Worcestershire

Green Infrastructure Strategy 2013 - 2018

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www.worcestershire.gov.uk/

worcestershire county council

This Strategy has been prepared by the Worcestershire Green Infrastructure Partnership, consisting of the following organisations:

Bromsgrove District Council
English Heritage
Environment Agency
Forestry Commission
Malvern Hills District Council
Natural England
Redditch Borough Council
Sustrans
Woodland Trust
Worcester City council
Worcestershire Biological Records Centre
Worcestershire County Council
Worcestershire Wildlife Trust
Wychavon District Council
Wyre Forest District Council

Foreword

Worcestershire is a diverse county with fantastic examples of the historic and natural environment and a strong economic base which includes cyber technology and security, horticulture and agri-foods and manufacturing.

Worcestershire's population is expected to grow by approximately 5% in the next 10 years. The county's "Open for Business" agenda aims to attract new investment and businesses and to support expansion of local industries. Ambitious development targets across the county of over 40,000 new houses and 400ha of employment land will mean growth predominantly focussed on the fringes of existing urban settlements of Worcester, Bromsgrove, Redditch and Kidderminster.

Worcestershire has a high-quality natural environment and numerous green infrastructure assets, which contribute to the unique character of the county. The landscapes and habitats of the Malvern Hills and the Wyre Forest are nationally recognised. Recreational resources ranging from the Droitwich Canals to the Lickey Hills are widely appreciated by local communities and visitors alike, making valuable contributions to the county's economy.

The natural environment supports economic growth and the health and wellbeing of Worcestershire's residents. We need to make sure that this environment is maintained and enhanced so that it continues to support quality of life for existing and future communities.

Green infrastructure can offer practical and viable solutions, providing environmental services to support and enhance new and existing developments, contributing to the economic success of the county.

The Worcestershire Green Infrastructure Strategy, produced by the Worcestershire Green Infrastructure Partnership, describes the need for green infrastructure in the county and sets a vision for the delivery of green infrastructure. It highlights how this can be delivered through housing, employment, infrastructure development and land management.

Successful promotion and delivery of the Strategy, its vision and objectives is reliant on continued partnership working across specialisms and between sectors.

We look forward to the implementation of the Strategy, and to the delivery of high quality development in Worcestershire which incorporates the principles of green infrastructure.

Peter Pawsey
Chairman of the Worcestershire Local Enterprise Partnership

Dave Throup
Chair of the Worcestershire Local Nature Partnership

Table of contents

Executive summary i

Section 1. Introduction 1
- Green Infrastructure Framework in Worcestershire 1
- What is green infrastructure? 2
- Purpose and structure of the Strategy 2
- What does multi-functional green infrastructure look like? 3
  - Multi-functional green infrastructure in Worcestershire 4
- How will investment in green infrastructure benefit Worcestershire? 6

Section 2. Vision and objectives 8
- Vision 8
- Objectives 9

Section 3. Green infrastructure context in Worcestershire 10
- Environmental character in Worcestershire 10
- Socio-economic analysis 12
- Climate change 14
- Blue infrastructure 14

Section 4. Spatial priorities for green infrastructure in Worcestershire 15

Section 5. Delivering multi-functional green infrastructure 17
- Key delivery opportunities 17
- Cross-cutting principles 17
  - Sustainable development 17
  - Multi-functionality 18
- A. Delivering green infrastructure through new development 19
  - Why deliver green infrastructure through new development? 19
  - What principles should be followed? 23
  - What mechanisms exist to assist in delivery now and in the future? 23
- B. Delivering green infrastructure through land management 25
  - Why deliver green infrastructure through land management? 25
  - What principles should be followed? 27
  - What mechanisms exist to assist in delivery now and in the future? 27
- C. Delivering green infrastructure through mineral extraction and restoration 28
  - Why deliver green infrastructure through mineral extraction and restoration? 28
  - What principles should be followed? 29
  - What mechanisms exist to assist in delivery now and in the future? 30
- D. Delivering green infrastructure through infrastructure development 31
  - Why deliver green infrastructure through infrastructure development? 31
  - What principles should be followed? 32
  - What mechanisms exist to assist in delivery now and in the future? 33

Section 6. Funding and viability 34
Viability 35

Section 7. Monitoring the success of the Green Infrastructure Strategy 36

Section 8. Next steps 37
Worcestershire level 37
District level 38
Site level 38

Appendix A: Worcestershire Green Infrastructure Framework 39
GI Partnership 40
Green infrastructure: Strategy and evidence Base 40
GI policy context 40

Appendix B: Worcestershire context 42
Environmental character 42
Biodiversity 42
Landscape 42
Historic Environment 43
Blue infrastructure 43
Flood risk 43
Water availability 44
Water quality 45
Climate change influence 46
Climate change 46
Economic context for green infrastructure 47
Social context for green infrastructure 48
Health 48
Informal recreation and accessibility 50

Appendix C: Strategic green infrastructure assets 53

Appendix D: Green infrastructure profiles 55

Appendix E: Priorities and delivery 62

Appendix F: Other relevant documents 69

Appendix G: Glossary 70

Executive summary

Green infrastructure in Worcestershire

The Worcestershire Green Infrastructure Partnership is a cross-disciplinary partnership of statutory agencies, voluntary organisations, local district councils and the county council. The purpose of the Partnership is to optimise planning and delivery of green infrastructure (GI) in Worcestershire. The partners represent a diverse range of interests, all focused on the natural and historic environment but encompassing sustainability, recreation and transport.

One of the Partnership's roles is to develop the Worcestershire Green Infrastructure Strategy. The Strategy is a non-statutory county-wide guidance document which aims to:

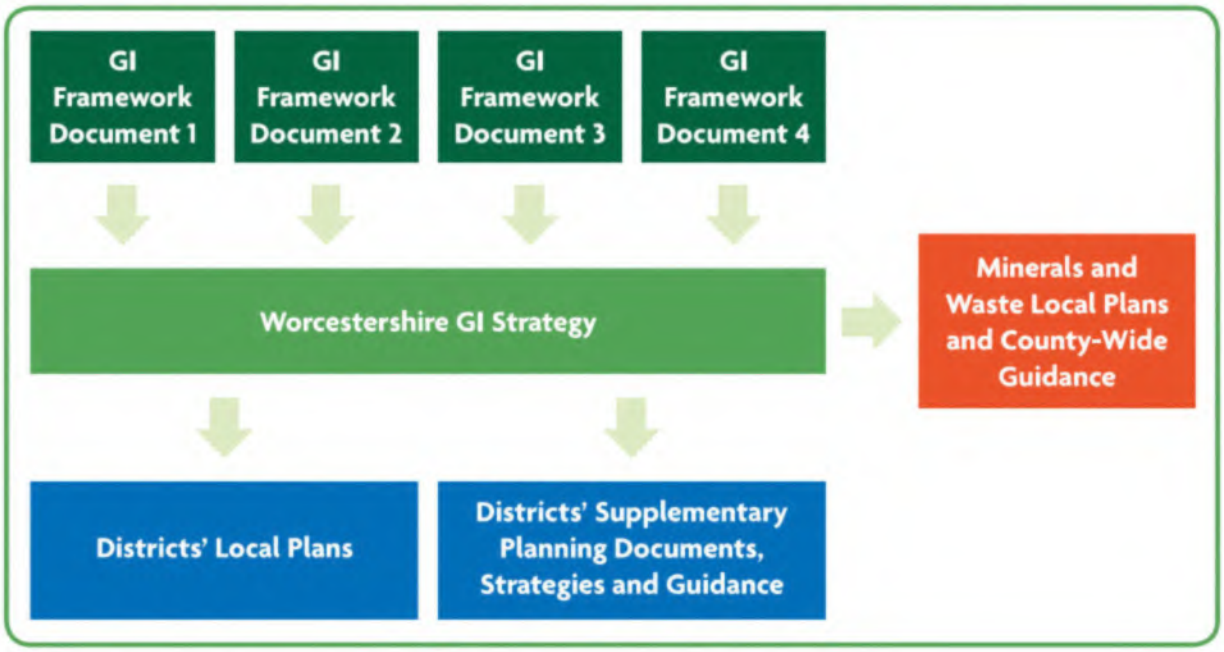
- direct and drive the delivery of GI in Worcestershire; and
- inform relevant strategies and plans of partner organisations over the next five years.

The Worcestershire Green Infrastructure Strategy is supported by four evidence base documents which cover the following issues:

- **GI Framework Document 1** – establishes GI concept and policy context for Worcestershire
- **GI Framework Document 2** – establishes the Environmental Character Areas based on natural environment datasets
- **GI Framework Document 3** – explores the supply, potential need and capacity of strategic recreational assets
- **GI Framework Document 4** – investigates the economic, health and climate change benefits of GI

The Strategy contains high-level priorities which should be explored in more detail at the local and site level.

The diagram below illustrates the relationship between the GI Strategy and other plans and strategies in Worcestershire. More detail about the Partnership and about GI research in Worcestershire can be found in Appendix A.



Definition of green infrastructure

Green infrastructure (GI) is the planned and managed network of green spaces and natural elements[1] that intersperse and connect our cities, towns and villages. GI comprises many different elements including biodiversity, the landscape, the historic environment, the water environment (also known as blue infrastructure) and publicly accessible green spaces and informal recreation sites.

Traditionally the focus has been on the environmental benefits of these green spaces, but the underlying principle of GI is that the same area of land can frequently offer multiple benefits. The green infrastructure approach therefore integrates consideration of economic, health and social benefits to ensure that delivery against both environmental and socio-economic objectives is central to the planning, management and delivery of these spaces.

Green spaces and natural elements do not exist in isolation. Considering networks in an integrated way also achieves benefits that are far greater than when individual components are considered separately. There are many advantages to be gained from securing a critical mass of GI in a locality – creating a wide range of benefits which meet individual site priorities.

Purpose of the Strategy

The Partnership has developed this Strategy to drive forward the delivery of GI in the county. It sets out county-scale principles to inform plans and strategies being developed by partner organisations to enable a coherent approach to delivery across a range of initiatives.

Vision and objectives

In order to guide the direction of the Green Infrastructure Strategy **the Worcestershire Green Infrastructure Partnership** has developed a **vision for the future of GI in the county**:

Worcestershire's high quality natural and historic environment will fulfil a multi-functional role. It will enable sustainable growth of the economy, improve the community's experience of natural and historic places, deliver benefits to health and well-being and underpin the county's resilience to climate change.

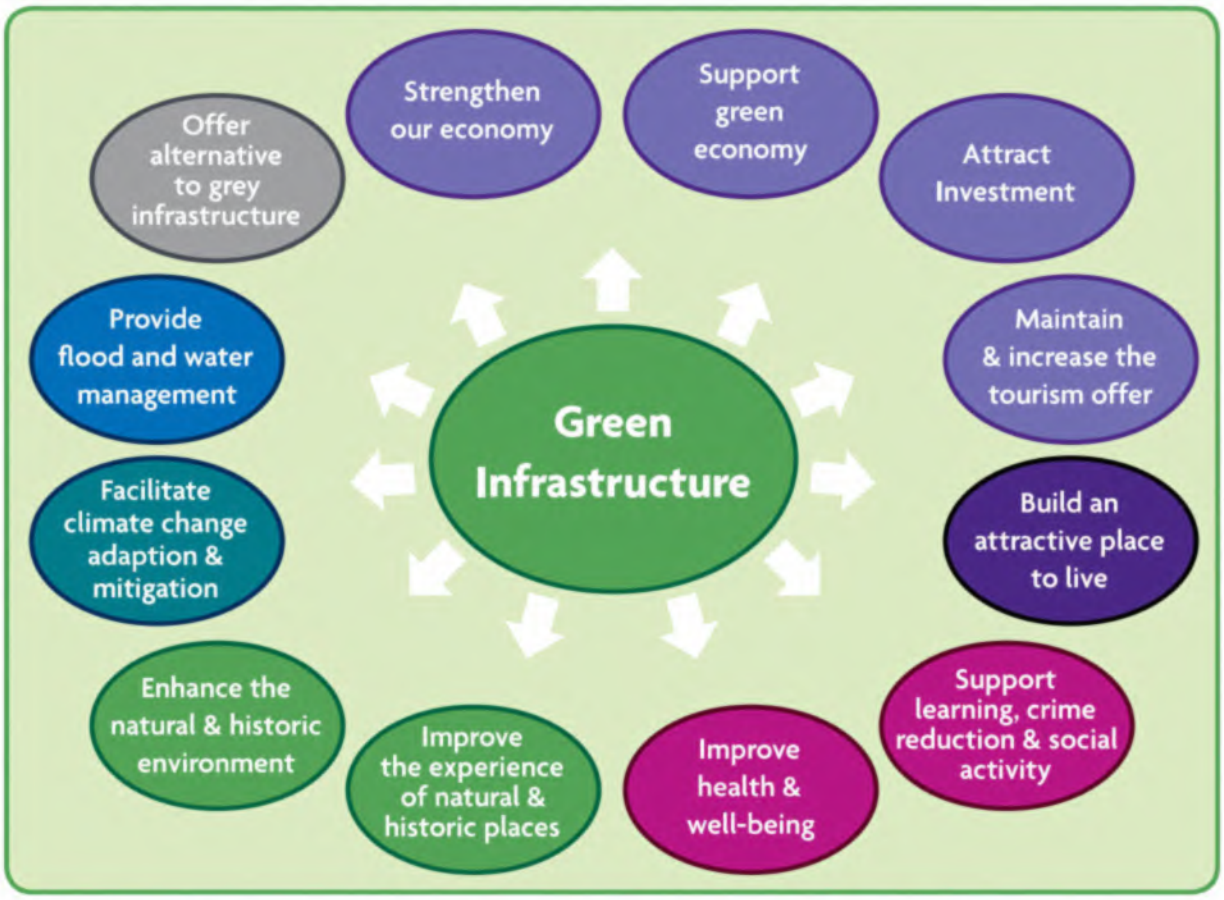
The **strategic objectives** of the Green Infrastructure Strategy are:

- Establish a framework of principles and priorities for green infrastructure in Worcestershire to meet the multiple integrated needs of business, the natural & historic environment and our communities.
- Embed the benefits of green infrastructure and the services the environment provides in supporting the successful growth of Worcestershire's economy and the health and well-being of its communities.
- Synthesise existing evidence to identify needs and opportunities to inform the future planning and management of green infrastructure in Worcestershire which complements wider networks beyond Worcestershire.
- Drive the implementation, delivery and long-term maintenance of high-quality green infrastructure in the county and ensure that measures are in place by 2018 to deliver the vision.
- Assist partners in aligning future delivery projects and their funding streams.

1 Natural elements include rivers, streams, canals, woodlands, street trees, parks, rock exposures and semi-natural greenspaces.

