage context.

- Aspects of more recent heritage are often over looked or undervalued. This is particularly true of the historic urban environment. The historic cores of many of the Northamptonshire settlements have been designated as Conservation Areas and numerous individual buildings are listed. However, historic townscapes associated with 20th century development is less considered and at greater risk.

- The rich industrial heritage of the area should be celebrated. An emphasis on promoting industrial heritage destinations as part of the green infrastructure strategy could assist this.
Sub-Regional Greenspace Issues and Opportunities

- An absence of common land, moor, coastline and mountain means that free access to open countryside, via the CROW Act, is limited in the study area. Country Parks and areas of open accessible woodland are therefore key assets for such activity in these rural areas.

- Despite a general absence of common land, significant areas within the study area are covered by strategic scale green space although public access is limited to approximately 10 large sites.

- In relation to the absence of land covered by the CROW Act in the county, there may be opportunities for relatively low cost creation of large wet grassland/meadow common land within the Nene Valley following the closure of existing and future gravel workings, rather than restoration to farmland or other more formal access and recreation sites.

- Publicly accessible woodland and Nature Reserves within the Strategy Area are critical green space destinations which provide a valuable, often high quality resource as part of the 'bigger green space picture' and should therefore be promoted.

- Although there is a reasonable distribution of public open space within the Strategy Area an assessment of the quality of the resource has not been a focus of the Green Infrastructure study.

- The country park ‘experience’ within North Northamptonshire varies from the restored Ironstone quarry at Irchester, to former gravel extraction sites as at Barnwell, and woodland sites.

- Visitor numbers to country parks peaked in the early 1990s and the desire is to work towards improving visitor numbers. As populations increase alongside new development, it is anticipated that visitor numbers could increase to levels where litter, erosion, traffic congestion and damage to wildlife and heritage assets may occur.

- Incidental picnic areas and nature trails are underutilised and not widely promoted.
# Access and Movement Issues and Opportunities

- The intention is to reinforce the Nene Way as a centre piece to the Regional Park.

- The A605/ A45 route bordering the Nene, combines with the river to form a significant physical barrier between areas to the north and to the south. Indeed, the busy road is infrequently crossed by bridges and has resulted in the severance of many cycle/pedestrian routeways through the study locality.

- Principal vehicular crossings over the Nene are located at Wellingborough, Irthlingborough, Thrapston and Oundle.

- Busy roads encircling the area’s principal settlements create strong urban edges and have limited the occurrence of urban fringe landscapes. The abrupt urban-rural interface acts as a barrier to movement between the town and countryside, particularly around Corby, Kettering and Wellingborough.

- A section of the former Northampton to Peterborough railway line has been identified as an important recreational route with the creation of a bridleway and cycle route between Irthlingborough and Stanwick / Raunds. This could link into other potential off-road sections along the Nene Valley to create a Nene Cycleway. Following structural surveys of the railway bridges between Thrapston and Irthlingborough ENC and RFT in partnership with NCC intend to develop a “Green Lane Strategy” for the area. Seven towns and villages along the former Thrapston – Irthlingborough line are connected to it by a bridle network. The development of the line itself will provide off road sustainable transport links between all the settlements and a through route avoiding the A45.
Leisure, Recreation and Tourism Issues and Opportunities

- There is a growing tourism sector, which is of importance to the regional economy but is starting from an embryonic base so there is much potential.
- The resident market is important for day visits. Other important markets are conference and business travel, short breaks and waterways holidays.
- Strong landscape character, lived in heritage and gardens of Northamptonshire, and soft adventure (i.e. walking and cycling) were identified as the strengths of Northamptonshire by the Tourism Study.
- River/canal boating holidays and general use of these watercourses for pleasure is an important activity; there are opportunities for further promotion of this facility to meet new tourism markets focusing on activity holidays and use of inland waterways.
- Weaknesses included lack of ‘brown signage’, poor public transport services, lack of identity, and poor perceptions of region.
- There was considered to be a strong potential to establish a Northamptonshire brand.
- Poor signage of tourism locations.
- Opportunity to develop an ‘International Centre of Motor Excellence’, building on local expertise and industry.

2.3 Interrogation of Spatial Datasets

In parallel with the desk top research undertaken, the full suite of baseline maps produced from the baseline collation stage was interrogated to distill out those assets which were of strategic significance. These key assets normally included statutory designated features; however, the resource was also evaluated for ‘county’ significant resources for each strategic theme, such as County Wildlife Sites for the Biodiversity Key Asset Mapping, so that matters of county importance were flagged up. This mapping is presented in Appendix 5, Figures 5.1-5.5 inclusive.

Key asset mapping therefore spatially illustrates the most significant assets, either due to statutory or semi-statutory designation, or as a consequence of county level policy and guidance, that are found in North Northamptonshire. A resource base which should, where possible, contribute to the emerging Strategic Green Infrastructure Framework.

Key asset mapping was subsequently further interrogated to enable gaps or missing links in the resource to be identified (termed Interpretative Mapping). The following approaches were taken with regard to each of the Strategic Themes:

2.3.1 Environmental Character

Northamptonshire’s Environmental Character Process has provided reference sources which form the corner stone to this study. It is considered to be a topic area which should influence decision making (with regards to GI) at all levels of the planning and delivery process. As detailed below, components of the BCA and HLCA outputs have steered the interpretative mapping exercises used for the Biodiversity and Heritage Strategic Themes analysis and as such have steered the framework proposals.
2.3.2 Natural Processes and Environmental Systems
The limitation of relevant information for this topic area (see Appendix 4) prevents an interpretative approach at this time.

2.3.3 Biodiversity
A study of the existing resource for county level priority habitats, as defined by the Planning Sustainable Communities Guidance and other documents, was undertaken with regards to Biodiversity. An innovative methodology was developed for the study to enable the analysis and interpretation of the biodiversity resource to be undertaken at a county scale, the details of which are provided in Appendix 7. This included consideration of key biodiversity assets in combination with the County Biodiversity Character Types as identified by the BCA study. The interpretative mapping work looked to identify:

- Landscape scale biodiversity resources in the study area, termed the existing biodiversity resource, and focused on priority habitats
- Where key strategic opportunities exist for protection, enhancement and creation of these priority habitats (an area termed the habitat reservoir) with a view to addressing issues of habitat fragmentation at a county scale.
- Where key strategic opportunities exist for habitat connectivity (termed habitat links) with a view to addressing issues of biodiversity ‘isolation’ at a county scale.

This established the location and extent of the existing woodland, calcareous and neutral grassland and wetland biodiversity resource in North Northamptonshire, and therefore enabled the identification of strategically significant reservoirs and potential links between them (see Appendix 6, Figures 6.1-6.4).

2.3.4 Heritage and Culture
A unique methodology was also developed for the study to enable the analysis and interpretation of the heritage resource to be undertaken at a county scale and allow the heritage issues to influence the emerging GI framework. Details of this process are provided in Appendix 7. The interpretative mapping work identified concentrations of the historic resource at a county scale through the use of buffering techniques in combination with statutory designated features (see Appendix 6.5). This was subsequently correlated with known ‘mature landscapes’ as defined by the Northamptonshire Historic Landscape Character Assessment (HLCA) so that areas of high concentrations of heritage assets could be highlighted and subsequently used during the overlay process which was undertaken in the production of the GI framework plan.

2.3.5 Sub-Regional Greenspace
The nature of this topic area did not lend itself to the interpretative approach and as a consequence is not included in the Interpretative Mapping exercise. However the Sub-Regional Greenspace destinations identified by the key asset mapping steered the development of the proposed access network (proposed above) and remains of central significance to the evolution of a GI framework proposal.

2.3.6 Access and Movement
An opportunity was presented by this study for a progressive approach to the co-ordination and delivery of access and movement in the county as an integral component of the GI network delivery. The vision for this strategic theme was for the development of a ‘Sustainable Movement Network’ (SMN) which delivers a connected network across North Northamptonshire for a wide range of user groups. The SMN aims to deliver connected systems at varying scales of ‘networks’ or grids.
• Strategic Network: Provision based on a 20km grid
• Inter-settlement Network: Provision based on a 10km grid
• Local Network: Provision based on a 2.5 – 5km grid

It is not intended that the proposed networks scales are rigidly adhered to, but instead are adjusted to ensure linkage to key destinations or to meet local level community requirements. The interpretative mapping exercise undertaken for this strategic theme is illustrated in Appendix 6.7. The network size is broadly based on the following:

• That the 20km grid of the strategic network would provide an interlinked system for long distance walkers (20km being considered to be a walkable distance in a day). It would provide access to strategic destinations within Northamptonshire but also link into long distance routes of national significance. The network is not intended to be for exclusive use by walkers; it may correlate with national cycle routes, for example. However, the intention would be to promote connectivity and the provision of services at this scale of network so that visitors to the County are encouraged to explore the locality by foot.

• That the 10km grid of the inter-settlement network provides connectivity and provision of services for cycle users (a commutable distance) for example inter-settlement commuters or day round trippers. It would also provide linkage between the strategic SMN and the Local SMN. Although not intended to be for exclusive use by cyclists this network would ensure the connectivity and provision of services exists to provide residents and visitors to the County the opportunity/ choice with regards to transportation options.

• That the 2.5 – 5km grid of the local network provides connectivity and provision of facilities for local users. It provides circular routes from built areas into rural locations and access to strategic destinations and wider areas via the inter-settlement and strategic movement networks.

Clearly Sustainable Movement Network proposals will need further testing, refinement and verification through local access groups and communities to ensure proposals meet local objectives. However the underlying premise for the proposal is that communities are given the opportunity to make sustainable movement ‘choices’ and that there is provision of a sustainable connected system from ‘doorstep to countryside’.