Context in Worcestershire

Investment in GI in Worcestershire can deliver a broad range of benefits.



The environmental, social and economic context in Worcestershire has been assessed to develop spatial priorities for GI in Worcestershire.

Environmental character

The Green Infrastructure Partnership has considered the way in which landscape character, biodiversity (including elements of blue infrastructure such as water quality) and historic environment contribute towards character across the county and has identified 30 distinctive Green Infrastructure Environmental Character Areas (ECA).

The quality of these areas has been assessed against each of the considerations (landscape character, biodiversity and historic environment) to arrive at a 'score' for each ECA. Each ECA has been placed into one of three categories according to its score. The categories are:

1. **Protect and enhance** (greatest existing green infrastructure value)
2. **Protect and restore** (medium existing green infrastructure value)
3. **Restore and create** (lowest existing green infrastructure value)

Socio-economic analysis

The analysis of the socio-economic situation in Worcestershire in this Strategy considers the economy and health & well-being at a high level. It is not intended to draw a full picture of the economy or health and well-being in the county, focussing only on the indicators which are of most relevance to green infrastructure:

- **Economy:** unemployment, household income and deprivation levels.
- **Health and well-being:** health deprivation, heart disease, obesity, mental health problems and respiratory conditions.
- **Access to sites for informal recreation:** considers links between informal recreation and mental and physical well-being.

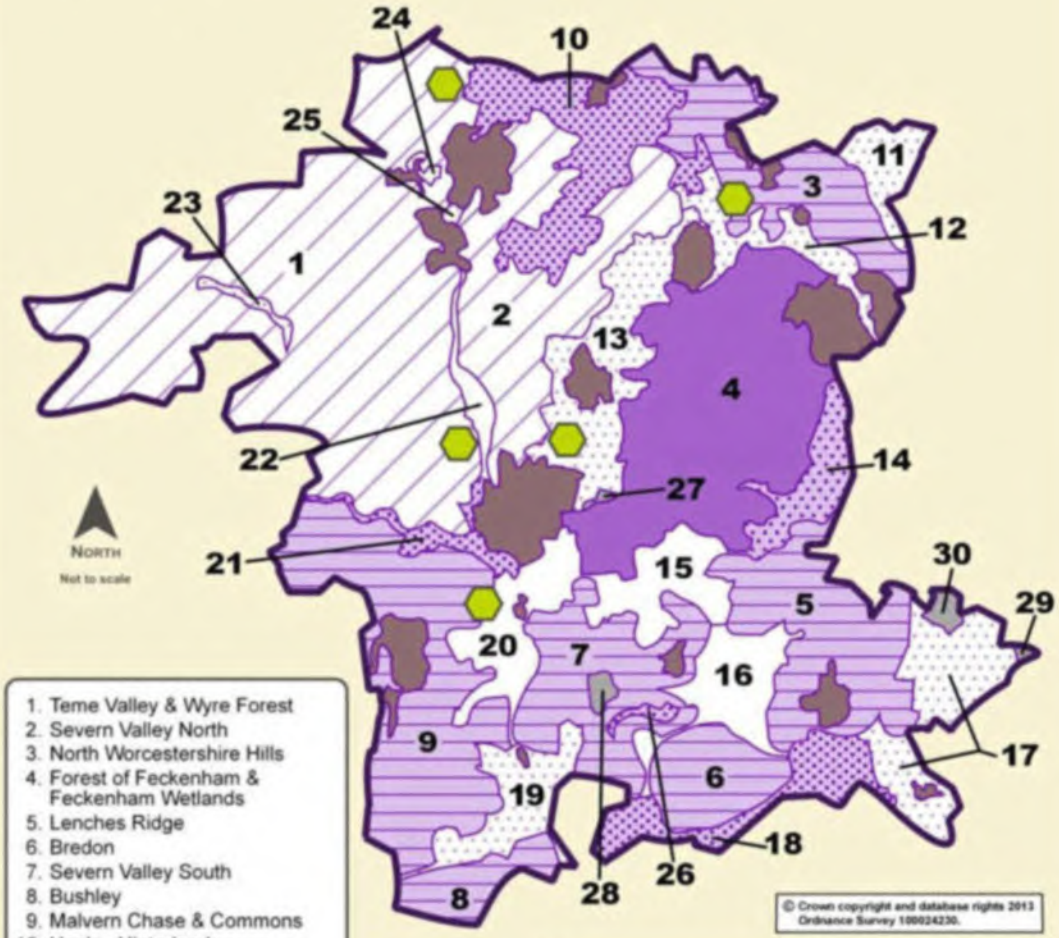
These factors have been assessed to divide the county into higher, medium and lower performing areas.

Spatial priorities

The quality of the natural and historic environment and the socio-economic status across the county has been taken into account to identify high-level green infrastructure priorities for different areas of the county. This is intended to be a high-level approach that balances environmental and socio-economic considerations.

Classifcation	Environmental Quality	Socio-economic Status	Overall Approach
Premium	H	H	Protect and enhance environmental quality/maintain socio-economic status
Good a)	H	M	Protect and enhance environmental quality/support socio-economic enhancements
Good b)	M	H	Restore environmental quality/maintain socio-economic status
Average a)	H	L	Protect and enhance environmental quality/invest in socio-economic enhancements
Average b)	M	M	Restore environmental quality/support socio economic enhancements
Average c)	M	L	Restore environmental quality/invest in socio-economic enhancements
Other a)	L	Any	Low environmental quality – further investigation required
Other b)	?	?	Urban unsurveyed – further investigation required.

Worcestershire Green Infrastructure Strategy
Overall spatial approach



1. Teme Valley & Wyre Forest
2. Severn Valley North
3. North Worcestershire Hills
4. Forest of Feckenham & Feckenham Wetlands
5. Lenches Ridge
6. Bredon
7. Severn Valley South
8. Bushley
9. Malvern Chase & Commons
10. Hagley Hinterland
11. Hollywood & Wythall
12. Bromsgrove - Redditch Corridor
13. Mid - Worcestershire Corridor
14. East Wychavon
15. Bow Brook South
16. Evesham Valley
17. Broadway & Cotswold Corridor
18. Carrant Brook Corridor
19. Longdon Hinterland
20. Kempsey Plain
21. River Teme Corridor
22. Severn Meadows Corridor
23. Eardiston
24. Bewdley Fringe
25. Birchen Coppice
26. Birlingham
27. Crowle
28. Defford
29. Bickmarsh
30. Long Marston

PREMIUM
- Protect and enhance environmental quality / maintain socio-economic status

GOOD
- Protect and enhance environmental quality / support socio-economic enhancements
- Restore environmental quality / maintain socio-economic status

AVERAGE
- Protect and enhance environmental quality / invest in socio-economic enhancements
- Restore environmental quality / support socio-economic enhancements
- Restore environmental quality / invest in socio-economic enhancements
- Further investigation required / Urban unsurveyed
- Further investigation required / Low Environmental Quality
- Recreation Opportunity Area

Delivering multi-functional green infrastructure

Elements of multi-functional green infrastructure

Key delivery opportunities

The main opportunities to plan, deliver and manage green infrastructure in the county will be from integrating green infrastructure priorities and principles into other proposals and decision-making processes. These include:

1. **New development** such as housing and employment related development
2. **Land management initiatives** such as agri-environment and woodland grant schemes
3. **Minerals extraction and restoration**
4. **Infrastructure developments** such as transport, renewable energy and water related projects

This is by no means an exhaustive list, but outlines the main opportunities likely to come forward.

The Strategy is focused on these four key delivery opportunities. It sets out:

- the rationale for delivering green infrastructure through each of these opportunities;
- the principles that should be applied and the priorities to take into account; and
- the mechanisms that exist to assist with delivery.

It also considers a number of **cross-cutting principles** that apply to all of these opportunities, namely:

- **Sustainable development** and
- **Multi-functionality**

Funding

Green infrastructure opportunities will be derived from a wide range of different opportunities - from changes in land management to development proposals - leading to a diverse range of funding mechanisms. Some proposals will need capital funding to establish a green infrastructure asset and subsequently revenue funding to secure its long term management.

The funding for a green infrastructure schemes will be dependent on the type of scheme, its origins and functions.

Viability

Any GI viability assessment needs to be determined against both the policy requirements and the functions which are being delivered. Green infrastructure can be a cheaper and more viable alternative to investment in more traditional grey infrastructure. The assessment also needs to take into account all the multi-functional characteristics of green infrastructure, to ensure functions are not costed twice.

Monitoring the success of the Green Infrastructure Strategy

The success of the green infrastructure strategy will be monitored through a number of indicators which assess the progress of activities of the Worcestershire Green Infrastructure Partnership.

Next steps

Following the endorsement of the Worcestershire Green Infrastructure Strategy by the Worcestershire Green Infrastructure Partnership, partners will then take steps to implement the strategy in their organisations and through their own structures.

Diglis Weir, Worcester © crisdobbs

Section 1. Introduction

Green Infrastructure Framework in Worcestershire

1.1 The Worcestershire Green Infrastructure Partnership[2] is a cross-disciplinary partnership of statutory agencies, voluntary organisations, local district councils and the county council. The purpose of the Partnership is to optimise planning and delivery of green infrastructure (GI) in Worcestershire. The partners represent a diverse range of interests, all focused on the natural and historic environment but encompassing sustainability, recreation and transport.

1.2 One of the Partnership's roles is to develop the Worcestershire Green Infrastructure Strategy. The Strategy is a non-statutory county-wide guidance document which aims to:

- direct and drive the delivery of GI in Worcestershire; and
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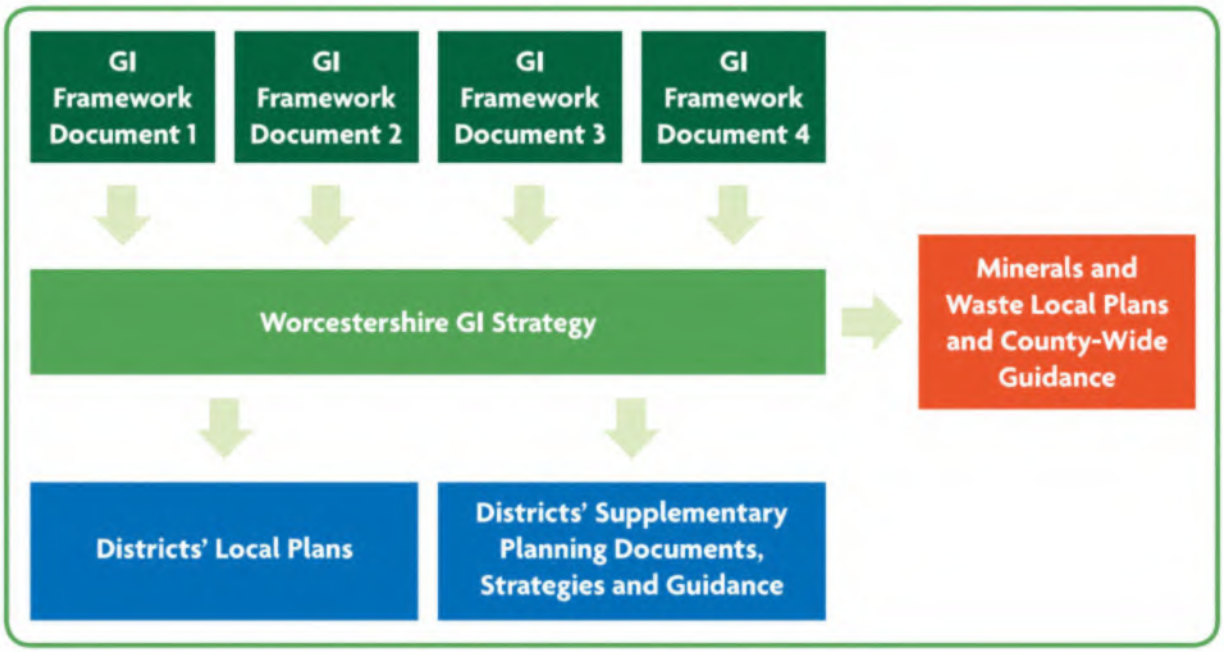
- **GI Framework Document 3** – explores the supply, potential need and capacity of strategic recreational assets
- **GI Framework Document 4** – investigates the economic, health and climate change benefits of GI.

1.4 The Strategy contains high-level priorities which should be explored in more detail at the local and site level.

2 See Appendix A for more information about the Worcestershire GI Partnership.

1.5 Figure 1 illustrates the relationship between the GI Strategy and other plans and strategies in Worcestershire. More detail about the Partnership and about GI research in Worcestershire can be found in Appendix A.

Figure 1 - Relationship between the evidence base, GI Strategy, and other plans



What is green infrastructure?

1.6 Green infrastructure (GI) is the planned and managed network of green spaces and natural elements[3] that intersperse and connect our cities, towns and villages. GI comprises of many different elements including biodiversity, the landscape, the historic environment, the water environment (also known as blue infrastructure) and publicly accessible green spaces and informal recreation sites.

1.7 Traditionally the focus has been on the environmental benefits of green spaces but the underlying principle of GI is that the same area of land can frequently offer multiple benefits. The green infrastructure approach therefore integrates consideration of economic, health and social benefits to ensure that delivery against both environmental and socio-economic objectives is central to the planning, management and delivery of these spaces.

1.8 Green spaces and natural elements do not exist in isolation. Considering networks in an integrated way also achieves benefits that are far greater than when individual components are considered separately. There are many advantages to be gained from the critical mass of GI that is clustered together and other benefits to be gained from pursuing different but integrated priorities on different sites.

Purpose and structure of the Strategy

1.9 The Worcestershire Green Infrastructure Partnership has developed this strategy to drive forward the delivery of the GI agenda in the county. It is intended to set out county-scale principles to inform plans and strategies being developed by partner organisations and to enable a coherent approach to delivery across a range of initiatives.

3 Natural elements include rivers, streams, canals, woodlands, street trees, parks, rock exposures and semi-natural greenspaces.

1.10 The Strategy consists of seven sections outlined in the table below:

Table 1: Structure of the Strategy

Section 1	Introduces the GI concepts, with specific reference to Worcestershire
Section 2	Sets out the vision and objectives of the Strategy
Section 3	Outlines the context in Worcestershire, with further information set out in Appendix B. More detailed evidence can be found in the GI Framework Documents in see Appendix A.
Section 4	Identifies and illustrates spatial priorities for green infrastructure in Worcestershire. The green infrastructure profiles which served in identifying the priorities are presented in Appendix D.
Section 5	Identifies key opportunities for delivery through working in partnership with developers, decision makers, land managers and other key partners. Detailed priorities for delivery are contained in Appendix E
Section 6	Considers funding and viability, with more detail in the GI Framework Documents.
Section 7	Identifies how the Strategy will be monitored.
Section 8	Outlines the next steps for the Worcestershire Green Infrastructure Partnership and its individual members.