Although a conceptual ‘rationale’ for GI access, it is proposed to provide a framework for considering provision for different user groups at all spatial levels. The standard of provision would be determined through an assessment of need relevant to the level of network under consideration. A preliminary exercise was undertaken to establish existing and proposed (missing links) routes on the basis that the strategic network would require provision for walkers only, the inter-settlement network requiring shared routes for cyclist and walkers, and the local network requiring provision for walkers only. The approach is intended to assist with strategic decision making on access and movement issues, particularly with regards to funding and delivery. However, the approach is hoped to promote integration and cross border working on the issue.

Further details of the methodology used are provided in Appendix 7.

2.3.7 Leisure, Recreation and Tourism
The nature of this topic area did not lend itself to the interpretative approach and as a consequence is not included in the Interpretative Mapping exercise. However the strategic
destinations identified by the key asset mapping steered the development of the proposed access network (proposed above) and remains of central significance to the evolution of a GI framework proposal.

2.4 GI Proposals Plans
The opportunities for the creation or enhancement of GI resources identified through the analysis and interpretation stage of study are summarised in the GI Proposal Plans (Figures 4 -6). These plans summarise both the spatial mapping and research undertaken during this stage of the study and intend to highlight the principle recommendations for strategic GI delivery.

- Proposed landscape scale biodiversity reservoirs and links are illustrated on the Strategic GI Proposal Plan (Figure 4). This indicated proposed areas for landscape scale biodiversity protection, enhancement and creation.

- Proposed and existing routeways of the Sustainable Movement Network are illustrated on the Strategic Access and Movement GI Proposal Plan (Figure 5).

- Proposed Sub-Regional Greenspace, leisure and recreation destinations are illustrated on the Sub-Regional Greenspace, Leisure, Recreation and Tourism Proposal Plan (Figure 6).

2.5 Development of a Strategic Green Infrastructure Framework Plan
The outputs of the analysis and interpretation mapping exercises were subsequently produced as a series of trace overlays, the ‘best fit’ of the composite information thus indicating geographical areas within which existing GI resources are concentrated and therefore landscape areas with the potential for ‘multi –functionality’. This overlay process steered development of the emerging Strategic Green Infrastructure Framework Plan (Figure 7).
3.0 **Strategic Green Infrastructure Framework**

3.1 **Introduction: The Northamptonshire Green Infrastructure Vision Statement**

Green Infrastructure objectives for the County are aspirational with delivery envisaged in the longer term (25-30 years). To promote a common purpose for Green Infrastructure over this time period, and to enable key partners to ‘sign up’ to the broad principles and objectives of the framework for in the county, a Preliminary Vision Statement was developed in the early stages of the project through consultation with the PSG. The Vision of Steering Group Members for Green Infrastructure in Northamptonshire is:

‘By 2030 we will provide a living system of greenspaces, parks, river and other corridors which connect urban and rural areas to the River Nene, the Regional Park and beyond. These vibrant high quality landscapes will enrich local distinctiveness, support biodiverse habitats and the cultural heritage, and provide for the interaction and enjoyment of human and natural living’.

This Vision Statement is radical; it places landscape at the heart of the development process, and environmental process at the heart of sustainable development. It is a vision which will require sustained investment and long-term commitment from national, regional and local politicians, communities, business, developers, the voluntary sector and other institutions.

3.2 **Green Infrastructure Delivery Principles**

The Strategic Green Infrastructure Framework Plan shown in Figure 7 illustrates the proposed network of sub-regional and local GI corridors within North Northamptonshire. This proposed network is based on a detailed understanding of existing and potential assets and resources within the study area, and the potential linkages and opportunities that exist to create a cohesive system. Notwithstanding this, it is intended to be a ‘principle led’ approach and is therefore a conceptual framework only, to aid the decision making process with regards to GI delivery on the ground. It is not intended to be prescriptive or inflexible, and as a consequence the network delivered in the longer term may vary depending on a multitude of local issues, not least those relating to the aspirations of local communities, land ownership and changing development context.

To ensure the vision of a multi-functional GI network is achieved in the long term, delivery should be guided by the following principles:

- The delivery of multi-functional green space is fundamental; proposals should be formulated to secure this wherever possible.
- The delivery of a connected network is also critical to ensure strategic objectives with regard to multi-functionality (ie biodiversity and access) are achieved.
- Corridors identified on both strategic and local framework plans are intended as broad areas of opportunity only and as such are open to adjustment/refinement as long as proposals adhere to the other related principles.
- Preference should be given to GI proposals which complement other GI assets and resources in the locality.
- The principle of ‘net gain’ should be secured where there is to be a loss in GI resource.
- Quality of the GI resource is paramount.
- Opportunities to consider socio-economic as well as environmental gains should be sought during the delivery of GI at all times.
- Long term monitoring of GI delivery and management through stage reviews of the resource (existing and proposed) is critical to ensuring delivery opportunities are not missed.
- Options for partnering and funding of GI delivery should be proactive and flexible including potential competition for delivery.
• Opportunities for GI delivery should be taken as and when they arise; both flagship and small scale projects will therefore be important in delivering change in the long term.

These principles should be adopted by statutory and non-statutory GI delivery partners within the County to assist with the consideration of GI proposals during the development of the local network in the long term.

GI proposals should be considered in the first instance within the context of both the overarching GI planning and delivery principles set out in the Planning Sustainable Communities document (GI Guide for MKSM) and Strategic GI Guidance/Delivery Criteria provided in the Northamptonshire GI Strategic Framework Report.

3.3 Strategic Green Infrastructure Framework Plan
The overall Strategic Green Infrastructure Framework Plan, which has emerged as a critical output from the extensive research and consultation process detailed in the previous sections, is shown in Figure 7. It applies to the whole of the North Northamptonshire and provides the context for a countywide Green Infrastructure network. It seeks to:

• provide a framework for the co-ordinated delivery of Green Infrastructure related proposals in the long term at a strategic level;
• provide a strong environmental infrastructure framework within which planned settlement growth and associated landscape change can be positively managed (ie a plan-led approach) to assist with the delivery of sustainable communities and natural systems which can respond to changing global context; and
• aims to connect communities to spaces and places, people to nature, and thus contribute to improved environmental quality, quality of life and well being, as well as link to wider agendas regarding social inclusion/regeneration and economic prosperity.

In further detail it aims to:

• deliver improved environmental quality, and thus ‘liveability’;
• celebrate the unique experience, image and visual qualities of Northamptonshire’s landscape.
• radically improve connectivity between urban and rural landscapes and thus connect spaces and places, and to and through urban areas, the countryside, the Nene river floodplain, its tributaries and other destinations;
• create multi-functional ‘working’ landscapes which deliver a wide range of interlinked environmental, social and environmental benefits;
• in particular, work with (rather than against) environmental processes to improve flood-risk and water management systems, biodiversity, and air quality; and
• provide the landscape/townscape context for appropriate urban development.

3.3.1 Green Infrastructure Corridors
The location and name of the proposed sub-regional and local Green Infrastructure corridors which combined to form the proposed interconnected network are shown on Figure 7. They are not intended to indicate rigid corridors for Green Infrastructure provision but instead identify broad landscape zones within which Green Infrastructure related proposals should be focussed. This multi-functional zone will range in its focus and objectives (see examples of corridor descriptions below).

3.3.2 Sub-regional Green Infrastructure Corridors
These sub-regional corridors broadly following the strategic waterways or its tributaries, and are already noteworthy for their mosaic of landuses, natural and built resources and settlement. They also function as transportation routeways, flood storage areas, and are rich in historic and
biodiversity resource, recreation and leisure. These corridors therefore already essentially function as Green Infrastructure corridors, providing GI related benefits. Names are proposed for these corridors, based on the natural geographic features and as such form the ‘backbone’ of the Green Infrastructure resource for the county that are of sub-regional significance.

The following sub-regional Green Infrastructure corridors have been identified:

- Nene Valley (Northampton – Wansford)
- Ise Valley
- Jurassic Way
- Willow Brook
- Harper’s Brook
- Nene Valley (Wansford – Peterborough)

They are intended to become truly multifunctional zones and therefore with the existing or potential to deliver the following ‘functionality’:

- Access and Movement – linking settlements to their hinterland, destinations and the wider strategic Green Infrastructure sustainable movement network; corridors provide sustainable links through attractive green corridors with clear way marking and other relevant facilities;
- Biodiversity – providing a focus for the enhancement and linkage of the biodiversity resource;
- Enhancement of flood risk, water management and other natural process roles;
- Enhancement and promotion of environmental character to celebrate the distinctiveness of these different corridors;
- Enhancement and promotion of heritage and cultural assets
- Enhancement and promotion of recreation and leisure – providing the context for the county’s Sub-Regional Greenspace and other destinations.

Green Infrastructure related proposals are therefore likely to focus on the enhancement and restoration of the resource and assets in these corridors, rather than the creation of new resources.

Example descriptions of the two principal Sub-regional Corridors are given below in order to illustrate the scope and range of proposals.

1. Nene Valley (Northampton – Wansford)

This sub-regional corridor follows the River Nene floodplain from Northampton north of Oundle to the County border and form the backbone of the GI framework within North Northamptonshire. It encompasses the rich floodland and valley landscapes to the north of Thrapston and the settled/extraction scarred floodplains of the Lower Nene. The mosaic of wetlands, open water and semi natural grasslands which are common habitats within this corridor are important for national and county level sites of nature conservation value as well as providing opportunities for future water management in relation to the growth settlements of Northampton and Wellingborough.

There are numerous heritage features associated with prehistoric settlement in the river corridor, particularly archaeological artefacts (many of which are scheduled) and built heritage features, such as Fotheringhay Castle. Views of the vernacular settlements of Oundle, Thrapston and Irthlingborough within the landscapes in the northern portion of the corridor, however, contrast markedly with the modern settlement edges of Northampton and Rushden which are dominated by distribution related landuses and prominent large industrial scale ‘sheds’. Visually significant landmarks within the southern portion of corridor are limited to modern industrial buildings.
(notably Victoria Mills in the case of Wellingborough) while local spires and water towers provide more iconic features in the north.

The Nene Way Long Distance Walk weaves between the banks of the River Nene for the length of the proposed corridor providing access from the urban communities of Northampton, Wellingborough and Rushden to the wider floodplain and its strategic leisure and recreation sites at Grendon Lakes Water Centre, Summer Leys Nature Reserve, Irchester Narrow Gauge Railway Museum and Irchester Country Park (and Barnwell Country Park in the Upper Nene area). The recreation site proposed at Stanwick Lakes and heritage centre at Chester Farm will serve to complement these strategic leisure attractions in the future.

Project Proposals for the Nene Valley Sub-Regional Corridor

The overall GI resource found within the Nene Valley corridor is relatively extensive; however existing links from this important nature conservation and recreation corridor to GI assets within the wider North Northamptonshire landscape are poor and there is also a need to develop the landscapes ‘functionality’ with regards to its role for water storage and sustainable movement:

- In biodiversity terms there is a need to enhance and link the wetland habitat reservoirs through the river corridor and the woodland reservoirs at Titchmarsh Wood, Barnwell and Ashton Wood.
- Connection to the strategic leisure and recreation sites at Titchmarsh Wood, Ferymn Woods, Laudimer Woods (all FC owned), Brigstock Country Park and Wicksteed Park should be strengthened, centred on the improvement and promotion of facilities along the Lyveden Way to improve access between the Nene Valley and Corby within the Harper’s Brook Sub-regional GI Corridor.
- Further enhancement and improvements to the access connections between the Nene floodplain and Finedon, Kettering, and Brigstock should be undertaken to provide for sustainable movement use at the inter-settlement and local levels.
- There are a number of existing landmarks within the floodplain, due to its central location within the County, and proximity to principal transportation corridors. However, as a consequence of its fragmented visual qualities within the Lower Nene area, opportunities should be sought to introduce iconic landmarks and features into the landscape.

2. Ise Valley

This Ise Valley sub-regional corridor follows the River Ise valley from Northampton north to Kettering and then from Kettering west to Rothwell. Although not as broad as the Nene Corridor it is an important natural physiographic feature in the intensively farmed landscape of these areas. The habitat resource is limited within this corridor with wetland habitats confirmed within the narrow river corridors, with fragmented neutral grassland resource being the dominant natural habitat within the context of Wellingborough’s eastern edge and calcareous grassland at Geddington Chase, to the North of Kettering. There are consequently few nature conservation sites of national or county significance with the exception of the Geddington Chase calcareous grassland area.

Boughton House and Park are important heritage features in the corridor, and the Registered Park is also significant as a Sub-Regional green space although public access is limited to when the park is open. The Triangular Lodge within the landscape to the North of Kettering is a notable local feature, and of county renown, although not visible from the wider area. The wider visual quality of the corridor is influenced by communication infrastructure and the industrial built edges of the adjacent settlements of Wellingborough and Kettering.
There are no long distance routes currently linking through this sub-regional corridor or a continuous routeway for local level use including between Wellingborough and Kettering. The only strategic recreation site is located at Wicksteed Park within the built edge of Kettering although Boughton House is a strategic tourist destination to the north of Wellingborough.

There is a notable local link between the Ise Valley and Harper’s Brook corridor through the extensive woodland of Geddington Chase to the north of Boughton House and parkland. From the village of Geddington there are public rights of way through the Chase to Stanion, and to Brigstock, the latter via the ancient route of Clay Dick that skirts the eastern edge of Geddington Chase.

Project Proposals for the Ise Valley Sub-Regional Corridor

The overall GI resource found within the Ise Valley corridor is relatively poor indicating the that opportunities are being missed for the delivery of GI objectives in these landscapes so near to key growth settlements. There is therefore a need to develop the landscapes ‘functionality’ within many of the strategic theme areas:

- The potential for water storage and flood risk management should be established in close combination with growth area development.
- In biodiversity terms there is a need to enhance and link the calcareous grassland habitat reservoir at Geddington Chase through to those sites located in the Stanion area of Corby by way of the railway line. Wetland and neutral grassland habitat creation and enhancement would also provide important linkage between the biodiversity resource in the Nene Valley with the Rockingham Forest area.
- Continuous recreation routes from the Nene Valley to Wellingborough, and from Wellingborough to Kettering should be developed to improve connectivity at the inter-settlement level, to provide access to the strategic destination of Wicksteed Park and Boughton Park and sustainable movement options for local users.
- A further routeway between the Ise Valley and Harper’s Brook sub-regional GI corridors (via the Geddington – Stanion local corridor) should be considered in due course to provide sustainable access between Kettering/Wicksteed Park and Corby (and its accessible sub-regional greenspace in due course.
- Subject to demonstration of need there may be an opportunity for a strategic accessible recreation/greenspace site within the Kettering locality to provide for the growth communities in this area.

3.3.3 Local Green Infrastructure Corridors

These corridors ‘link up’ the Sub-Regional Strategic Corridors to create a comprehensive Green Infrastructure network. They are zones within which a mosaic of landuses, natural and built resources and settlement may be found although they are more commonly ‘potential’ corridors rather than existing because in their current condition they are comprised of fewer Green Infrastructure components, ie ‘multifunctionality’ is less developed.

They are critical for providing the network linkage between two sub-regional Green Infrastructure corridors, and between sub regional corridors and urban communities providing the doorstop to countryside ‘connections’. The proposed names are based on the geographic locations or assets they connect and have a local resonance and relevance to the communities they serve.

The following Local Green Infrastructure corridors have been identified:

- Ecton – Wilby
- Sywell Reservoir – Broughton
• Hockley Lodge – Finedon
• Finedon – Little Addington
• Little Addington – Hargrave
• Rotherwell (Triangular Lodge) – Wicksteed Park
• Wicksteed Park – Thrapston
• Thrapston – Bythorn;
• Rotherwell
• Macmillian Way
• Harper’s Brook
• Boughton Park – Titchmarsh Wood
• Thrapston
• Geddington – Stanion
• Stanion – Deene Park
• Brigstock Country Park – Oundle
• Oundle – Great Gidding
• Oundle Wood – Shire Hill Wood
• Blatherwycke – Fotheringhay
• Elton Park (Peterborough Green Wheel Link)
• Gretton – Harringworth (Jurassic Way)
• Wakerley Wood – Fineshade Wood
• King’s Cliffe – Wansford
• Welland Valley

These corridors will require substantially more resources to improve their functionality than the Sub-Regional corridors. Asset and resource creation will be at the centre of the GI related proposals. These local corridors have the potential to become truly multifunctional, and therefore with the existing or potential functions as detailed above, are critical to delivering Green Infrastructure related benefits at the local level.

Detailed characteristics and descriptions of the GI resources and functions of these corridors will be included within the Local Framework Studies.

3.4 Strategic Green Infrastructure Framework Guidance
For each Strategic Theme sub-regional guidance on delivery and planning principles is provided (derived from the Planning for Sustainable Communities’ Green Infrastructure Guide) to provide a context to the study output. The Northamptonshire Strategic GI framework guidance is then given which indicates linkage to sub-regional guidance with a view to illustrating how the emerging framework proposes to deliver the identified sub-regional delivery and planning principles. It then outlines areas for further work or study omissions which should be addressed.

3.4.1 Further Study Omissions
The alignment of Green Infrastructure corridors through urban areas have been omitted from the Strategic Framework Plan because of the need to consider the issues at a finer detail before proposals are committed, and because of the very different resource and asset issues that urban areas present. Relevant sub-regional Green Infrastructure principles with particular reference to the management of Urban Green Spaces will therefore be considered thorough the Local Framework Plans.
### Guidance for Environmental Character

#### Sub-Regional GI Planning and Delivery Principles
The ‘Planning for Sustainable Communities’ Green Infrastructure Guide sets out the following overarching GI planning and delivery principle in relation to environmental character.

- Green Infrastructure should contribute to the management, conservation and improvement of the local landscape

#### Strategic Framework Guidance
Environmental Character baseline mapping (Appendix 3 and supporting Strategic Theme research (Appendix 4) provides the broad context of the Environmental Character resource within North Northamptonshire. Baseline studies which constitute the full suite of Environmental Character Assessment information for the county (CLCA, HLCA, BCA and overarching ECA), must influence planning and development decisions at all levels of GI delivery. The importance of environmental character in providing an overarching context for GI delivery and management within the growth region is emphasised within the sub-regional guidance by the inclusion of reference to this strategic theme in the first key principle. Further planning and delivery principles also point to its strategic significance through reference to its role in environmental policy formulation and development planning. Whilst it is not possible to develop a GI Proposal Plan for Environmental Character, issues of environmental character must inform GI delivery and management alongside other strategic issues.