What does multi-functional green infrastructure look like?

1.11 The underlying principle of GI is that the same area of land can frequently offer multiple benefits. Multi-functionality may be defined as the ability to perform several functions and provide several benefits in the same spatial area. The functions delivered can be environmental, such as conserving biodiversity or adapting to climate change; social, such as providing water drainage or greenspace; or economic, such as supplying jobs or increasing property prices.[4]

1.12 Notwithstanding the multifunctional role of green infrastructure, there may be situation where one particular aspect of GI dominates or only a single functional element can be achieved. These situations arise infrequently and will need to be considered on a case by case basis.

1.13 GI can be delivered at a number of different levels depending on the nature of the project proposed:

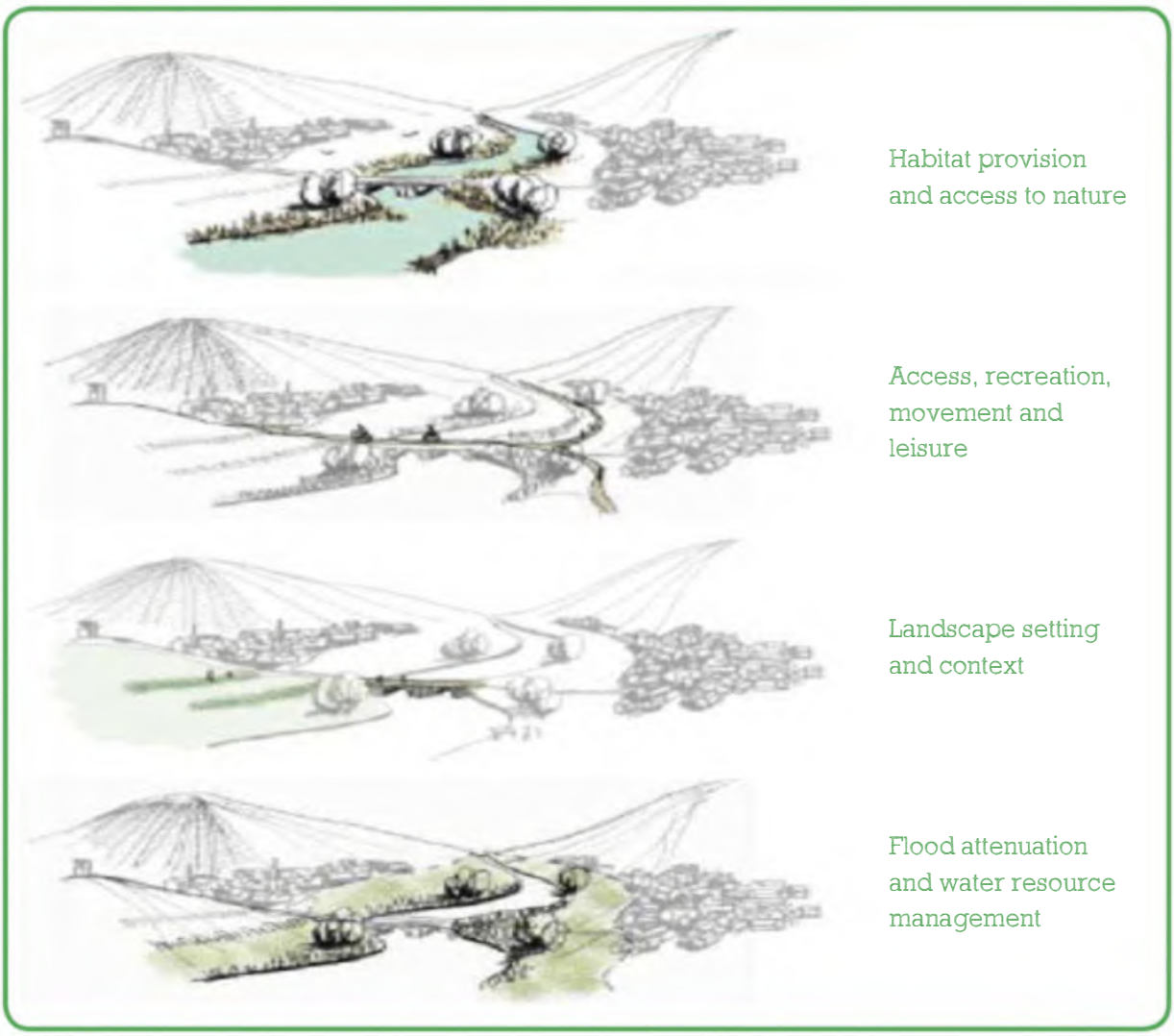
- **Strategic or county scale:** These are large-scale projects which provide functions and facilities which benefit more than one district or population within the county. An example of strategic green infrastructure would be the provision of a 100ha+ country park to attract visitors from the whole of the county, or a large-scale flood scheme to reduce incidence of fluvial flooding (such as the Gloucester strategic flood alleviation scheme).
- **District scale:** These are green infrastructure schemes providing a range of functions at a district level which benefit the population of the district. An example is the green infrastructure corridor alongside the River Severn in Worcester, providing a range of functions including flood alleviation, off-road walking and cycling routes and enhanced biodiversity.
- **Neighbourhood or local scale:** These are small-scale green infrastructure enhancements which would typically be included within a development site. Examples could include off-road walking and cycling routes connecting with the local centre which also includes sustainable drainage provision through swales and balancing ponds.

1.14 This strategy is primarily concerned with large scale green infrastructure, also known as 'strategic green infrastructure', but many of the principles will also apply to provision of green infrastructure at local and neighbourhood scales.

4 The Multifunctionality of Green Infrastructure; Science for Environmental Policy, EU, DG Environment News Alert Service, March 2012.

1.15 The concept of multi-functionality at a large-scale is illustrated below:

Figure 2. Large scale multi-functional Green Infrastructure[5]



1.16 Green infrastructure can deliver a broad range of functions applied to individual areas and routes in order to contribute to a multifunctional network. A multifunctional green infrastructure approach involves considering different options for areas to provide usable space and to deliver meaningful opportunities to deliver multiple functions.

1.17 For example, the single area of land shown in Figure 2 is delivering a number of different functions including:

- Biodiversity
- Access and recreation
- Landscape character
- Flood attenuation and water management

Multi-functional green infrastructure in Worcestershire

1.18 Worcestershire has numerous GI assets, which contribute to the unique character of the county. They deliver many different functions and varied benefits. Some of these assets, such as the Malvern Hills and the Wyre Forest, are nationally recognised. Others such as the Droitwich Canals and Lickey Hills are widely appreciated by local communities.

1.19 Figure 3 gives a few examples of assets and outlines some of their multi-functional benefits. These include examples of GI at strategic, district and local scales.

5 Natural England, Green Infrastructure Guidance, 2009.

Figure 3. Examples of green infrastructure in Worcestershire

A closer look at...

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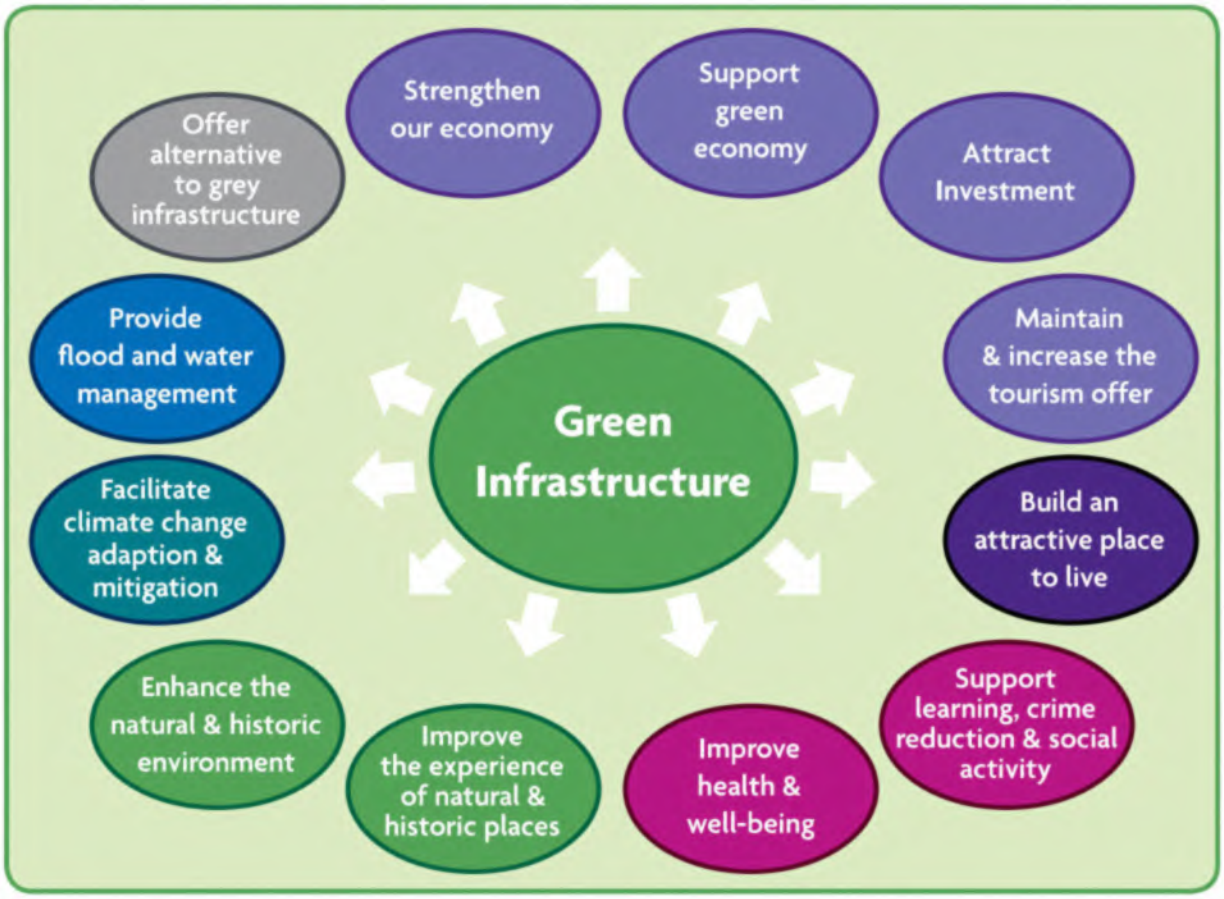
How will investment in Green Infrastructure benefit Worcestershire?

1.20 Worcestershire's natural and historic environment helps to define our county. It provides a strong sense of place and attracts and retains people and businesses. GI also contributes a vast range of benefits to the economy and local communities which are sometimes overlooked. Investing in multi-functional Green Infrastructure will:

Figure 4: Benefits of multifunctional Green Infrastructure



Strengthen our economy: The natural environment provides an enormous range of products and services worth £15 billion to the national economy[6] and supporting a wide range of economic sectors including food production, agriculture and horticulture. Protecting natural areas can deliver economic returns that are 100 times greater than the cost of their protection and maintenance[7]. In 2009 approximately 122,000 people in the UK were employed in the green space sector, including public parks departments, nature reserves and landscape services[8].

Support the green economy: Green infrastructure will support the green economy through the provision of goods such as biofuels, which offer renewable energy opportunities. Technological innovation in this area will enable business growth, skills development and new employment opportunities.

Attract investment: The quality of the natural environment forms a key part of the Worcestershire 'offer' for businesses seeking to locate in the county, with many indigenous businesses citing quality of life potential as being a key factor in their choice of business location[9].

Maintain and increase Worcestershire's tourism offer: Tourism is one of the largest industries in Worcestershire, being worth approximately £539million in 2008[10]. Many of Worcestershire's high quality green

6 Research Councils UK (nd) Adding Value: How the Research Councils benefit the economy.

7 Economics of Ecosystems and Biodiversity Study quoted in Natural Environment White Paper (p10).

8 CABE, Green space skills 2009: National employer survey findings.

9 The Economic Development Team, WCC, Internal Communication.

10 The Sub-Regional Value of Tourism in the UK in 2008 published by Tourism Intelligence within the Office of National Statistics.

spaces attract visitors from outside the county, with the Lickey and Clent Hills attracting visitors from the Birmingham and Black Country conurbation and the Malvern Hills, Cotswolds and Wyre Forest attracting visitors from further afield. In 2005, at least 12% of all visitors to Worcestershire came for walking and hiking[11]. The Guardian recently identified The British Camp in the Malvern Hills as one of the best views in England[12].

Build on Worcestershire's reputation as an attractive place to live: 9 out of 10 adults identify parks, playgrounds and green spaces as important in making their neighbourhood a good place to live or work[13]. It is estimated that a property located within 450 metres of a park can be worth up to 19% more than houses not in such a location. A view of a forest and water can increase house value by 7% and 5% respectively[14].

More specifically, in a recent poll Worcester was voted one of the happiest places to live in the UK and the happiest place to live in the West Midlands, with the quality of parks, the outdoor environment and local character being key factors[15].

Improve health and well-being: Proximity to greenspace is generally associated with increased levels of physical activity. This effect is particularly marked in the under 25's, who are more likely to be obese if they do not have access to greenspace[16]. Regular participation in physical activities has been shown to improve physical and mental health. Increasing physical activity through access to high quality greenspace has the potential to save the NHS £2.1 billion a year[17].

Provide learning opportunities, reduce crime and encourage social activity: Residents who live near nature generally cope better with the stress of everyday life and are considered as happier than those who do not have easy access to green spaces. Education involving the natural environment and green spaces can positively influence the functioning of communities through reducing anti-social behaviour, increasing self-esteem and improving skills[18].

Improve the community's experience of natural and historic places: Integrating access to green spaces and historic places into the everyday lives of communities can help to develop a connection with the local area, increase community participation and reduce anti-social behaviour.

Enhance the natural and historic environment: This can include creating and enhancing biodiversity, connecting wildlife corridors and networks, protecting and enhancing landscape character, and improving the quality of our rivers and streams as well as conserving and enhancing heritage assets such as historic landscapes and archaeology, and improving the setting of historic buildings and monuments.

Facilitate climate change adaptation and mitigation: To maximise the capacity of our natural environment, towns and cities to cope with climate change, we need to establish an ecological network that is as robust and resilient as possible to current conditions, and that can help to mitigate the impacts of extreme weather events (for example through including shading, natural cooling and storm water storage in design solutions).

Provide flood alleviation and water management: GI can play a key role in sustainable drainage, drought mitigation, and in flood and water stress reduction, through providing opportunities for attenuation or infiltration that can help to recharge aquifers as well as to maintain levels in watercourses or other blue infrastructure features. Green infrastructure can influence water quality through limiting diffuse pollution and controlling water levels in watercourses.