- GI related proposals should consider local character and context at all times, including the historic landscape context, in order to contribute to positive landscape change, and to enable opportunities for landscape enhancement and creation to be considered as an integral part of scheme development.
- Changing land uses in urban and rural contexts can threaten this resource at both the micro and macro scale. The considerable planned growth of settlements and associated infrastructure, including major Green Infrastructure proposals such as new woodlands and recreation facilities, will be a key consideration at the macro scale.
- At the micro scale the local effects of land management change and detailing of features such as access route improvements and footpaths which need to be sensitively handled (see also Access and Movement Guidance). This will require larger schemes within GI corridors to be informed by local landscape or townscape assessments undertaken at an applicable scale and within the framework provided by the Northamptonshire ECP. Such studies should also include the findings of historic landscape character assessment. All character assessments should follow best practice guidance Countryside Character Assessment, Countryside Agency and Scottish Natural Heritage, 2002) and to methodologies agreed by the County Council. All assessments should ‘nest’ within the county hierarchy with each new assessment adding detail to the tiers above.
- Biodiversity or access ‘gains’ should not be to the detriment of biodiversity, historic, landscape or broader environmental character.
- The effects of past mineral extraction, urban and industrial development on the landscape character of the locality should serve as a reminder of previous pressures for landscape change, and lessons learnt accordingly.
- GI proposals in urban contexts should seek to reinforce and enhance existing built form and local vernacular and provide opportunities for new, exciting townscape where applicable.
- GI related proposals in rural contexts should seek to reinforce and enhance features and attributes identified in the ECA. Opportunities to celebrate and promote landscapes within the Rockingham Forest area, the River Nene and Welland corridors should be taken wherever possible because of their particular contribution to the landscape quality of the county.
Guidance for Environmental Character (cont)

- GI delivery should focus on the improvement of views of the landscape from principal infrastructure corridors when opportunities arise because of the contribution these strategic view corridors have on the perception of the county’s environmental character as a whole. Opportunities to celebrate and promote locally distinctive/prominent landmarks and features should also be taken within the context of GI delivery.

Further work

- Detailed Landscape Character Assessments should be undertaken to inform the character of future large scale development and GI delivery projects.
- Design Guidelines should be developed for GI related proposals to ensure consistency and appropriateness of approach during delivery of GI proposals in EC terms.
- Assessment of Views, Approaches and a Management Plan specifically designed to protect celebrated views, vistas and approaches should be developed.
Guidance for Natural Processes and Environmental Systems

Sub-Regional GI Planning and Delivery Principles
The ‘Planning for Sustainable Communities’ Green Infrastructure Guide sets out the following overarching GI planning and delivery principle in relation to Natural Processes and Environmental Systems:

- Green Infrastructure should take account of and integrate with natural processes and systems

Strategic Framework Guidance
Natural Resources and Processes baseline mapping (Appendix 3) and supporting Strategic Theme research (Appendix 4) provides a broad context for the GI Framework within the study area. The main river systems and valley networks provide natural well defined ‘corridors’ for access and movement as well as connectivity of the biodiversity resource. They have been a focus for human activity since pre-historic times, are rich in archaeological resource and critical to people’s perception of the county’s landscape. It is for these reasons that these features have fundamentally informed the structure of the emerging strategic GI framework plan and provide the key references for the naming of GI corridors at the strategic level.

As a consequence of a lack of critical information it is not possible to develop a GI proposal for Natural Resources and Processes. However, opportunities should not be missed to deliver benefits for water storage and flood risk management during the formulation of proposals alongside other strategic issues to ensure a multi-functional system is delivered across the Northamptonshire GI network in the longer term.

- Flood risk and water management areas should be designed and managed create multi-functional systems that address strategic themes. There should also be a co-ordinated approach to the management of these features to ensure they are viewed as connected sub-regional assets.
- In the context of water storage/flood risk management, proactive improvements should be made to flood plain restoration work so that flood risk is reduced and landscape character improved.
- Watercourses and wetlands should be enhanced to create multifunctional assets capable of delivering recreation and biodiversity benefits as well water storage or flood management functions. This can be achieved by creative enhancement or management such as restoring water courses to natural profiles or developing retention ponds, wetland and marshland habitats as part of sustainable drainage systems.
- Development work associated with manipulating water levels and drainage must not compromise or directly damage archaeological or palaeo-environmental deposits.
- Access to rivers and water bodies, both for active and passive recreation provides the potential for closer association with ‘natural systems’, engenders wellbeing and provides for healthy living. Opportunities to improve access should be exploited wherever possible, subject to safety issues and compatibility with wildlife objectives.
- Strong geographical features such as valleys and rising ground have an important role to play in defining and strengthening the identity of GI corridors (eg Harper’s Brook, Nene Valley), and balance the effects of new as well as existing developments. The integrity of these natural assets should be reinforced as entities in their own right through GI delivery rather than incrementally denigrated by landscape change.
Guidance for Natural Processes and Environmental Systems (cont)

The Jurassic Way extends through the northern section of the county and follows the Jurassic Stone Belt. In addition to its importance as a national recreation route, there are important geological and biodiversity associations, notably with areas of calcareous grassland. Opportunities should be identified to strengthen the identity of this routeway.

Further work
Catchment Flood Management Plans, Catchment Abstraction Management Schemes and Strategic Flood Risk Assessments are in the process of being compiled for the study area. These outputs will provide a framework of opportunities to establish creative solutions to flood and water management within the GI network while also delivering broader strategic theme objectives. The Northamptonshire GI Strategic Framework should be revisited following the completion of the emerging EA/Local Authority documentation.
Guidance for Biodiversity

Sub-Regional GI Planning and Delivery Principles
The ‘Planning for Sustainable Communities’ Green Infrastructure Guide sets out the following overarching GI planning and delivery principles in respect of biodiversity:

- Green Infrastructure should maintain and enhance biodiversity to ensure that development and implementation results in a net gain of Biodiversity Action Plan habitats, and
- Be delivered through the enhancement of existing woodlands and also by the creation of new woodlands and forest areas.

Strategic Framework Guidance
- The Strategic Biodiversity Green Infrastructure Proposal Plan (Figure 4) provides a basis for targeting resources to maximise the delivery of county level biodiversity objectives as an integral part of the GI Framework. It is in line with the overarching sub-regional principles together with further principles identified in the Strategic Themes section. The plan maps the existing biodiversity resource of statutory and non-statutory designated sites, and other non designated habitat. It also identifies landscape scale ‘reservoirs’ for priority habitats (Woodland, Calcareous, Neutral Grassland and Wetland Grassland) and strategic linkages between these. It provides a basis for the delivery of a connected system of habitats as an integral part of the county’s GI network and a pro-active approach to biodiversity protection, enhancement and creation in Northamptonshire. It champions biodiversity enhancement and sustainability, rather than maintenance of the status quo.
- The formulation of GI proposals should consider the multiple benefits that biodiversity can deliver; for example, the biodiversity resource can deliver access, educational and health agendas. To ensure ‘joined up’ action, GI delivery partners and mechanisms should promote the wider benefits of maintaining/improving biodiversity resources, including those found within private ownership.
- The launch of the Environmental Stewardship Programme, encompassing Higher and Entry Level Schemes, has brought new impetus to the system of agri-environment schemes. These schemes are being promoted in association with targets and priorities for Joint Character Areas and represent opportunities for biodiversity enhancement as well as respecting countryside character. Increasing take-up will make valuable contributions to GI in the longer term.
- Character of vegetation and species should be enhanced or created as appropriate to context.

Woodlands
Enhancement of the woodland GI in North Northamptonshire should be achieved at the strategic level through a variety of measures including:

- The protection of all designated woodland sites and other identified areas of strategic woodland biodiversity resource as indicated on Figure 4. GI delivery should prioritise these assets for action.
- The creation of buffer zones around woodlands, especially where new development adjacent to these sites is proposed, would achieve protection. Ideally this would include new woodland plantings to increase the woodland area and to protect the inner core of older woodland habitat. Such planting measures would also contribute to the objective of expanding the overall woodland area.
Guidance for Biodiversity (cont)

- Restoration of woodlands should prioritise ancient woodland sites that have been disturbed or converted to commercial plantation. These ancient woodland sites often retain remnants of the original woodland flora and fauna and experience suggests that effective restoration of such sites can be achieved in relatively short periods of time and may even be given priority over planting of new woodlands, where a choice exists. Such an approach is consistent with objectives concerning the protection and enhancement of environmental, landscape, biodiversity and historic landscape character.
- The restoration or sympathetic management of woodland sites can be achieved through the provision of management advice to woodland owners, the acquisition of key woodlands by nature conservation organisations and the provision of management grants to woodland owners. A new system of woodland grants is now in place and take up of grant funding should be encouraged.
- Reducing the effects of habitat fragmentation will be achieved through increasing the size of individual blocks of woodland and by connecting woodland through new planting or through the widening of hedgerows or planting of new hedgerow connections. Priority should be given to whole new woodland planting schemes that deliver the strategic links identified between woodland reservoirs or fill a strategic gap between woodland reservoirs. Any new planting aimed at improving woodland connectivity should carefully consider any species-specific requirements. For example, if the objective of a planting scheme was to counter the fragmentation of dormouse populations, then careful consideration would need to be given to the width, species composition and structure of any linking woodland habitat in order that an effective link is established.
- It should be noted that new woodland planting must be carefully considered if it would result in the loss of another priority habitat type.
- New woodland planting or hedgerow planting may also provide opportunities for the establishment of new access routes. However, consideration should be given to potential conflicts between the objective of the new planting and potential disturbance by increased human access. In general with careful design this should not give rise to conflict but an assessment on a case by case basis should be made.

Calcareaous Grasslands

Enhancement of the calcareous grassland should be achieved at the strategic level through a variety of measures including:

- The protection and appropriate management of all designated calcareous sites and other identified areas of strategic calcareous grassland resource as indicated on Figure 4. Green Infrastructure delivery should prioritise these assets for action.
- Creation of new calcareous grassland should be targeted in the reservoir areas, in particular in the Cropped Limestone Plateau and Limestone Woodland Biodiversity Character Areas (BCAs).
- Opportunities should be taken to create new grasslands and bring existing sites into appropriate management. This can be achieved in association with new permissions and planning gain arising from mineral extraction and expansion of urban areas, in particular to the north of Corby. Where opportunities present themselves, planning authorities should seek to revise restoration proposals for existing mineral extraction permissions.
Guidance for Biodiversity (cont)

- In the Limestone Woodlands and Cropped Limestone Plateau BCAs there may also be opportunities to create new calcareous grassland habitat in association with enhancements to access routes.

Neutral grasslands

Enhancement of the neutral grassland GI in North Northamptonshire should be achieved at the strategic level through a variety of measures:

- Neutral grasslands are scattered throughout North Northamptonshire (see Figure 4) but there is a good assemblage of small sites within the Liassic Slopes BCA. Priority should be given to protecting, managing and expanding existing sites in this area through the provision of advice and grant awards to landowners.
- Given the density of grassland sites within the Liassic slopes BCA priority should also be given to restoring improved or semi-improved grasslands in close proximity to designated sites.

Wetlands

The River Nene and Welland corridors support a wide diversity of wetlands (as shown on Figure 4) and priority should be given to ensuring existing sites are protected and managed appropriately.

- New habitats including floodplain grassland, reedbed and wet woodland should be encouraged in preference to open water, which is very well represented within the Nene valley and inconsistent with the character of the Welland. These habitats should be given priority in future sand and gravel quarry restoration proposals.
- There is much less open water in the tributaries of the Nene and Welland where wetland habitats comprise marsh, riparian wet woodland, swamp and damp neutral grasslands. These habitats and designated sites should be protected and maintained through sympathetic management. This can be achieved through the provision of advice and grant awards to encourage landowners to sympathetically manage these water courses and their riparian habitat systems.
- Alongside or within these river corridors, areas of informal wildlife habitat that is not accessible to the public should be created or maintained. Refuge areas free from disturbance are essential elements for the maintenance of local biodiversity. The Environment Agency typically asks for development free buffer zones for a minimum of 8m alongside freshwater rivers, and 16m alongside tidal rivers. The agency also sees this as an opportunity to ensure biodiversity rich pedestrian routes and green spaces are integrated into residential, industrial or mixed use developments adjacent to river corridors.

Further work

- It should be noted that whilst the biodiversity element of the Green Infrastructure is based on selected priority habitats, the approach set out here should also be applied to other habitats within the study area as opportunities arise. Such habitats include arable field margins, hedgerows, farmland and urban and post-industrial habitats all of which have been identified as regional priority habitats in the study undertaken by Denton Wood Associates on behalf of English Nature. This also accords with the advance towards good agricultural and environmental conditions that are now a requirement of the Single Payment Scheme for farmers.
Guidance for Biodiversity (cont)

A similar approach to that adopted in this assessment for addressing priority habitats should also be developed for priority species in the study area. Although there is likely to be a great deal of overlap between habitats and species, consideration of species requirements is likely to help define priorities for habitat creation and restoration at a more local scale than has been possible here. Such an approach will also help better define the objectives of particular creation and restoration projects. Such an approach would be subject to mapping BAP species to achieve the necessary objectives.
Guidance for Heritage and Culture

Sub-Regional GI Planning and Delivery Principles
The ‘Planning for Sustainable Communities’ Green Infrastructure Guide sets out the following GI planning and delivery principle relating specifically to heritage and culture:

- Green Infrastructure should contribute to the protection, conservation and management of historic landscape, archaeological and built heritage assets.

Strategic GI Framework Guidance
The Heritage and Culture Interpretative Mapping (Appendix 3) and supporting Strategic Theme research (Appendix 4) provides a basis for informing GI related decisions with regard to the heritage resource of the county.

- When delivering proposals within GI corridors which are contiguous with mature landscapes a particular emphasis should be placed on the consideration of the historic environment and the features and elements that contribute to the legibility of the historic character of the landscape. The approach must accord with guidance provided by the Northamptonshire HLCA.
- When delivering proposals within GI corridors which are not contiguous with mature landscapes opportunities should be sought to manage historic landscape features or attributes in line with guidance given in Northamptonshire’s HLCA.
- The production of historic environment management plans will ensure that opportunities are taken that proactively protect and enhance existing strategic and local assets.
- Strategic historic assets should be promoted as part of an integrated approach to visitor destinations within Northamptonshire, linked by way of the Sustainable Movement Network. Northamptonshire’s archaeological resource would benefit from having its ‘profile’ raised through the promotion of ‘flagship’ projects such as the Chester House Farm Complex as much of the historic resource that is visited is focused on County Houses.
- Opportunities to celebrate the rich industrial heritage of the county should be taken within the context of GI; this could include the promotion of industrial heritage destinations as part of a wider approach to strategic destinations within the GI framework.
- The historic resource within the GI framework should also be promoted through better site interpretation and educational initiatives.
- Environmental Stewardship Schemes (Higher and Entry Level Grant Schemes) have an important role to play in the sustainable management of the historic environment and can also provide opportunities for ‘multiple wins’ such as biodiversity and access objectives.
- Opportunities to enhance the context and integrity of historic urban environments should, wherever possible, also be pursued within the context of Green Infrastructure.
- Effective management of the heritage environment is essential. Management would include the preservation of some sites and the mitigated loss of others. Opportunities should be taken to manage the landscape surrounding historic assets to aid the interpretation of a site within the wider heritage context.
- Non-designated sites, features and structures constituting historic landscapes, historic buildings, visible monuments, buried archaeological remains are clearly at risk from ploughing, changing land use and, in this context, to planned settlement expansion and associated infrastructure. Proposals within GI corridors should seek to demonstrate consideration of such resources. Similarly, buried organic archaeological and palaeo-environmental remains are at risk from drainage for agriculture, but also changes in water quality, aeration and pH associated with wetland creation schemes, and GI.
Guidance for Heritage and Culture (cont)

- Historic environment records and management systems will be important tools to assist with informing development and planning decisions across the growth area as well as in the context of the GI framework; these underpin and inform all aspects of understanding and management of the heritage resource. The availability, quality and ease of access to these systems (such as the Northamptonshire Sites and Monuments Record) is critical.

Further Work

- To date, the GI analysis process has relied upon the identification of heritage assets with a formal statutory or semi statutory designation. This has excluded assets whose only designation is through the Northamptonshire Sites and Monuments Record are recorded as areas of known or predicted archaeological potential. In essence this has meant that only a relatively small percentage of the entire heritage resource has been considered as part of the GI Project. To resolve this, Northamptonshire County Council is now undertaking to create a new dataset (based on the full SMR) that will provide a more comprehensive record of known surviving heritage assets in the county. The dataset will exclude find spots but will record all sites that are upstanding visual monuments/remains or represent significant buried archaeology. A finer degree of analysis will be made possible if the dataset were to note whether the resource is above ground, visible or buried.

- In due course the findings of the detailed HLCA may be used to initiate sensitivity mapping for the heritage resource at a landscape scale. This will further assist the routing, design and management of GI corridors and consideration of the heritage resource more generally, placing it at an equal footing with other agendas considered in the GI process.
Sub-Regional Greenspace

Sub-Regional Planning & Delivery Principles
The ‘Planning for Sustainable Communities’ Green Infrastructure Guide does not set specific principles relating to Green Space within a rural context, which has been the focus of strategic theme analysis. Broadly related to this Strategic Theme, however, the overarching principle is that:

- Green Infrastructure should create new recreational facilities, particularly those that present opportunities to link urban and countryside areas.

Strategic Framework Guidance
The Sub-Regional Greenspace, Leisure, Recreation and Tourism Green Infrastructure Delivery Plan (Figure 6) indicates those accessible green spaces which are of strategic significance. They are identified to ensure their strategic relevance is brought to the forefront of GI issues and are included as part of the overall vision for ‘connected places and spaces’ proposed through the GI framework despite an absence of direct reference in sub-regional guidance. They are set apart from broader recreation and leisure assets because of their importance in providing free access to green space within a landscape with a notable absence of freely accessible open countryside.

Although sub-regional guidance includes reference to green space and open space targets assessment investigations undertaken as part of this study have been inconclusive. Despite this, opportunity remains for the GI initiative to deliver accessible green space in the future, when clarity on need is achieved. For this reason Proposed Sub-Regional Greenspaces are indicated as on Figure 6.