Offer a cost-effective alternative to investing in traditional (or grey) infrastructure: GI can provide alternative solutions to providing drainage, managing blue infrastructure, promoting non-vehicular transport and contributing to sources of renewable energy.

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11 The Worcestershire Visitor Survey 2005

12 Guardian (6 May 2010) Britain's best views: The British Camp, Malvern Hills http://www.guardian.co.uk/travel/2010/may/06/britains-best-views-worcester-malvern

13 Ipsos Mori survey http://www.groundwork.org.uk/news--events/news/2012/90-of-adults-say-green-spaces.aspx

14 Natural England (2012) Microeconomic Evidence for the Benefits of Investment in the Environment - review

15 Rightmove.co.uk survey reported in The Guardian March 2013.

16 Forest Research (2010) Benefits of Green Infrastructure. Forest Research, Farnham, Surrey.

17 Benefits of Green Infrastructure: Report by Forest Research (October 2010).

18 UK National Ecosystem Assessment and The Marmot Review quoted in Natural Environment White Paper.

Diglis Bridge, Worcester © Mark Bishop, Worcestershire County Council

Section 2. Vision

Vision

2.1 In order to guide the direction of the Green Infrastructure Strategy **the Worcestershire Green Infrastructure Partnership** has developed a **vision for the future of GI in the county**:

> Worcestershire's high quality natural and historic environment will fulfil a multi-functional role. It will enable sustainable growth of the economy, improve the community's experience of natural and historic places, deliver benefits to health and well-being and underpin the county's resilience to climate change.

2.2 The Green Infrastructure Strategy aims to deliver the Worcestershire Green Infrastructure Partnership's vision through the principles specified below.

2.3 GI will be both planned and managed to form a network of integrated spaces. GI will be delivered as a part of new development and through changes to the management and maintenance of existing areas. Forthcoming development in Worcestershire should ensure the sustainable delivery of GI.

2.4 The key to success will be working together. The GI approach requires us to move away from looking at individual parts of the environment in isolation, towards a more joined-up, partnership approach which uses limited resources to secure the greatest gains for both the environment and the sustainable economy. This is something we are good at in Worcestershire, but to succeed we need continued commitment to a shared direction.

2.5 To deliver this strategy, the Worcestershire Green Infrastructure Partnership will work with a wide range of stakeholders across the public and private sectors and will ensure alignment between the Green Infrastructure Strategy and the plans, strategies and delivery proposals of other stakeholders.

Objectives

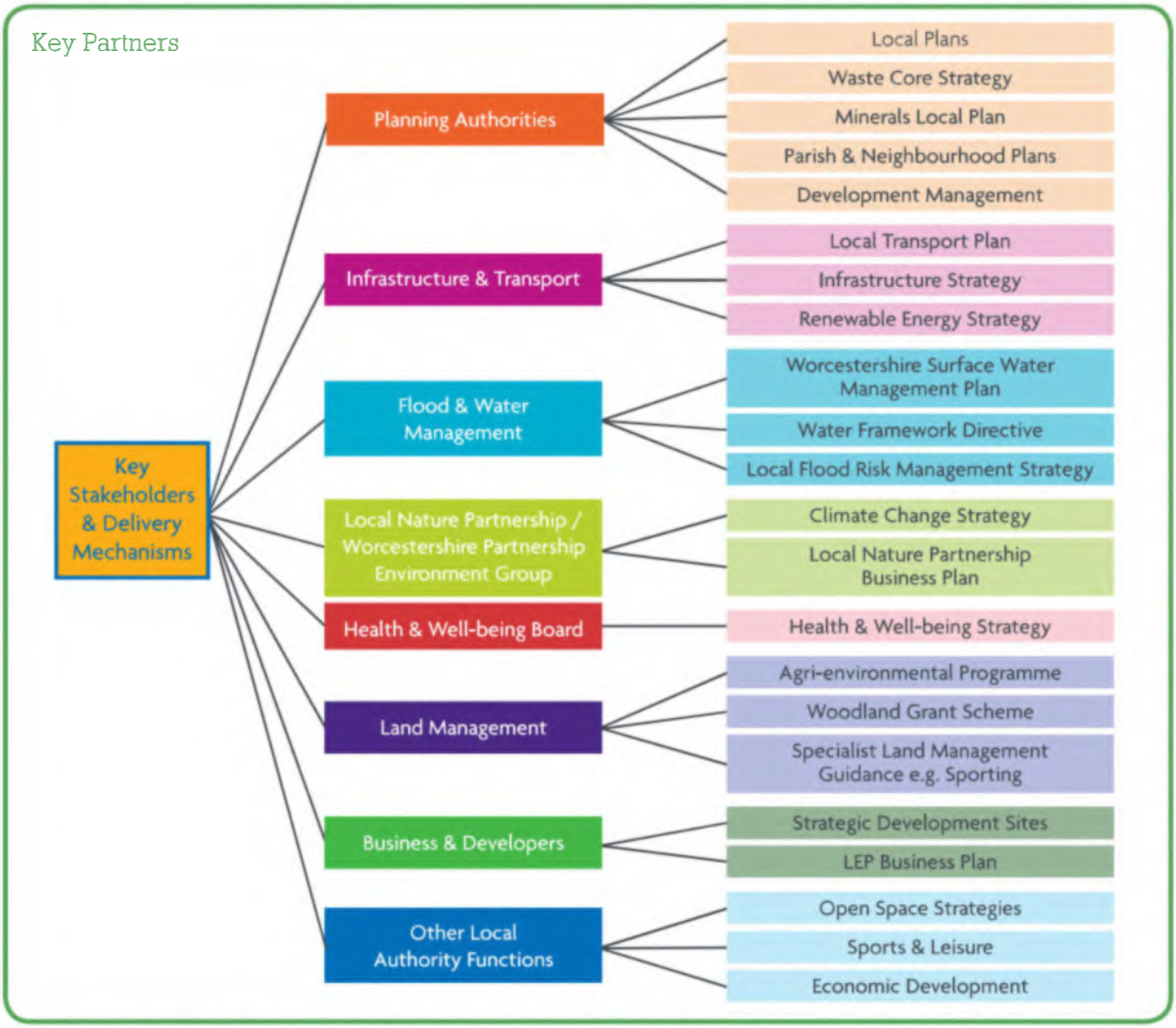
2.6 The **Strategic Objectives** of the Green Infrastructure Strategy are:

- Establish a framework of principles and priorities for green infrastructure in Worcestershire to meet the multiple integrated needs of business, the environment and communities.
- Embed the benefits of green infrastructure and the services the environment provides in supporting the successful growth of Worcestershire's economy and the health and well-being of its communities.
- Synthesise existing evidence to identify needs and opportunities to inform the future planning and management of green infrastructure in Worcestershire which complements wider networks beyond Worcestershire.
- Drive the implementation, delivery and long-term maintenance of high-quality green infrastructure in the county and ensure that measures are in place by 2018 to deliver the vision.
- Assist partners in aligning future delivery projects and their funding streams.

2.7 There is the potential to deliver green infrastructure through a wide range of activities including new development and effective land management practices. The development industry and planning system will have a key role to play, but other sectors also have the potential to make a significant contribution.

2.8 Key stakeholders and strategies relating to GI in the county include those set out in Figure 5.

Figure 5: Key Partners



Note: *The above list of partners is indicative and focuses on only key workstreams and documents prepared by these organisations and groups. A more comprehensive list of relevant documents can be found in Appendix F.*

Section 3. Green infrastructure context in Worcestershire

3.1 This section outlines the GI context in Worcestershire, with further detail set out in Appendix B. The information in this section is derived from the evidence base set out in the Worcestershire Green Infrastructure Partnership Framework Documents, available on the Worcestershire County Council's green infrastructure webpages.

Environmental character in Worcestershire

3.2 The character of the environment in Worcestershire varies across the county. Lowland agricultural areas in the Vale of Evesham, for example, have a different character to the North Worcestershire Hills or the wooded landscapes of the Wyre Forest. The Worcestershire Green Infrastructure Partnership has considered the way in which landscape character, biodiversity and historic environment contribute towards character across the county and has identified 30 distinctive Green Infrastructure Environmental Character Areas (ECA).

3.3 The quality of these areas has been assessed against each of the considerations (landscape character, biodiversity including blue infrastructure and historic environment) to arrive at score for each ECA. Each ECA has been placed into one of three categories according to its score. The categories are:

1. **Protect and enhance** (greatest existing green infrastructure value)
2. **Protect and restore** (medium existing green infrastructure value)
3. **Restore and create** (lowest existing green infrastructure value)

3.4 These categories have been mapped in Figure 6 to provide an indication of the quality of existing strategic GI in the county.

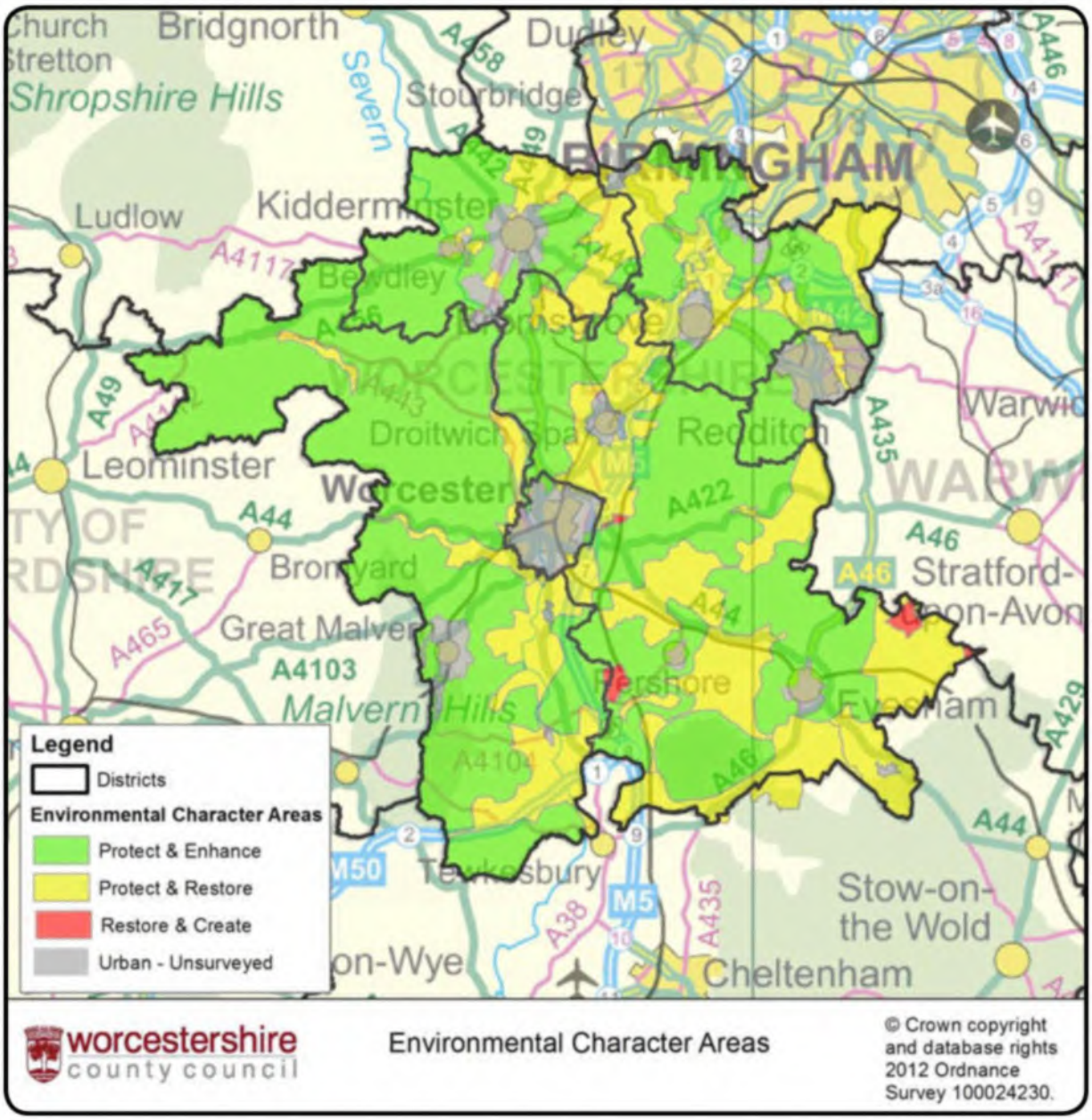
3.5 The majority of the county is of high GI quality. This is particularly the case in the north and west areas, which are characterised by the Malvern Hills and Commons and the Teme Valley. Significant areas of high quality GI also exist to the east in the Forest of Feckenham and on the Cotswold outlier of Bredon Hill.

3.6 There is a significant corridor of green infrastructure categorised as protect and restore linking the principal residential areas of Redditch, Bromsgrove, Droitwich and Worcester and following the Severn Valley in the south of the county. A further area of medium quality green infrastructure also exists in and around the Vale of Evesham in the south east of the county.

3.7 There are only 4 small areas in the restore and create category. These are areas which have low scores for at least two of the three categories they were assessed against. They represent opportunities to restore degraded characteristics and to create new green infrastructure opportunities where none exist currently. However, it should be noted that in some cases areas have a low score only because the level of information is limited, and this may not necessarily reflect a low quality of GI.

3.8 The ECAs defined exclude all of the large urban settlements in the county, as data was not available for these areas in all or some of the categories. On the map they are shown as "urban unsurveyed".

Figure 6. Green Infrastructure Environmental Character Areas



3.9 A summary of the landscape character, biodiversity and historic environment of the county is set out in Appendix B, with more detail in the GI Framework 2 evidence base document.

Socio-economic analysis

3.10 The analysis of the socio-economic situation in Worcestershire in this strategy considers the economy and health & well-being at a high level. It is not intended to draw a full picture of the economy or health and well-being in the county, instead it focuses only on the indicators which are of most relevance to green infrastructure:

- **Economy:** unemployment, household income and deprivation levels.
- **Health and well-being:** health deprivation, heart diseases, obesity, mental health problems and respiratory conditions.
- **Access to sites for informal recreation:** considers links between informal recreation opportunities and mental and physical well-being.

3.11 This analysis has identified the linkages between socio-economic factors and green infrastructure. Its findings, however, need to be treated with caution; elements such as the quality of the natural environment, distinctiveness of places or accessibility of natural open spaces can potentially help to attract investment and improve the health of residents, but the natural environment is only one of many factors which influence people's lifestyle decisions and behaviour.

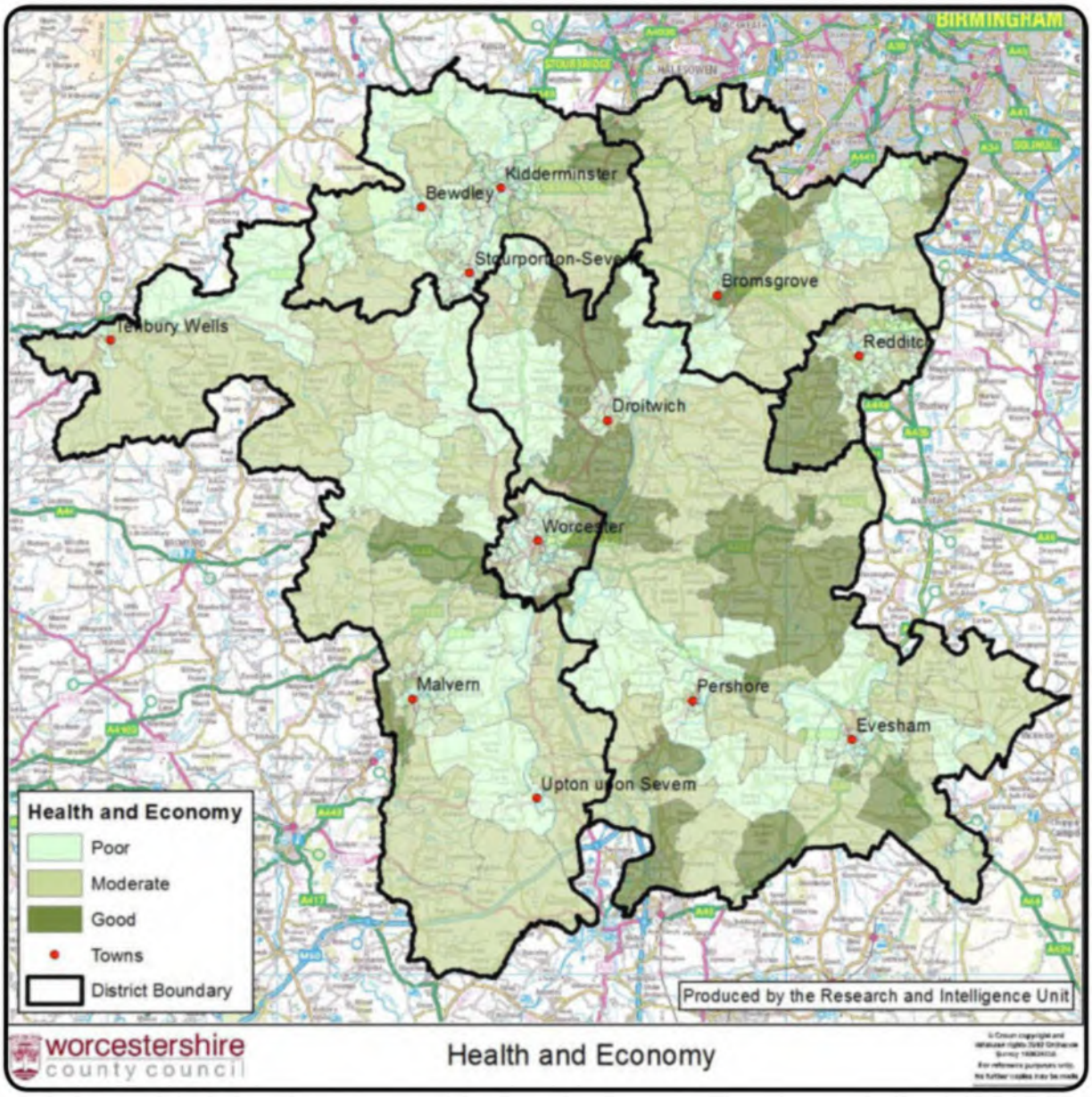
3.12 The socio-economic performance of Worcestershire is generally good. Notwithstanding this, some particularly highly- and poorly-performing areas can be identified, as illustrated in Figure 7. It is important to note that most of the areas indicated as 'poor' in Figure 7 actually perform relatively well on a national scale. The comparisons are therefore only relevant when used to identify patterns at a county-scale.

3.13 Generally, areas of poorer health are found were there are lower incomes and employment levels. The exceptions are in the eastern part of the Bromsgrove district, in the south east of the county, and in a large area to the south from Worcester covering both Malvern Hills and Wychavon districts. The latter areas perform poorly against health indicators but well against economic considerations.

3.14 High-performing areas are scattered to the north of Worcester, continuing past Droitwich and to the east of the county along the A44. There is also an area of good performance in the north-east of the county. The Birmingham and Black County conurbation, with good transport links encouraging commuting, is likely to be a factor here, influencing the higher employment levels and younger age profile of the area. Similarly, the positive socio-economic pattern of the south east corner of the county is likely t be influenced by the proximity to Stratford-upon-Avon and good transport links.

3.15 More prosperous areas are also found around Malvern and Bredon Hill. The rural and picturesque character of these parts of Worcestershire could be considered as one of the factors attracting high-income earners and wealthy retirees to settle. However these affluent rural areas suffer from some health issues such as heart diseases.

Figure 7. Socio-economic profile of Worcestershire - analysis of green infrastructure indicators



3.16 The evidence base also analysed the provision of strategic recreation assets in the county, the current level of demand for facilities and anticipated future demand based on predicted population growth in the county and in neighbouring counties.

3.17 The resulting analysis concluded that the majority of the existing facilities are currently experiencing a high level of demand and are unlikely to be able to absorb an increase in visitor numbers without having a detrimental impact on the habitats, visitor experience or the quality of the site. To overcome this, a new country park or similar facility will be required in the county, to accommodate the informal recreational needs arising from predicted population growth.

3.18 We have identified a series of broad areas of search for a new facility which will need further investigation to determine the most suitable location for a new facility. These are shown on Figure B 6 in Appendix B.

3.19 A summary of the health and economic indicators and capacity of recreation assets is set out in Appendix B, with more detail in the GI Framework Documents 4 and 3 respectively.

Climate change

3.20 Worcestershire's CO_2 emissions and Air Quality Management Areas are concentrated along the main transport routes, as well as in and around the main urban centres. However there are also some concentrations of significant CO_2 emissions in rural areas of Wychavon district, due to the absence of mains gas and a reliance on high-emission sources of energy such as coal.

3.21 Climate change is likely to have a detrimental impact on Worcestershire's habitats, species and residents. It is expected that the county will experience significant changes in weather conditions in the future, for example the temperature on the warmest day in summer could increase by as much as 5.5°C[19]. Recently, Worcestershire has suffered from extreme weather events including flooding, drought, overheating and storms and the risk of these events is likely to increase in the future.

3.22 A summary of the climate change indicators is set out in Appendix B, with more detail in the GI Framework 4 evidence base document.

Blue infrastructure

3.23 The types of flooding that arise in Worcestershire include fluvial flooding (from main rivers and watercourses), rising groundwater, and pluvial flooding (from surface run-off). Whilst pluvial flooding can occur anywhere in the county, the areas particularly prone to fluvial flooding are located in proximity to main rivers and watercourses and include the following:

- River Teme (e.g. Tenbury Wells)
- River Severn (e.g. Worcester, Bewdley, Upton-on-Severn, Kempsey)
- River Avon (e.g. Evesham).

3.24 A significant shortfall of water supply is predicted for the period between 2014 and 2035 and aquifers are under pressure in many areas of the county, including Kidderminster and Bromsgrove, due to greater demand for water as a result of increased development and population growth[20].

3.25 In addition, Worcestershire suffers from significant water quality issues. The majority of watercourses in Worcestershire are polluted with phosphates and nitrates from agricultural land. The Water Framework Directive (WFD) sets a target that all surface and ground waters should aim to reach 'good status' by 2015 and all water bodies must reach 'good' or 'high' status by 2027. Currently, most of Worcestershire's watercourses are at a medium or high risk of not meeting the WFD targets[21].

3.26 Many blue infrastructure issues, such as water supply or water quality and flooding, will become more prevalent as a result of extreme weather events linked to climate change.

3.27 There are multiple interactions between blue and green infrastructure which are explored more fully in the GI Framework Document 4 evidence base. A summary of the blue infrastructure indicators is set out in Appendix B with more detail in the GI Framework documents.

19 UK Climate Projections (UKCP09)

20 Worcestershire County Council (2013) Planning for Infrastructure in Worcestershire, Worcestershire Infrastructure Strategy, Consultation Draft.

21 Worcestershire County Council (2011) Planning for Water in Worcestershire: Technical Research Paper.

Section 4. Spatial priorities for green infrastructure in Worcestershire

4.1 This section outlines the spatial priorities for GI in Worcestershire. The quality of the natural and historic environment and the socio-economic status has been taken into account to identify high-level priorities to inform the Partnership's approach to green infrastructure in different areas of the county. This is intended to be a high-level approach that balances environmental and socio-economic considerations.

4.2 The following broad categories have been identified:

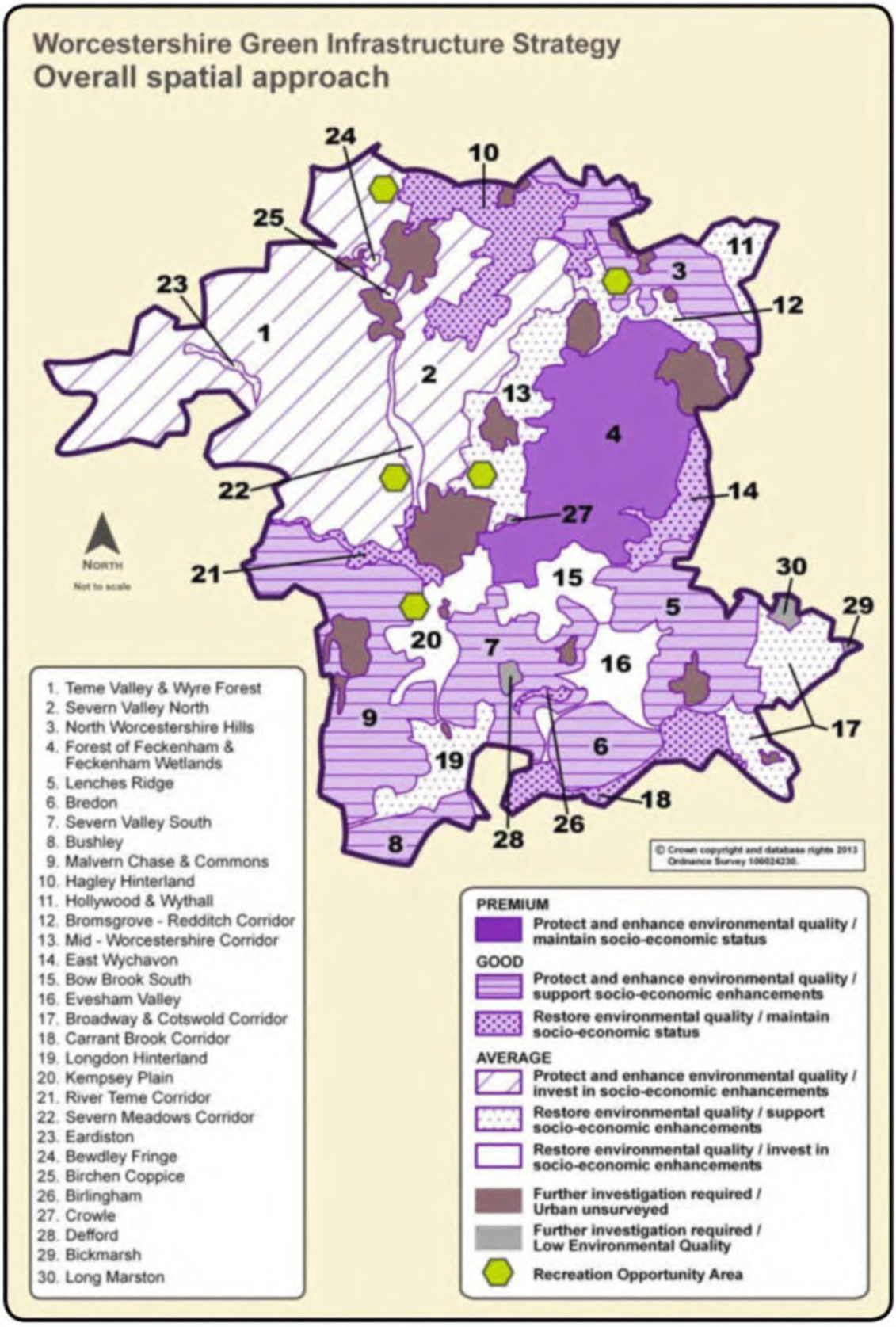
Table 2: Broad categories and overall approach to GI

Classification	Environmental Quality	Socio-economic Status	Overall Approach
Premium	**H**	**H**	Protect and enhance environmental quality/maintain socio-economic status
Good a)	**H**	**M**	Protect and enhance environmental quality/support socio-economic enhancements
Good b)	**M**	**H**	Restore environmental quality/maintain socio-economic status
Average a)	**H**	**L**	Protect and enhance environmental quality/invest in socio-economic enhancements
Average b)	**M**	**M**	Restore environmental quality/support socio economic enhancements
Average c)	**M**	**L**	Restore environmental quality/invest in socio-economic enhancements
Other a)	**L**	**Any**	Low environmental quality – further investigation required
Other b)	**?**	**?**	Urban unsurveyed – further investigation required.

4.3 Figure 8 sets out these categories across the county and identifies opportunity areas for informal recreation sites.

4.4 The spatial priorities presented in Figure 8 are intended to guide the work of the Partnership. When considering specific proposals, they should be read in conjunction with the strategic priorities for each ECA, as identified in Appendix C and the more detailed assessment of green infrastructure priorities in the GI Framework 2 evidence base document. It is also important to remember that although the priorities provide a starting point, individual site considerations will be key in choosing an appropriate approach. More details about how to do this are set out in section 5.

Figure 8. Spatial priorities for green infrastructure in Worcestershire



4.5 More detail about the individual GI priority areas and overarching environmental and socio-economic principles for each individual area is provided in Appendix D. Priorities and potential delivery opportunities for these areas can be found in Appendix E.

Hopwood Motorway Service Area © Bromsgrove District Council

Section 5. Delivering multi-functional green infrastructure

Key delivery opportunities

5.1 The main opportunities to deliver green infrastructure in the county will be from integrating green infrastructure priorities and principles into other plans, proposals and decision-making processes. These include:

1. **New development** such as housing and employment
2. **Land management initiatives** such as agri-environment schemes, woodland grant schemes and land management activities
3. **Minerals extraction and restoration**
4. **Infrastructure developments** such as transport, renewable energy and water-related projects

5.2 This is by no means an exhaustive list and other opportunities will come forward through the future of the strategy. This strategy will concentrate on these as the dominant methods of delivery.

5.3 The rest of this section is focused on these four key delivery opportunities. It sets out:

- the rationale for delivering green infrastructure through each of these opportunities;
- the principles that should be applied and the priorities to take into account; and
- the mechanisms that exist to assist with delivery.