- There is an opportunity through the GI initiative to provide a co-ordinated network of recreation facilities and green spaces. This approach should be championed and promoted at all levels of GI delivery.
- An absence of common land, moor, coastline and mountain means that free access to open countryside, via the CROW Act, is limited in the county. Country Parks and areas of accessible woodland/nature areas are therefore key assets for such activity and opportunities to improve this existing resource should be taken where there is an existing or future demonstration of need.
- Visitor numbers to country parks peaked in the early 1990s and there are efforts to work towards improving the number of visitors to country parks. As populations rise alongside new development, the strategic significance of the country park resource will increase. The effects of increased visitor numbers on the resource will need to be monitored to ensure that increased visitor pressure does not damage the resource.
- Country Parks are designed specifically to provide access for all, to most if not all facilities. Proposed sites will need to address the ‘access for all’ issue in design and planning of function, and facilities.
- There is no remit for planning authorities to expand open space provision unless there is a business case to do so. All public open space requires management and maintenance and as such funding streams will need to be made available for those sites that have limited commercial returns.
- Following the closure of existing and future gravel workings along the Nene, opportunities may arise for the creation of large riverside meadows with similar status to that of common land. In certain instances, such an approach may be preferable to restoration to farmland or other more formal access and recreation sites. The relatively low cost of implementing and managing such restoration proposals and the absence of land covered by the CROW Act in the county, would make such an approach successful.
Sub-Regional Greenspace (cont)

- Funding, management and governance of the open space and recreation resource and the coordination of access and recreation provision at a local and strategic scale are critical issues for consideration.
- The value of open spaces and recreational resources increases when individual sites and facilities are easily accessible and connected to a larger system or network. Establishing viable and effective links between green space assets is critical.
- The contribution of environmental landscape character, historic landscape character and biodiversity character are crucial to the siting and design of new green spaces and recreational resources. Community involvement in design and management should also be exploited wherever possible.
- The educational, health and community benefits of existing and new public green spaces should be fully exploited. Design and management should seek to limit mis-use and anti-social behaviour that would otherwise threaten users of particular resources and result in damage to heritage and biodiversity assets and facilities.
- Strategic flood corridors may offer opportunities for creating linear green spaces that can connect to each other and existing recreation and tourism sites and so create an integrated network of accessible green space.

Further work

- Mechanisms for applying OpenSpace standards at the county level require clarification. The Strategic Space, Leisure, Recreation & Tourism GI Delivery Plan (Figure 6) should subsequently be updated to include Proposed Strategic Accessible Green spaces if relevant.
Guidance for Access & Movement

Sub-Regional GI Planning and Delivery Principles
The ‘Planning for Sustainable Communities’ Green Infrastructure Guide does not set specific principles relating to access and movement. Broadly related to this Strategic Theme, however, is the overarching principle that:

- Green Infrastructure should create new recreational facilities, particularly those that present opportunities to link urban and countryside areas.

Strategic Framework Guidance
The Strategic Access and Movement Green Infrastructure Delivery Plan (Figure 5) provides a rationale for targeting resources for sustainable movement as an integral component of the GI Framework. Although there are few direct reference to this Strategic Theme in Sub-Regional Guidance, the Planning Sustainable Communities document highlights two key points: the importance of linked space and green routes for recreational and health benefits; and the importance of linkage between urban and countryside areas. The Sustainable Movement Network proposed by the Access and Movement Delivery Plan aims to ensure action is co-ordinated, and that the opportunity to provide an integrated network (which the GI initiative presents), is taken for the benefit of a wide range of existing and potential users. The network has been developed so that key Sub-Regional Greenspaces and other Strategic Assets (Heritage, Biodiversity and Leisure Destinations) are accessible through the network.

Strategic GI Objectives on Access and Movement
- Routeways should be delivered through a co-ordinated programme which seeks to develop a clear ‘identity’ between different levels of the network. This will require the development of Design Guidelines for the Sustainable Movement Network (see items below).
- Central to this approach is the promotion of the ‘named routes’ so that, like roads, they can be easily identified and referred to in high quality Green Infrastructure maps and form part of the ‘branding’ exercise proposed to be undertaken by Explore Northamptonshire. This will aid way-marking and way-finding and give the routes distinctive identities within the wider network. Route names should be derived from those given to the Green Infrastructure corridors identified on the Strategic GI Framework Plan (Figure 7) and tested through wider consultation. Names should aim to reflect the ‘level’ of network provision that they represent, have local resonance and seek to indicate the resources and/or assets which they connect.
- Improved access should be delivered after careful consideration of user requirements with the correct access standard applied in accordance with specific needs. Delivery will also need to consider the landscape context of the proposal and ensure that it is sensitive to location (see reference to Design Guidelines below).
- Opportunities to work collaboratively with a variety of partners should be sought during the delivery process; for example, with local access groups, education and health authorities, art groups, tourism bodies and access groups. Such collaborative working will help deliver routes that meet specific needs and assist the branding of parts of the network.

Further Work
- Green Infrastructure Sustainable Movement Network maps and literature should be produced to instil confidence in all users that the routes are shown are attractive, well-signed, continuous and meets the standards of agreed provision.
- Design Guidelines for access improvements should be developed for each level of the proposed network and applicable to Urban, ‘Doorstep’ (urban fringe) and rural contexts to ensure change is appropriate to the urban or rural character into which they are being proposed.
Guidance for Access & Movement (cont)

- A signage strategy should be developed. This is proposed to create a unified sub-regional series of signs and waymarkers. They would be intended to mark all junctions within the Green Infrastructure framework. A co-ordinated design ‘family’ of signage types should be developed which reflects the landscape they are in and their purpose. For example, signs may be mounted on stone or items of industrial archaeology for instance, within former quarries or industrial sites. Existing landmarks and destinations should all be incorporated as part of the overall signage strategy. Lighting, sculpture, buildings and beacons should all form a part of the matrix of landmarks and waymarkers which build a characteristic image for Northamptonshire and contribute to a strong sense of connectivity.
Guidance for Leisure, Recreation and Tourism

Sub-Regional GI Planning and Delivery Principles
The ‘Planning for Sustainable Communities’ Green Infrastructure Guide sets out the following GI planning and delivery principle relating specifically to Leisure, Recreation and Tourism:

- Green Infrastructure should create new recreational facilities, particularly those that present opportunities to link urban and countryside areas.

Strategic GI Framework Guidance
The Northamptonshire Strategic Theme: Sub-Regional Greenspace, Leisure, Recreation and Tourism GI Delivery Plan (Figure 6) indicates those green spaces and other recreation/tourism destinations which are of strategic significance (as defined by the Northamptonshire Tourism Strategy) which should, wherever possible, form part of the integrated GI network. Although Sub-regional guidance is broad with regards to this topic area the Northamptonshire Strategic Theme: Sub-Regional Greenspace, Leisure, Recreation and Tourism GI Delivery Plan (Figure 6) aims to assist with the delivery of further principles 2, 3, 4 (in the broadest sense) and provide a delivery a framework for developer contributions (principle 6).
4.0 Strategic Delivery

Section 3 introduced the proposed Strategic Green Infrastructure (GI) Framework Plan for Northamptonshire supported by GI Delivery Principles. This section considers who the key partners might be in the long term delivery of the GI initiative, what their roles and remit should be, and the potential funding and delivery mechanisms available to them during this process. It is not intended as an exhaustive review of the issues, many of which are the subject of other parallel studies. It seeks to highlight the principal opportunities as well as constraints for delivery that exist in the county, in order to provide an overview of strategic delivery issues.

4.1 GI Delivery Champion

The overriding aim of the GI initiative is to deliver a significantly enhanced environment in Northamptonshire over the coming decades, balancing and integrating with the proposed growth areas, and the wider River Nene Regional Park. In parallel with this aim, GI will support and promote the tourism potential of the county through a marketable and cohesive landscape concept in tandem with associated economic and employment opportunities and associated investment. Wider recreation and leisure opportunities, environmental education and accessibility will also benefit from the Strategic GI Framework. This is a demanding and ambitious initiative, however, and the identification of a champion organisation is key to its successful realisation. The ‘GI Delivery Champion’ should have the remit to lobby and engage with a broad range of other organisations in both the public and private sector with a view to establishing effective long-term partnerships and mutually supportive ‘joined up’ action.

From an assessment of current GI Delivery Strategies in the Thames Gateway Growth Area, it is apparent that an effective way forward has been achieved through the setting up of a single focus organisation, comprising the Thames Gateway Partnership (TGP) to act as the Delivery Champion. The TGP has the role of supporting both regional and local partners in translating strategic initiatives into delivery through local development frameworks, local delivery vehicle regeneration frameworks and individual projects. Within Northamptonshire, the River Nene Regional Park Team would seem well placed to take on the role of the ‘Delivery Champion’ organisation for the GI initiative in the future, not least because of its environmental focus within the wider remit of meeting sustainable development objectives. The potential governance options, and whether the organisation is comprised of a loose partnership of organisations or spearheaded by a more formal Partnership, Trust or new Park Authority is discussed in some detail in the River Nene Regional Park Feasibility Study, and is the subject of on-going research and discussion.

4.2 Delivery Framework

Regardless of whether a Delivery Champion is identified or not, a consortium of local authorities, statutory and non-statutory agencies and organisations will need to play an important role in taking the Green Infrastructure Project forward, and meeting the aspirations and objectives set out in Section 3. This multi-agency approach will require a clear identification of roles and responsibilities, along with the setting and monitoring of delivery targets. This is illustrated in Figure 8. Table 1 (overleaf) identifies the key government sector and other organisations that should be engaged to act as GI delivery partners in Northamptonshire (ie a Delivery Framework), and their potential roles at the different spatial levels. The table also suggests priorities for action at the different spatial levels within each Strategic Theme. Organisations will need to ‘sign up’ to the roles and areas of work identified, in conjunction with the additional partners needed to assist with delivery.
Table 1: Delivery Framework (also refer to Figure 8)

<table>
<thead>
<tr>
<th>Other Delivery Partners: Government, Charitable Trust &amp; Private Sector</th>
<th>Key Government Sector Delivery Partner, &amp; Proposed Roles</th>
<th>Environmental Character</th>
<th>Natural Processes &amp; Environmental Systems</th>
<th>Biodiversity</th>
<th>Heritage &amp; Culture</th>
<th>Strategic Green Space</th>
<th>Access &amp; Movement</th>
</tr>
</thead>
</table>
| EN, EH, CA, EA, FC, RNRP | EMRA  
- Policy formulator  
- Sub Regional GI Coordinator  
- Integration into RSS / MKSM SRS | Focus on delivery of sub regional GI objectives through planning policy | Focus on delivery of sub-regional GI objectives through planning policy | Focus on delivery of sub regional GI objectives through planning policy | Focus on delivery of sub regional GI objectives through planning policy | Focus on delivery of sub regional GI objectives through planning policy | Focus on delivery of sub regional GI objectives through planning policy |
| EN, EH, CA, EA, FC, RNRP | RNRP  
- Strategic & local cross boundary coordinator  
- Environmental Advisory Service  
- Promoter of GI Good Practice and Standards  
- Strategic GI planning and priority coordinator  
- GI infrastructure fund coordinator  
- GI Review & Monitoring | Focus on:  
Promotion of NCC 'environmental landscape character identity'  
Review & monitoring of landscape change | Focus on flood risk management proposals that work with and can delivery creative GI opportunities | Focus on promotion of projects which deliver Priority Habitat Reservoirs and Links (Landscape Scale resource) | Focus on:  
Review, recording and monitoring of resource assets  
Protection and enhancement of resource | Focus on delivery of strategic destination provision/signature projects.  
Focus on delivery of Strategic and Inter-settlement SMN links. |

2018LO/Strategic/September 05
Table 1 (cont): Delivery Framework (also refer to Figure 8)

<table>
<thead>
<tr>
<th>Other Delivery Partners: Government, Charitable Trust &amp; Private Sector</th>
<th>Key Government Sector Delivery Drivers, &amp; Proposed Roles</th>
<th>Strategic Theme Delivery Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>Environmental Character</td>
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<td>Biodiversity</td>
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</tr>
<tr>
<td>EN, EH, CA, EA, FC, RNRTP</td>
<td>NN LDV • NN cross boundary co-ordinator • Policy Formulator</td>
<td>Focus on delivery of ECA objectives through planning policy</td>
</tr>
<tr>
<td>EN, EH, CA, EA, FC, RNRTP</td>
<td>Developers Landowners RFT, Wildlife Trust, Groundwork Trust, Land Restoration Trust</td>
<td>LA/LSP • Policy Formulator • Initiate and delivery local Greenspace Strategies • Promote Standard of Excellence schemes (ie Green Flag Award)</td>
</tr>
</tbody>
</table>
4.3 **Delivery Mechanisms**

Numerous mechanisms have begun to be employed for the delivery of GI ‘on the ground’ across the sub-region.

4.3.1 **Public Sector Delivery**

The public sector encompasses a range of government organisations and agencies, ranging from national and regional level through to local, all of which have the potential to contribute either directly or through partnership working to the funding of green infrastructure projects and initiatives.

Through the Sustainable Communities Plan, and the Growth Areas agenda, the ODPM has shown its commitment to the funding of a range of innovative projects including many which will deliver green infrastructure. In August 2005 the ODPM confirmed its commitment to the funding of up to £200 million for innovative projects to benefit communities across the South East and the Growth Areas including the Milton Keynes and South Midlands Growth Area. In the current round for projects to commence in 2006, Northamptonshire made bids of over £50 million, a number of which are focused on enhancing the environment. Selected projects are now to be taken forward to the next round, some of which directly relate to GI provision eg £1.75 million for the North and West Northants Green infrastructure and £950,000 for Corby: Top Lodge – Fineshade Woods. Other projects confined to urban areas nevertheless provide opportunities for GI to form an integral part of the proposals.

Tiering down from the ODPM, and EMRA at the regional level, the River Nene Regional Park Initiative will remain the key driver at a sub-regional level for the context for delivery of GI. The embedding of GI into the emerging LDFs will also provide the relevant Local Authorities with the core spatial strategy and policy framework for supporting and co-funding of GI delivery. The Local Strategic Partnerships for each of the district and borough councils will also provide an important delivery vehicle to initiate projects and opportunities, particularly through the work of sub groups focused on environmental issues.

Other key public sector organisations that are committed to the delivery and support for funding of GI include the key government agencies of English Nature and the Countryside Agency (emerging Natural England); the Environment Agency; English Heritage; and the Forestry Commission.

4.3.2 **Private Sector Delivery (in respect of Developer Contributions)**

This is normally secured through two routes:

- Direct asset investment (GI funded and delivered on the ground by private interest);
- Indirect asset investment (GI funded through a commuted sum and delivered on the ground by the Local Authority or Third Party – for example RFT)

Aside from the funding issue identified in Section 4.5 below, the limitations to the current delivery structure that have a potential bearing on the successful delivery of the GI network in the future are considered to be:

- The absence of flexibility for delivery, and a review process: Many environmental proposals are agreed as Conditions to applications which form part of extended planning negotiations for a site. There is a need to ‘build in’ incremental reviews between the parties concerned so that GI delivery opportunities are not lost at the time of delivery on the ground simply because ‘that was what was agreed’ at a particular time. This is particularly pertinent in the context of a rapidly changing environment such as that seen in the growth area.
• The absence of competition for delivery: The potential for a more competitive approach to delivery may yield benefits to all parties. Elsewhere in the country, for example in the National Forest, proactive delivery is being encouraged through the promotion by the Forestry Commission of enhanced grants for woodland planting, with FC funding schemes topped up within the park area. There may also be opportunities for private contributors to be more selective in their contributions to enable their interests to be promoted in a broad context.

4.4 Delivery Challenges
The key challenges for delivery will be:

• Delivery of multi-functionality
• The Long Term management of Quality Greenspace
• Skills for the Planning, Design, Implementation and Maintenance of Greenspace

4.4.1 Delivery of Multi-functionality
A major ‘thread’ within this report is the concept of multi-functional green infrastructure offering a range of benefits. These include recreation, sport, healthy exercise, education, social inclusion, mitigation of impacts of climate change and pollution, improvement of water quality and management, protection and enhancement of biodiversity, income generation via the green economy, sustainable food production, sustainable access and movement, a sense of place, and identity and an overall enhancement of the quality of local environments. It is essential that the potential of the GI network to deliver multi-functionality as an integral part of the working landscape, is recognised in its planning, design and management. The precise functional use of green space should be decided on at the local level, dependent on specific needs, but good planning should always seek to deliver multiple benefits wherever possible. Early engagement with local organisations and communities who have expertise in particular areas will help maximise the benefits that these green spaces can provide to local communities.

Another important aspect of delivering multi-functionality in the long term is to ensure green space is delivered through the planning system so that green infrastructure can be planned alongside other infrastructure, thus linking green space strategies to local transport plans, Rights of Way Improvement Plans, walking and cycling strategies, community strategies, cultural strategies, economic strategies, health plans, biodiversity action plans, strategic and local flood risk assessments, sustainable drainage schemes and landscape strategies.

A planned strategic approach must also include consideration of how green space will be managed and maintained over the long term to ensure quality and that the site remains fit for purpose. Embedding multi-functionality into the planning and design of green space will help secure its long-term management.

4.4.2 Long term Management of Greenspace
The management and maintenance of public green space will continue to be a role for Local Authorities. However, competing demands on budgets and an increasing recognition that the value of green space is wider than public amenity, means that there is also a need to develop new models for funding, management and maintenance. Innovative models of long term management already exist, such as using the green economy to generate an income and private sector management trusts for individual developments. There is a wide range of support at a national level for green space management and maintenance, for example CABE Space and ODPM Good Practice Guides.

4.4.3 Skills
Success in delivering Northamptonshire’s GI network will depend on contributions from many organisations and people. The Egan review of skills needed to create sustainable communities
recommended Regional Centres of Excellence to drive the development of skills of professionals involved in the green space sector because of a perceived shortage in this area.

4.5 Funding Mechanisms
The underlying premise of GI delivery in the Growth Areas is that development will drive both the need for and mechanism of delivering environmental improvement in the coming 25-30 years, and will encompass improvement of both the existing green resource and creation of new landscapes. However, development alone cannot deliver the investment required to realise the initiative in the next 20-30 years. This level of investment will require a range of funding mechanisms, including continued public sector investment and public private partnerships, in parallel with a range of delivery mechanisms. (See Section 4.3).

Substantial public funding streams are in place to assist with the delivery for GI within the identified growth areas, namely through the ODPM Liveability and Green Space funds (part of the Sustainable Communities Programme). In addition to these funding streams the Big Lottery fund may provide further access to monies for environmental improvements or the creation of new assets. Further details of potential funding streams are detailed in Chapter 7 of the RNRP Feasibility Study and the RNRP project team is continuing to explore these potential options. The Regional Park/NCC currently acts as a conduit from these funds to other strategic or local partners and there is an on-going requirement for this co-ordination role in the future, in conjunction with the North Northamptonshire LDV, to ensure Northamptonshire remains competitive in securing funding for environmental improvement within its administrative area.

The projected capital and revenue cost for GI provision cannot be achieved entirely through public sector funding. There are significant opportunities to deliver parts of the GI network through the development process. The transition to a plan led approach to development planning in turn provides opportunities for change at a number of levels, through policy development, spatial planning and development control. In particular, development control is often seen as providing opportunities for delivery via direct developer contributions. The approach taken within this study, however, sets a framework which can enable GI to be considered as an integral component of policy formulation, and spatial planning as well.

With regard to developer contributions, consultations undertaken during the study highlighted the restrictions that working within this approach can often impose on delivery, in particular that gains can only be achieved within the receiving administrative area. The establishment of a central environmental community chest, or green bank was often cited by stakeholders as a prerequisite to the successful delivery of a strategic GI network. Opportunities for the establishment of such a fund should therefore be explored as an integral delivery ‘tool’ available to the GI Delivery Champion (as indicated on Table 1).