In addition to these opportunities, green infrastructure also encompasses the following two cross cutting principles:

- sustainable development
- multi-functionality

Cross-cutting principles

Sustainable development

5.4 Many of the key delivery mechanisms identified relate to land-uses which are controlled to varying degrees by the planning system. The National Planning Policy Framework (NPPF) states that "to achieve sustainable development, economic, social and environmental gains should be sought jointly and simultaneously" and that "pursuing sustainable development involves seeking positive improvements in the quality of the built, natural and historic environment, as well as in people's quality of life"[22]. Adopted local plans, the emerging county-wide Minerals Local Plan and emerging district-level plans are also seeking to drive forward the delivery of

22 Department for Communities and Local Government (2012) National Planning Policy Framework

sustainable development.

5.5 GI has a clear role to play in this regard and closely reflects the principles of sustainable development identified in the NPPF. The delivery of GI is therefore likely to be an increasingly important consideration when assessing the extent to which proposals for housing, employment, mineral working, and infrastructure projects constitute sustainable development.

Multi-functionality

5.6 As outlined throughout this Strategy, multi-functionality underpins the GI approach. It ensures that all areas of land can deliver a number of different functions through their design, management and layout. For example, a new route for walking and cycling can be aligned to a wildlife corridor connecting fragmented habitats. Sustainable Drainage Systems (SuDS) can also contribute to the enhancement of both biodiversity and landscape, and offer opportunities for informal recreation. The key priorities for each of the environmental aspects of green infrastructure are set out below. In combination these interventions can deliver multiple socio-economic benefits.

Figure 9. Elements of multi-functional green infrastructure

A. Delivering green infrastructure through new development

Why deliver green infrastructure through new development?

5.7 Where green infrastructure is integrated into new development it delivers a range of benefits for the developer, future residents and occupants of the site and the wider community.

5.8 There are many ways in which investing in green infrastructure can bring short and long term benefits to new and existing developments. Figure 10 illustrates some examples of these economic gains.

Figure 10. Reasons to integrate green infrastructure into new development

BENEFITS OF GI ON DEVELOPMENT SITES

Higher Returns on Properties

- Proximity to a park can increase value of **the house by 19%**
- A view of a forest can increase value of **the property by 7%**

Source: Natural England (2012) Microeconomic Evidence for the Benefits of Investment in the Environment - review.

Money Saving

Case Study: Sustainable Drainage System (SuDS) incorporated into a residential development of 35 homes at Lamb Drove, Cambridgeshire provided around a 10% saving on capital costs compared with traditional drainage. It's been suggested that the savings could have been greater if the SuDS layout had been considered earlier in the development process.

Source: Susdrain website http://www.susdrain.org/delivering-suds/using-suds/the-costs-and-benefits-of-suds/comparison-of-costs-and-benefits.html

Increase occupancy rates and rents

Case Study: Investment in green infrastructure which included planting of over 1800 new trees created a setting for stimulating business growth at the Riverside Park **Industrial Estate** in Middlesborough. It resulted in: **38% occupancy growth, £1m of investment, 28 new businesses** starting up and **60 new jobs** being created.

Source: Gensler & Urban Land Institute (2011) Open Spaces: an asset without a champion?

Property and quality of life

5.9 In addition good quality green infrastructure will contribute to the value and desirability of a development by providing spaces for relaxation and opportunities for healthier lifestyles, contributing to community cohesion, and making the settlement comfortable and liveable through cooling and shading which offset the impacts of climate change. Green infrastructure can also contribute to water storage and management to ameliorate the impact of flooding, incorporate renewable energy use and passive solar gain through building orientation and design.

5.10 Even the most modest developments can contribute towards and benefit from the provision of green infrastructure at a local scale. However, the benefits arising from larger sites, such as linking biodiversity corridors or provision of a Country Park, can contribute to strategic green infrastructure which brings wider benefits to the county and beyond.

Business parks and industrial development

5.11 Quality green infrastructure, including areas of natural habitats, pedestrian routes, and cycle routes, can contribute to the attractiveness of business park and industrial development, encouraging inward investment. Sustainable transport routes also make these developments more desirable, as they improve accessibility. Sustainable drainage, rainwater collection and use of on-site waste water cleaning can reduce maintenance costs and reduce flood risk on site, meaning that business operations are more resilient to the increasing risk of extreme weather events.

5.12 In many cases green infrastructure can be used as a more cost-effective alternative to traditional 'grey' infrastructure; sustainable drainage, for example, can be used as an alternative to traditional methods of disposing of storm water. Biomass energy generation[23] could also be used as an alternative to traditional centralised energy supplies.

5.13 Additional sustainable design features, such as green roofs, can also be incorporated into developments.

Local case study: Kanes Foods, a leading UK supplier of fresh chilled vegetables based in the Vale of Evesham, constructed a new sustainable salad factory covered with Europe's largest green roof. The curved roof is covered in grass which incorporates a range of indigenous wild flowers. The roof maximises the thermal efficiency of the building whilst providing a new wildlife habitat which blends almost seamlessly into the contours of the surrounding Cotswold Hills.

Source: http://kanesfoods.co.uk/

5.14 The long term management and sustainability of GI should be taken into account when incorporating these features into a development. Where the long-term management of the business park or industrial development would typically be undertaken by a management company, it would normally be possible to integrate GI maintenance with standard arrangements, however where management and maintenance are more fragmented this would need to be taken into account.

23 Biomass energy generation in relation to GI means utilising the agricultural waste and natural waste produced as a result of maintenance of green infrastructure on sites to generate energy and heat.

Residential development

5.15 GI provision in residential developments can be varied and can include informal space, footpaths, bridleways, cycleways, SuDS, natural habitats and street trees. GI can also include gardens which are the responsibility of individual owners but can contribute to ecological networks if managed appropriately.

5.16 Quality green infrastructure such as pedestrian and cycle routes contribute to the attractiveness of residential development, particularly where sustainable transport routes are well linked to wider networks. Informal recreation spaces such as parks, playgrounds and green spaces are identified by 9 out of 10 adults as important in making somewhere a good place to live or work[24]. Proximity to good quality green infrastructure can also increase house prices. There is potential to incorporate natural habitats into the provision of both sustainable transport routes and informal recreation spaces.

Local case study: The Warndon Villages development on the edge of Worcester City integrates a network of off-road footpaths and cycle paths and informal recreation areas including kick-about areas and picnic areas. These are popular with residents, link residential areas to the local supermarket and community centre and also provide wildlife corridors, enhancing the natural environment.

5.17 An assessment of the capacity of nearby sites to absorb additional recreational use without causing detriment to the environment should be completed for new development sites. Access into these areas and buffering of the nearby sites should be incorporated into the design of new developments.

5.18 The quantum of green infrastructure within any new development needs to be sufficient to meet the needs of the new community, deliver multi-functionality and to fulfil the objectives of the NPPF, including sustainable development and no net loss of biodiversity. The 2007 Supplement to Planning Policy Statement 1[25] suggested that this should be about 40% of the land and water area of a development, including private gardens, green roofs etc. Subsequently, the same 40% approach was also recommended by the Town & Country Planning Association / Wildlife Trust.

24 Ipsos Mori survey http://www.groundwork.org.uk/news--events/news/2012/90-of-adults-say-green-spaces.aspx

25 Department for Communities and Local Government (2007) Planning Policy Statement 1: Planning and Climate Change, Supplement

5.19 There are some sites in Worcestershire, however, where the 40% GI provision has proved to be achievable and viable without including private gardens in this count. This has the benefit of securing a greater quantum of GI, the maintenance of which can be secured as part of a site management plan, ensuring that the functionality is secured into perpetuity. GI which includes private gardens does not provide this long term security of function as the management of gardens is subject to decisions of individual householders.

5.20 Sustainable drainage systems (SuDS) play an important role in the management of surface water run-off in new developments. They are more sustainable than conventional drainage system because they can mitigate adverse effects of stormwater runoff on the environment, whilst providing opportunities for biodiversity enhancement and recreational corridors.

5.21 The Flood and Water Management Act 2010 (FWMA) gives Worcestershire County Council as Lead Local Flood Authority (LLFA) a new role in flood leadership, with the statutory requirement to develop, maintain and apply a local flood risk management strategy. The LLFA will take on the role of the SuDS Approving Body (SAB) following commencement of the relevant parts of the FWMA. This role is also due to extend to include the adoption of SuDS which are satisfactorily developed in accordance with LLFA approval.

5.22 These requirements are expected to be enacted in April 2014. On many development sites within the county SuDS may become a key driver for green infrastructure.

National case study: Upton urban extension, Northampton. This scheme resulted in a large quantity of quality green infrastructure being incorporated within the development. The SuDS system was integral from the project outset and has delivered a range of high quality green infrastructure features. Also notable are the way flood attenuation measures have been integrated into the design of public space and the way in which a high environmental performance can be achieved by dwellings which are not unusual in appearance.

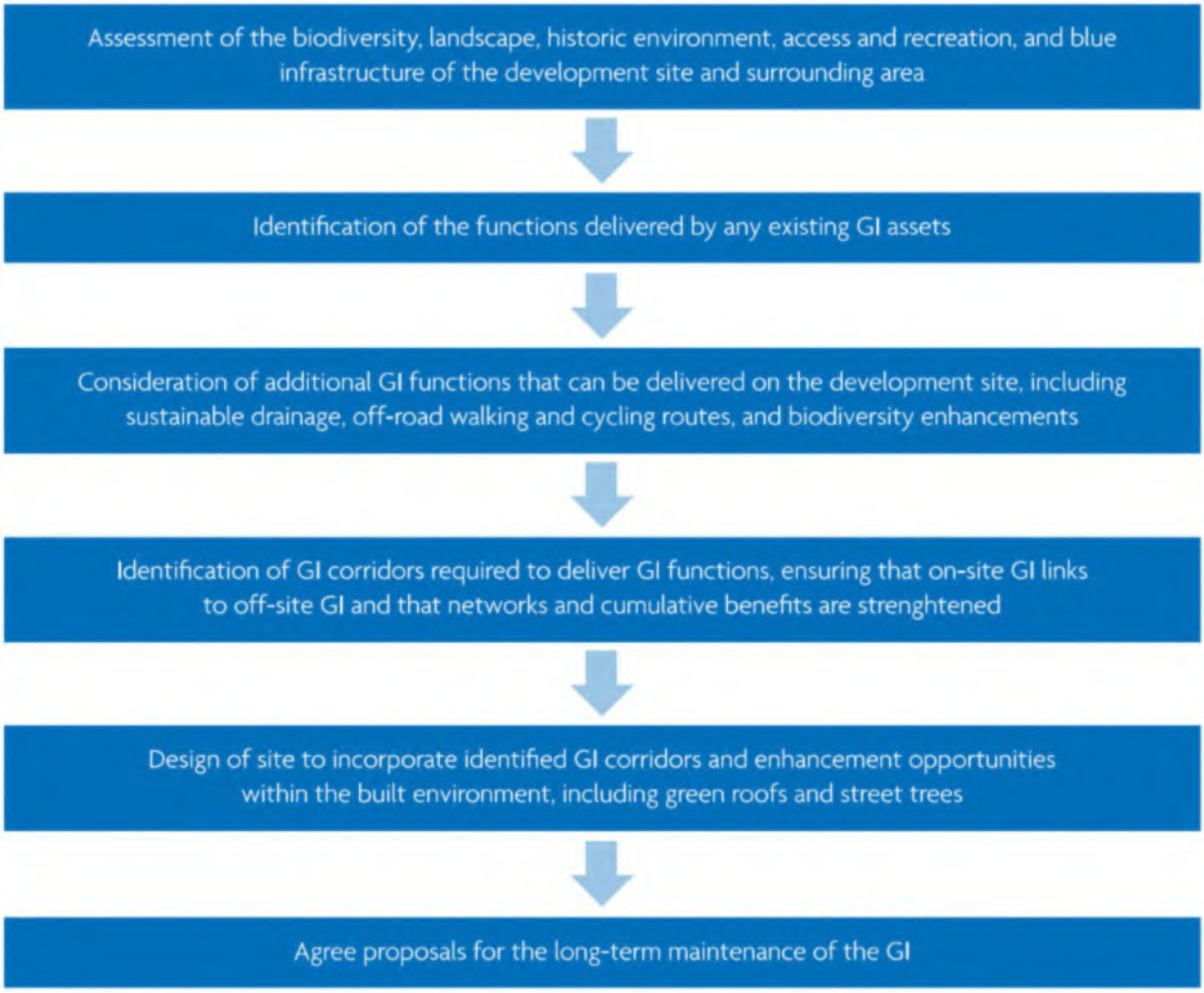
Source: CABE. Sustainable Places

What principles should be followed?

5.23 Figure 8. Spatial priorities for green infrastructure in Worcestershire (page 16) gives an indication of the high-level approach that should be taken to green infrastructure in each Environmental Character Area. A profile for each area is given in Appendix D, with detail about the priorities outlined in Appendix E. Additional guidance can be found in the Green Infrastructure Framework Documents 2, 3 and 4 which provide the evidence base for this Green Infrastructure Strategy.

5.24 The key to planning and managing green infrastructure in new development is to consider the site in its context. This includes considering the features of the site and the networks of habitats, sustainable transport routes and water courses that surround it. Figure 11 outlines the steps to follow when considering how to integrate green infrastructure within new development.

Figure 11. Principles to consider when integrating green infrastructure within new development



What mechanisms exist to assist in delivery now and in the future?

5.25 As previously mentioned, the integration of GI into new development closely reflects the principles of sustainable development identified in national planning policy. Local planning policies will play an integral role in the delivery of quality GI through new development. Appropriately trained development management officers at local authorities and well-informed developers and consultants will also be key to success.

5.26 There are approximately 50 strategic development sites in Worcestershire, mapped in Figure 12 below. Integrating GI into the development of these sites offers significant opportunities for GI delivery in the county. Smaller sites also offer the opportunity to include green infrastructure, potentially integrated with other on-site features such as the requirements for formal play areas, SuDS, and features such as street trees.

Figure 12: Map of strategic development sites in Worcestershire

Note: *This is an indicative map which does not include exact locations and sizes of the future development sites in Worcestershire.*

5.27 The long-term management and maintenance of GI is important to ensure that assets maintain their role and function, particularly where they replace traditional grey infrastructure. Without appropriate management, functions can become lost or impaired over time. For development sites, both management plans and funding should form a part of proposals for the site development and these arrangements should be secured alongside planning permission.

B. Delivering green infrastructure through land management

Why deliver green infrastructure through land management?

5.28 Although GI is frequently seen as the preserve of urban areas and development, there is also a need for GI in rural areas. Worcestershire is a largely rural county, with a prevalence of land-based industries:

- over 80% of Worcestershire is categorised as high quality agricultural land. Agriculture, horticulture and forestry are prominent business sectors;
- other areas of land are managed for informal recreation, with approximately 20 informal recreation sites at a strategic scale and many more that serve a district or neighbourhood scale. Many tourist attractions in the county also involved 'paid-for' access to GI;
- there are 14 Local Nature Reserves and 112 Sites of Special Scientific Interest and 2 Special Areas of Conservation in the county which are managed primarily for biodiversity interest;

5.29 Although the primary purpose for managing these areas of land may be focused on one of the components of GI, many of these assets are in fact multi-functional and there is significant scope to integrate multifunctional GI in a way which is complementary and beneficial to the primary land-use.

5.30 Changes to land management practices offer opportunities to include a number of green infrastructure principles, including[26]:

- Reduction in water abstraction from water courses for agricultural use through the development of water storage reservoirs. Well-designed reservoirs can also enhance biodiversity, and contribute to landscape and the historic environment;
- Enhancements to water quality by reducing agricultural run-off and/or reducing the use of agricultural chemicals such as fertilisers;
- Provision of informal recreational opportunities, particularly through the enhancement of walking and cycling networks;
- Biodiversity enhancements through management or creation of woodland as assets for renewable energy;
- Management or creation of new woodland for recreation, health, water benefits, timber and biodiversity;
- Enhancement and preservation of areas of historic interest and importance such as historic landscape patterns of hedges or the settings of historic buildings;
- Biodiversity enhancements such as planting and maintaining hedgerows, and managing new woodland areas, can attract additional funding to a site from sources such as agri-environment schemes.
- Locally-grown food can attract a price premium and become a tourist attraction (as evidenced in Worcestershire's Asparagus Festival and Plum Festival), which contributes to the local economy.

Melrose Orchard, Malvern Hills © Steve Bloomfield, Worcestershire Wildlife Trust

26 A wider analysis of the benefits and drawbacks to farm business, land management and rural economy is provided in the GI Framework 4 evidence base, which explores the economic and social benefits of GI in Worcestershire.

Figure 13: Economic benefits of integrating GI into land management for agriculture, horticulture and forestry

BENEFITS OF INTEGRATING GI INTO LAND MANAGEMENT

The Rural Development Programme for England (RDPE)

There is £55million available for funding schemes in West Midlands for 2013 through RDPE. Opportunities include:

- Funding opportunities through the agri-environmental schemes available to farmers and land managers in return for farming in a more environmentally-sensitive manner. Farmers in the West Midlands received £22 million in 2008/2009.
- Funding opportunities through the England Woodland Grant Scheme that provides farmers with payments to compensate for the agricultural income foregone as a result of planting and managing woodlands

Source: Department for Environment, Food and Rural Affairs: Funding & Support

Payment for Ecosystem Services (PES)

There is potential for PES to compensate farmers for changes to land management practices undertaken to enhance the level of ecosystem services provided from their land. This could include, for example, restoring traditional wetlands or reducing stock levels and access to streams to improve water quality.

Case Study: United Utilities, working with farm tenants in conjunction with partners such as the RSPB, Natural England and the Forestry Commission, undertook the Sustainable Catchment Management Programme (SCaMP) across 27ha of water catchment in the Peak District and Bowland areas. £10.6 million was invested in moorland restoration, woodlands, farm infrastructure and protecting watercourses. Undertaking the SCaMP improvements allowed farmers to access additional agri-environment income for ten years whilst Natural England and the Forestry Commission provided £2.7million of grants towards the cost of the work.

Source: Department for Environment, Food and Rural Affairs (2011) Payment for Ecosystem Services Report, United Utilities: SCaMP

Health and wellbeing benefits

Many sites offer the opportunity for informal recreation, through the inclusion of walking and cycling paths, mountain biking or specialist tourism such as bird watching.

1. Physical Inactivity Costs the NHS £1.8 billion annually
2. Children in deprived neighbourhoods are less obese and put on less weight in areas of accessible green space compared to those without access to such areas.

Case study: The Walking For Health initiative was managed by Natural England to promote walking as a healthy exercise. Initial evaluation of the programme indicated that every £1 invested in the programme delivered £7 in benefits to the NHS, through an increase in both mental and physical health and well-being.

Note: The Walking for Health programme is currently funded by Macmillan and hosted by The Ramblers,
Source: http://www.walkingforhealth.org.uk/

Wider recreational benefits

Case study: St Helens Forest Park is expected to attract over 100,000 new visitors a year to St.Helens and Merseyside. It will create new jobs and business opportunities. Developing the park is expected to generate 15 new jobs and 300 training opportunities for people who are out of work. It is predicted that the Forest Park will bring an extra £3m of investment into the area and boost the businesses involved by 3% in terms of GVA per capita.

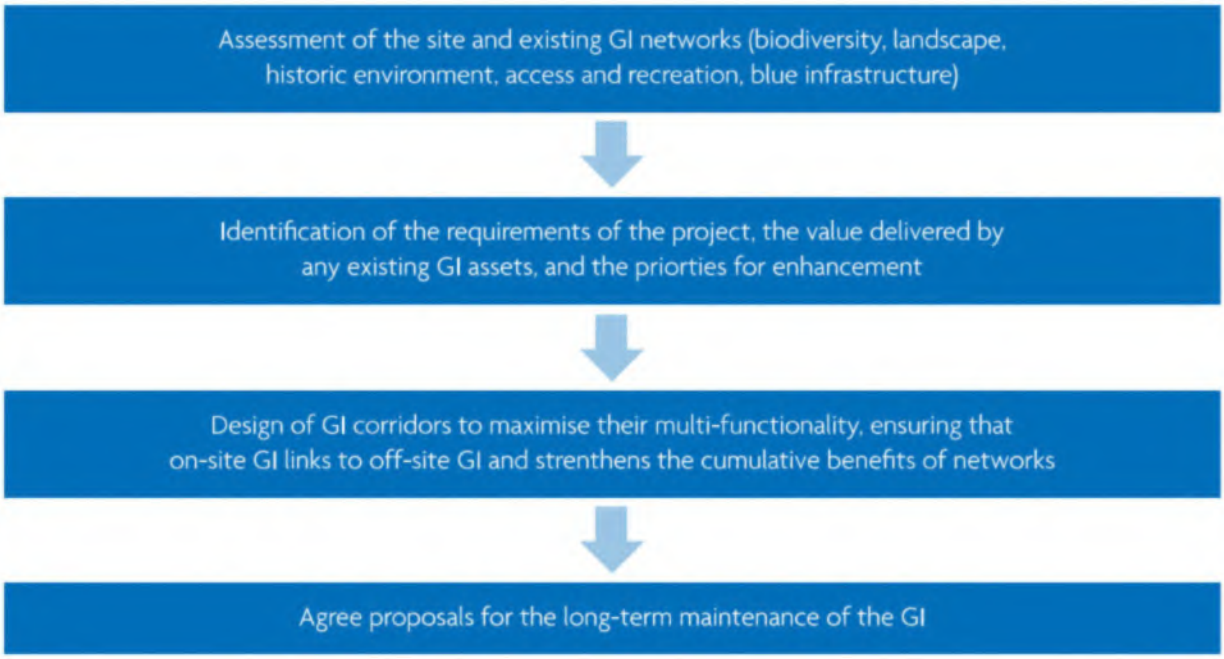
Source: Case study report commissioned by Natural Economy Northwest

What principles should be followed?

5.31 Figure 8. Spatial priorities for green infrastructure in Worcestershire (page 16) gives an indication of the high-level approach that should be taken to green infrastructure in each Environmental Character Area. A profile of each area is given in Appendix D, with detail about the priorities outlined in Appendix E. Additional guidance can be found in the Green Infrastructure Framework Documents 2, 3 and 4, which provide the evidence base for this Green Infrastructure Strategy.

5.32 The key to planning and managing green infrastructure in land management is to consider the site in its context. This includes considering the features of the site and the networks of habitats, sustainable transport routes and water courses that surround it. Figure 14 outlines the steps to follow when considering how to integrate green infrastructure within land management.

Figure 14. Principles to consider when integrating green infrastructure into land management



What mechanisms exist to assist in delivery now and in the future?

5.33 The mechanisms for delivery of green infrastructure in relation to land management include:

- Routine land management practices.
- Agri-environmental schemes which provide rewards to farmers for environmentally-sensitive land management.
- The England Woodland Grant Scheme will provide grants for schemes which aim to increase the benefits from existing and new woodland.
- Priorities for public access outlined in the Rights of Way Improvement Plan for Worcestershire.
- Eco-Schools scheme encourages pupils and supporters (school staff, admin and community members) to improve green infrastructure within their school grounds, promoting biodiversity and creating wildlife habitats, while providing rich learning opportunities.

Note: *This section aims to provide guidance for land managers and owners to include opportunities for green infrastructure. It is informed by and complements existing schemes such as agri-environmental schemes or England Woodland Grant Scheme which already offer funding and opportunities for integrating GI into land management. The recommendations also sit alongside and are informed by other existing information and the best practice shown by many land managers.*

C. Delivering green infrastructure through mineral extraction and restoration

Why deliver green infrastructure through mineral extraction and restoration?

5.34 Mineral development can have a long-term impact on the character of an area, but is in itself only a temporary operation. Once the minerals have been extracted, the land must be 'restored' to an appropriate after-use. In some cases this can involve restoring the land to its previous use, but restoration of mineral workings can provide significant opportunities for habitat creation, climate change mitigation and blue infrastructure enhancements and can include elements of public access for recreation. The scale of activity is also such that larger sites or sub-regional assets could be created.

5.35 The end-use of a restored mineral working would typically be agriculture, recreation or nature conservation, but due to their scale and the significance of landscape and habitat change often involved, there is usually opportunity to integrate the delivery of GI assets into restoration schemes. Many of the principles of multi-functionality outlined in part 3 above will also apply to restored sites.

5.36 The mineral industry has a long history of restoring sites for biodiversity gain. Mineral industry activities across the UK have been responsible for the creation of 700 Sites of Special Scientific Interest, two National Nature Reserves, 22 Local Nature Reserves, 15 field study and education centres and 13 nature trails. The RSPB says the industry is uniquely placed to single-handedly deliver nine out of the Government's eleven biodiversity action plan targets.[27]

5.37 Quarries and other extraction sites are also important to the UK's uniquely diverse geological heritage, because they afford opportunities to study and enjoy geology that would only otherwise be possible at major outcrops and around our coastline. Since 1949, 500 SSSIs (22% of all geological SSSIs), have been designated as a result of exposure left by quarrying.[28]

Beckford Nature Reserve © Worcestershire County Council

27 Minerals Products Association (2012) The mineral products industry's contribution to the UK http://www.mineralproducts.org/documents/MPA_MTL_Document.pdf

28 Minerals Products Association (2012) "The mineral products industry's contribution to the UK"

Figure 15: Benefits of integrating GI into minerals extraction and restoration

BENEFITS OF INTEGRATING GI INTO MINERAL EXTRACTION & RESTORATION

Cost-effective mitigation during extraction

In supporting The Millennium Ponds Project, the Minerals Product Association said:

"New ponds are cheap and easy to make, and as long as some key principles are applied, so that they are fed by a clean water source, they quickly become biodiversity hotspots. And pond creation on aggregate extraction sites can be very cost-effective because earth-moving equipment is often available on site and ponds need relatively little space – provided they are protected from pollution."

Source: http://www.mineralproducts.org/12-release33.htm

Reduced reliance on inert fill

With increased recycling and re-use of waste, inert fill to raise land levels following extraction is becoming increasingly scarce. It is also no longer acceptable in areas of flood risk or where it could impact on groundwater. The landfill of waste is also discouraged through the Worcestershire Waste Core Strategy.

The creation of many GI assets, including wetlands, facilitate restoration through use of overburden and other material found on site, without the need to import fill. This not only reduces reliance on outside industry but also minimises the regulatory burden through reducing environmental permitting requirements.

Cost-effective restoration

Example: Wet woodland is a common component of aggregate sites and almost always succeeds rapidly during the operational period. For example, restored sand and gravel sites can provide the moist ground conditions for wet willow woodland which can be promoted by natural regeneration of a surrounding habitat or through planting. Natural regeneration is therefore an effective and a low cost alternative that requires minimum effort. In addition, natural hydrological systems are generally more sustainable and cost effective solutions than artificial water control systems.

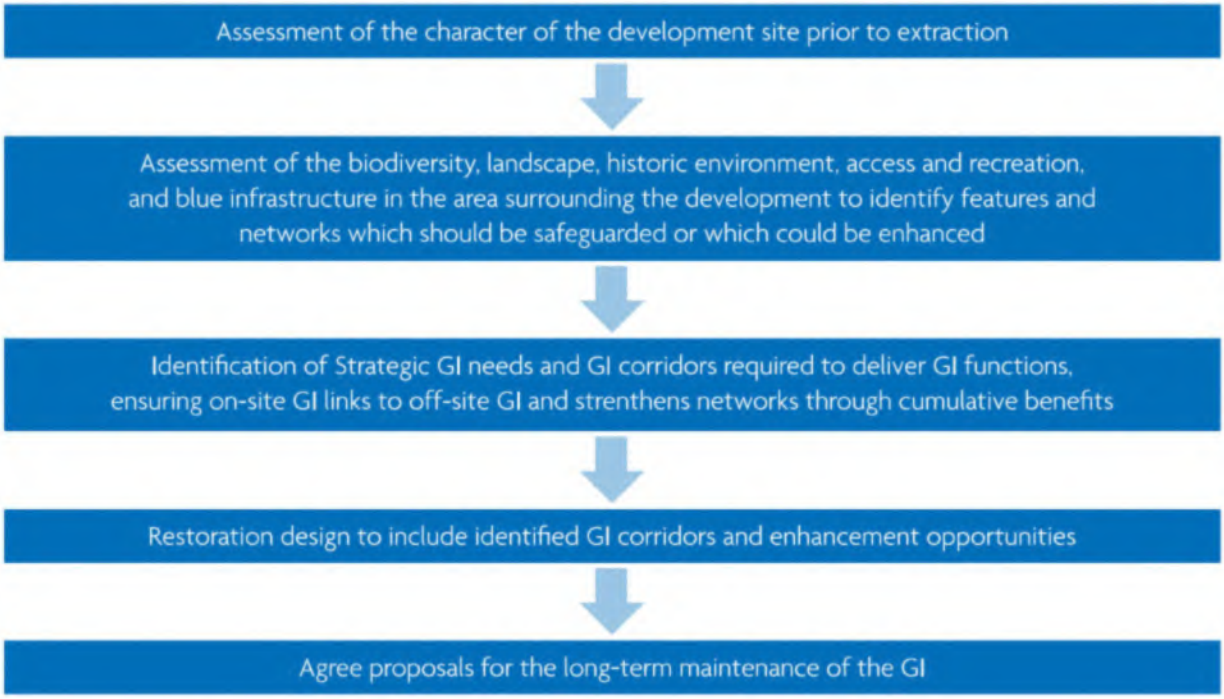
5.38 By taking a green infrastructure approach and integrating restoration schemes into wider networks of sites, environmental aspects are more likely to be successful. By taking an integrated green infrastructure approach it can be possible to deliver multiple benefits, for example biodiversity gains can be incorporated into agricultural or recreational restoration schemes.