4.6 GI Strategic Costings
The potential costs of delivering the Strategic Green Infrastructure Framework in the longer term is an important consideration at both the regional and sub-regional levels so that this can be accommodated within broader budgets for public sector funding streams. To assist with this requirement, generic costs per hectare have been used in order to provide broad ball park costs for the delivery of the Northamptonshire GI framework in the scenarios as detailed. However, the costs must be considered against the following assumptions, omissions and uncertainties:

- The generic cost per hectare referred to in Table 2 below are derived from The RNRP Feasibility Study (Section 7.2 – Table 7.1) which in turn has been established in consultation with the Greater London Authority (GLA) and English Partnerships through the East London Green Grid Initiative. These costs therefore reflect delivery of parks and open spaces within urban / brownfield localities rather than the largely rural context within Northamptonshire.
• The table gives average capital and revenue costs for restoration and enhancement of parks and open spaces based on levels of use. These rates will not, therefore, relate to the delivery of biodiversity or recreation lead proposals, again in largely rural contexts.

• Significant aspects of GI delivery will come forward through private sector investment i.e. through planning gain mechanisms.

• There are many further unquantifiable uncertainties and unknowns such as issues related to land ownership, delivery partners and mechanisms for which costs cannot be accurately determined at this stage.

The costings detailed below should only be regarded as a best guess approach, indicating a magnitude of cost based on best available information. While the generic figures detailed in Table 2 may be considered to be on the high side, an allowance of this order should be made to ensure the delivery of a multi-functional network, i.e. to deliver change which is over and above more limited projects confined to ‘planting trees’. Future monitoring and review undertaken through the RNRP should, of course, consider the refinement of these costings in consultation with delivery partners.

The overall Strategic GI Framework area is calculated as 394km² (39,400 hectares) within North Northamptonshire, of which 213km² (21,300ha) comprise sub-regional GI corridors and 181km² (18,100ha) of local GI corridors.

In respect of sub-regional GI corridors it has been assumed that 20% of the area (4,260 ha and 10.8% of the total GI framework) is subject to capital enhancement works. It is further assumed that 10% of that is at high intensity use, 20% at medium intensity use and 70% at low intensity. On this basis, the long term capital costs for implementing the initiative are estimated to be in the order of £212 million with revenue costs of £20 million/annum (as detailed on Table 3). These assumptions on levels of use are based on the premise that GI related proposals within sub-regional corridors are likely to focus on the enhancement and restoration of the resource to a large degree but with a number of high quality ‘flag ship/signature’ proposals.

In respect of local GI corridors it has been assumed that 30% (5,430 ha of the area and 13.8% of the total GI framework) is subject to capital enhancement works. 30% of that is at medium intensity use and 70% at low intensity. On this basis, the long term capital costs for implementing the initiative are estimated to be in the order of £171 million, with revenue costs of £21.4 million/annum (as detailed on Table 4). These assumptions on levels of use are based on the premise that GI related proposals within local corridors are likely to focus on the creation of local GI resources as well as the enhancement and restoration of assets; flagship proposals are less likely a component of the local network.

In overall terms the Northamptonshire GI framework initiative is therefore estimated at £383 million in capital costs to deliver. Bearing in mind the initiative is proposed over 25 -30 years, an average capital cost might be in the order of £12.8 -15.3m/annum, with a revenue cost of £42m.
Table 2: Generic Costs per hectare - Average figures for restoration and enhancement of parks and open spaces (Extract from RNRP Feasibility Study)

<table>
<thead>
<tr>
<th>Parks and open space – Level of Use</th>
<th>Capital Costs (£/ha)</th>
<th>Revenue Costs (£/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intensive use</td>
<td>£150,000</td>
<td>£17,000</td>
</tr>
<tr>
<td>Medium intensity use</td>
<td>£75,000</td>
<td>£8,500</td>
</tr>
<tr>
<td>Low intensity use</td>
<td>£30,000</td>
<td>£2,000</td>
</tr>
</tbody>
</table>

In respect of Table 2 above, it should be noted that figures do not include for land purchase or remediation of land. These figures are broad brush and intended to give an overall picture of costs and expenditure.

Table 3: Ball Park Costing for delivery of sub regional GI corridors:

<table>
<thead>
<tr>
<th>Sub-regional GI Corridors</th>
<th>Approximate Area (20% of total corridor area)</th>
<th>Capital Cost £m</th>
<th>Revenue Cost £m/annum</th>
</tr>
</thead>
<tbody>
<tr>
<td>High intensity use @ 10%</td>
<td>426ha</td>
<td>£63.9m</td>
<td>£7.2m</td>
</tr>
<tr>
<td>Medium intensity use @ 20%</td>
<td>852ha</td>
<td>£63.9m</td>
<td>£7.2m</td>
</tr>
<tr>
<td>Low intensity use @ 70%</td>
<td>2,982ha</td>
<td>£84.5m</td>
<td>£5.9m</td>
</tr>
<tr>
<td>TOTALS</td>
<td>4,260ha</td>
<td>£212.3m</td>
<td>£20.3m</td>
</tr>
</tbody>
</table>
Table 4: Ball Park Costing for delivery of local GI corridors:

<table>
<thead>
<tr>
<th>Local GI Corridors</th>
<th>Approximate Area (30% of total corridor area)</th>
<th>Capital Cost £m</th>
<th>Revenue Cost £m/annum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium intensity use @ 30%</td>
<td>1,630ha</td>
<td>£122.2m</td>
<td>£13.8m</td>
</tr>
<tr>
<td>Low intensity use @ 70%</td>
<td>3,800ha</td>
<td>£48.8m</td>
<td>£7.6m</td>
</tr>
<tr>
<td>TOTALS</td>
<td>5,430ha</td>
<td>£171m</td>
<td>£21.4m</td>
</tr>
</tbody>
</table>

4.7 GI Project Delivery Criteria
The ‘Planning for Sustainable Communities’ Green Infrastructure Guide sets out the following criteria for the delivery of GI.

4.7.1 Criteria for a net gain in GI should be secured by applying the following sequence of actions:
- Protect and enhance all existing natural and historic assets wherever possible;
- Significantly improve the management of existing GI;
- Provide for the creation and management of new GI assets to meet identified needs; and
- If GI is created as compensation for the loss or damage of an existing asset, the aim must be at least to create an equivalent asset. However, it must be recognised that some assets are irreplaceable.

4.7.2 Proposed Delivery Criteria for GI projects within the North Northamptonshire GI Framework
Building on this approach, it is proposed that in making strategic decisions regarding the suitability of a GI related proposal for funding through the Regional Park it should be interrogated under the following sequence of questions. Those projects which meet a high number of the criteria should be put forward for funding in preference to those that do not.

1. Does the GI related proposal fall within a Sub-Regional or Local Green Infrastructure Corridor?

Note: Table 1 of Section 4.2 indicates the priority for delivery, as follows:
- Projects delivered through the Regional Park initiative should focus on proposals which deliver within Sub-Regional GI corridors.
- Projects delivered through the LDV/Local Authorities should focus on proposals which deliver within Local GI Corridors.

2. Does the GI related proposal assist with the delivery of a Strategic Theme proposal as illustrated in the relevant Strategic Theme Proposal Plan? (Figures 4 – 6)

3. Does the GI related proposal have the potential to contribute to more than one Strategic Themes, and if so which ones?

Note: Priorities for delivery with regards to each Strategic Theme are indicated in Table 1 of Section 4.2 and where appropriate, on the Strategic Theme Proposal Plans, Figures 4-6.
4. Are these themes complementary or potentially conflicting? If there are potential conflicts, how have these been addressed?

5. Does the GI related proposal address the objectives set out within the Strategic Guidance for the Strategic Themes in question?

6. Does the GI related proposal address the matters raised within the GI Checklists given for the Strategic Themes, a worked example of which is given in the following section.

4.8 GI Strategic Proposal Checklist
Checklists will need to be prepared that will assist planning officers, and indeed developers, to consider Strategic GI objectives during the review of development proposals to ensure that future planned development contributes to the delivery of Green Infrastructure agendas and more generally to the principles of good design and sustainability.

4.8.1 Example of a Checklist for the Environmental Character Strategic Theme.

- Ensure that, where appropriate, development proposals are in scale and keeping with local environmental character. As a minimum, reference will be made to the County Environmental Character Assessment and key characteristics derived from the Biodiversity Character Assessment, Current Landscape Character Assessment and the Historic Landscape Character Assessment. Initially, the presence or absence of key characteristics should be assessed and then specific decisions made about the appropriateness of perpetuating existing environmental character or whether opportunities exist for creating new landscapes/townscapes (see below).

- Where the landscape/townscape context surrounding a development site has been lost through degradation or loss, opportunities may exist for the creation of new landscape/townscape character. The creation of open water lakes along the Nene are examples where new landscapes have been successfully created following the cessation of extraction activities. Careful consideration must be given to the quality of design solutions in such instances.

- For major developments, a detailed character assessment should be undertaken. This will use appropriate methodologies and nest within the hierarchy of the ECP. The findings of the local assessment will confirm the presence or absence of key characteristics identified at the county scale, and suggest appropriate design and implementation strategy.

- Cross referencing CLCA, BCA and HLCA reports will ensure that proposed development is applicable across all disciplines. For example, woodland planting, whilst of benefit to biodiversity agendas, may threaten archaeological remains and introduce non-characteristic landscape features.

- The Character, layout and materials used in structures and settlements are a critical consideration.