What principles should be followed?

5.39 Figure 8. Spatial priorities for green infrastructure in Worcestershire (page 16) gives an indication of the high-level approach that should be taken to green infrastructure in each Environmental Character Area. A profile for each area is given in Appendix D, with detail about the priorities outlined in Appendix E. Additional guidance can be found in the Green Infrastructure Framework Documents 2, 3 and 4, which provide the evidence base for this Green Infrastructure Strategy.

5.40 The key to planning and managing green infrastructure in minerals extraction and restoration is to consider the site in its context. This includes considering the features of the site and the networks of habitats, sustainable transport routes and water courses that surround it. Figure 16 outlines the steps to follow when considering how to integrate green infrastructure into minerals extraction and restoration.

Figure 16. Principles to consider when integrating green infrastructure into mineral extraction and restoration



What mechanisms exist to assist in delivery now and in the future?

5.41 The robust mechanism for delivering green infrastructure through mineral extraction and restoration is still to be established, but modern planning permissions for mineral workings require a restoration and aftercare scheme.

5.42 Many operators are sympathetic to environmental enhancement, which is supported by the Minerals Products Association. It is therefore likely that there is significant potential to incorporate wider green infrastructure concepts within a wider range of restoration schemes.

5.43 A new Minerals Local Plan for Worcestershire is currently being developed and there is significant opportunity to embed green infrastructure into policy and guidance on mineral extraction and restoration. If this opportunity is to be fully embraced, then a partnership approach to delivery is needed, involving discussions between the County Council (as the mineral planning authority), the mineral operator, and other relevant members of the Worcestershire Green Infrastructure Partnership.

National case study: The Minerals Products Association, the body representing over 90% of the sector activity, supports restoration for environmental gain and launched its Biodiversity Strategy in 2011.
Examples of delivering national and local biodiversity action plan targets include:

Restoring the population of the previously declining bittern by "hosting" 15 per cent of the UK's breeding pairs in reed beds created following quarrying.

Examples of delivering national and local biodiversity action plan targets include:

- Reed beds – home to bitterns, water voles, marsh harriers and Desmoulin's whorl snail.
- Lowland acid grassland – home to stone curlews and field crickets.
- Ponds – home to a wide range of invertebrates, and amphibians such as natterjack toads and great crested newts.
- Lowland heathland - home to rare and threatened species like the nightjar, smooth snake and sand lizard.

MPA members have planted a million trees in the last five years as part of their planned operational and restoration activities.

MPA members have planted 57 km (36 miles) of hedgerows in the last five years.

Source: http://www.mineralproducts.org/restoration_awards.htm

D. Delivering Green Infrastructure through infrastructure development

5.44 The term 'infrastructure' means the basic facilities, services and installations needed for a functioning community or society, including transport, waste management, emergency services, communications, water supply, wastewater, flood risk, minerals and energy (including heat), health, community and cultural infrastructure and other local facilities[29].

Why deliver Green Infrastructure through infrastructure development?

Figure 17. Economic benefits of integrating GI into infrastructure developments

BENEFITS OF INTEGRATING GI INTO INFRASTRUCTURE DEVELOPMENTS

Cost Savings

- 2007 flood events resulted in £3.5 million worth of damage to a 12 mile stretch of rail track between Bewdley and Bridgnorth and £1million worth of damage to the B4084 at Cropthorne.
- Reduction in energy (£30,000 per year) and waste disposal (£2,500 per week) costs by installing anaerobic digester at Springhill Farms, Fladbury.

Source: Worcestershire County Council (20101) Worcestershire Local Climate Profile Assessment, R&L Holt: Springhill Nurseries

Job Creation

Taking the opportunity to develop Worcestershire's biomass potential could create 63 FTEs by 2026.

Source: Worcestershire County Council (2013) Emerging Renewable Energy Strategy for Worcestershire

Cost-effective alternative to Grey Infrastructure

Case Study: A number of residential properties and businesses in Powick were flooded during the major flood events in 2007 when the River Teme broke its banks. The flooding and closure of the road - a main commuter link between Malvern and Worcester, and the access road to the M5 - impacted the local economy. Significant floods were also recorded upstream and downstream of the site between 1947 and 2004.

In November 2011 a flood defence scheme was installed. The completed scheme comprises a new embankment on the Common Land on the southern side of Powick and a southern embankment that will collect runoff from the land, draining into the existing stream. A culvert with a flow control device to prevent the passage of floodwater has been constructed in the southern embankment to allow the existing stream to flow through it in normal conditions. The existing access road has been raised to form a flood embankment to the north. The completed scheme will provide protection from a flood with a 1 in 75 year chance of occurring in any one year.

Source: Worcestershire County Council (2012) Planning for Infrastructure in Worcestershire, Worcestershire Infrastructure Strategy: Consultation Draft

29 Worcestershire County Council (2012) Planning for Infrastructure in Worcestershire, Worcestershire Infrastructure Strategy: Consultation Draft

Property and quality of life

5.45 Green infrastructure mechanisms can be used both in addition to traditional grey infrastructure approaches and as an alternative. The Worcestershire Infrastructure Strategy produced by WCC outlines a number of alternative approaches and contributions which green infrastructure can offer:

- Flood alleviation and management: green infrastructure can be used as an alternative to the traditional management of water, through the use of SuDS, or through upstream interventions which reduce the amount of water flowing into water courses in times of flood events. Other potential interventions include reducing agricultural run-off and the use of agricultural chemicals in catchments, through improved land management practices. This reduces the need for chemical treatment of water as it enters the supply chain.
- Renewable energy: there are a range of existing biomass renewable energy resources in the county, including existing woodlands and some plant resources such as meadows and reed beds. For economic reasons, these resources are frequently unmanaged. Development of the renewable energy market for biofuels will provide opportunities for the management of existing biomass resources (contributing to GI through biodiversity and landscape enhancements) and may result in the development of additional habitats[30].
- Transport: the development of walking and cycling networks can provide alternatives to using motorised transport, and contribute to healthier lifestyles and the reduction in localised car journeys, etc. Walking and cycling routes should link to community assets and local centres which are important destinations for local residents. If off-road, these networks can also provide opportunities to link corridors of biodiversity importance, to contribute to good neighbourhood design, and to form a part of facilities such as SuDS corridors.

What principles should be followed?

5.46 The principles for incorporating green infrastructure into wider infrastructure are included in the Worcestershire Infrastructure Strategy (2013). Proposals for investment in infrastructure should consider the potential to either incorporate green infrastructure or alternatively to replace traditional infrastructure approaches with green infrastructure solutions.

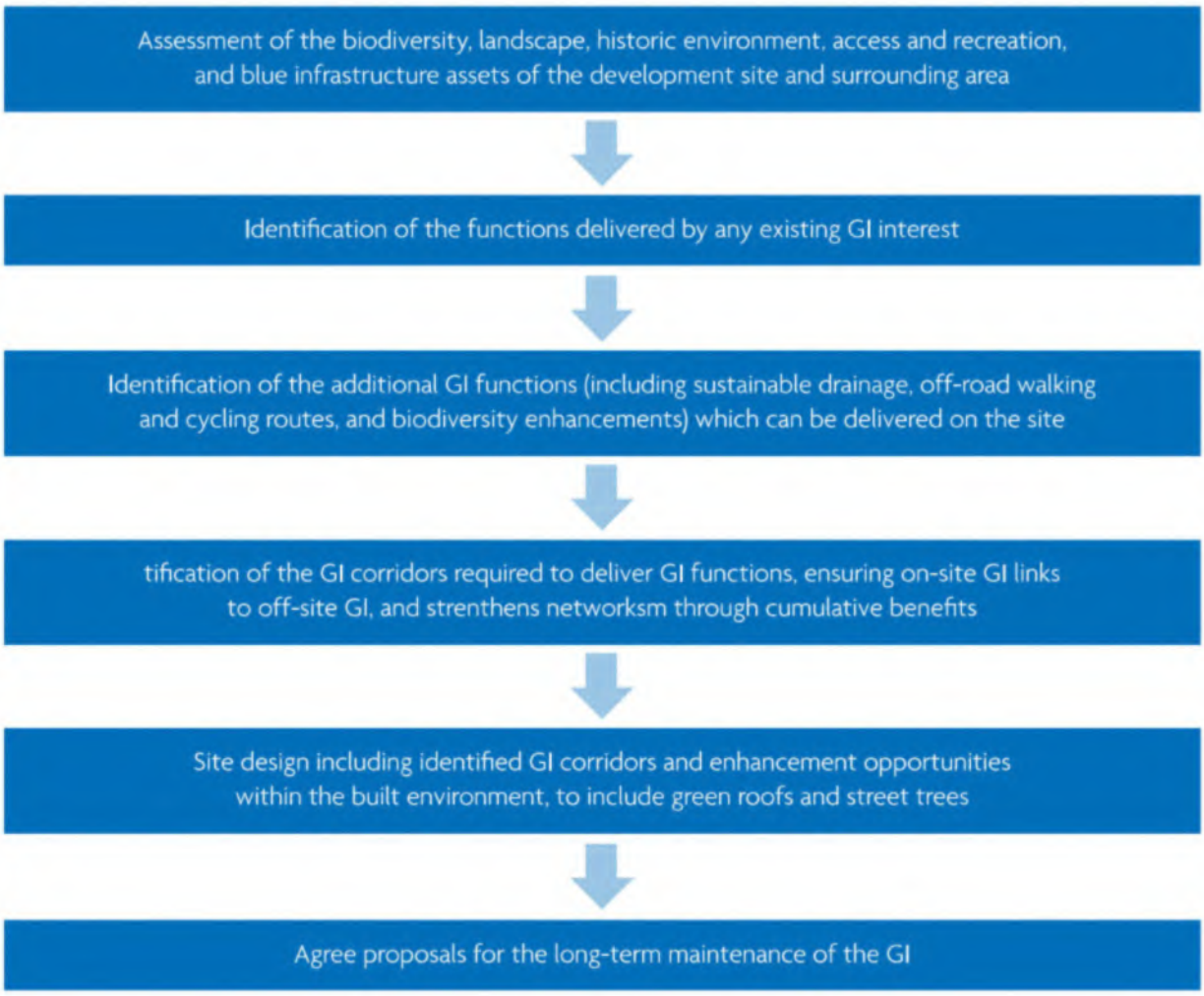
5.47 The priorities for this approach are:

- Water
- Transport
- Renewable energy

5.48 These are the strategic priorities, although there may be local priorities as well which can include green infrastructure.

30 In some cases site management requirements would not be compatible with increased biomass removal for renewable energy generation. In particular we must be careful to ensure that economic opportunity does not outweigh nature conservation value and that sites of high nature conservation value do not become over-'managed' to the detriment of their biodiversity.

Figure 18: Principles to consider when integrating green infrastructure into infrastructure developments



What mechanisms exist to assist in delivery now and in the future?

5.49 Currently, there are no confirmed mechanisms for delivering green infrastructure through 'conventional' grey infrastructure developments. A number of initiatives to include GI as part of wider infrastructure investment are expected to come forward, driven by renewable energy and economic development proposals.

Section 6. Funding and viability

6.1 Opportunities to develop green infrastructure will arise from a wide range of situations, from changes in land management to development proposals. This diversity leads to a range of funding mechanisms. Some proposals will need capital funding, to establish a green infrastructure asset, and subsequently revenue funding, to secure its long-term management. A new SuDS installation, for example, will require capital investment to initially create the scheme as part of development proposals, as well as revenue funding for its long-term maintenance and management to secure its functionality.

6.2 Funding for green infrastructure schemes will be dependent on the type of scheme, its origins and functions. For example, capital investment in green infrastructure arising from a new development will be funded primarily from that development, but may need to look at different ways of using revenue funding to secure long-term maintenance.

6.3 The table below outlines some of the principle sources of capital and revenue funding for green infrastructure for schemes within Worcestershire. This is not an exhaustive list, as other funding schemes may be available in particular circumstances or in specific areas.

Table 3. Funding mechanisms

Funding Mechanism	Types of GI Support	Details	Type of Funding
Community Infrastructure Levy	New development	The money can be used to fund a wide range of infrastructure that is needed as a result of development and provides wider benefits. This includes flood defences, parks, and green spaces. CIL rates have not yet been set in Worcestershire.	Capital and revenue
Section 106 agreements	New development	Funding must be intrinsically linked to the development.	Capital and revenue
Agri-environment funding	Land management	Agri-environment funding can be secured by landowners and managers for changes to the management of land which benefit the natural environment. Agri-environment funding is part of the Rural Development Programme for England, which is currently being renegotiated as part of CAP reform across the EU.	Capital and revenue
England woodland grant scheme	Land management / minerals / infrastructure	Funding is available for woodland creation and for the management of existing woodland. England Woodland Grant Scheme funding is part of the Rural Development Programme for England, which is currently being renegotiated as a part of CAP reform across EU.	Capital and revenue

The National Lottery: Big Lottery	Community use within new or existing development / minerals/ infrastructure	This funding is for community projects including acquisition and establishment of public open space.	Capital and revenue
The National Lottery: Heritage Fund	Community use within new or existing development / minerals/ infrastructure	The Heritage Lottery Fund operates a number of funds. This fund is to be used to conserve and enhance heritage assets including nature reserves and parkland.	Capital and revenue
Hypothecated taxes	New development	A tax levied for a specific purpose. Taxes can be levied on new development and reserved for green infrastructure. This model has been successfully applied on both small and large scale development sites.	Revenue
Endowments	New development / minerals / infrastructure	Site endowments may be successfully used to create a long-term income for the management of land. It may be appropriate to dedicate these to a specific charitable trust which can use the income to manage the land. There are also a number of charitable companies which specialise in using endowments to manage land.	Revenue
Management companies/ Community Development Trusts	New development / minerals	Land ownership is retained by the developers, but responsibility for the management is transferred to a management company with agreed standards and a management plan.	Revenue
Local authority	New development / minerals/ infrastructure	A traditional method of securing GI on development sites with the long-term management transferred to the relevant local authority.	Revenue

Viability

6.4 The capital and revenue costs of green infrastructure are determined by the requirements of any individual scheme. Nationally, a number of sources of information can inform the assessment of GI costs, including:

- land management standard costs such as Spon's Price Books
- standard costs from agri-environment and woodland grant scheme
- previous experience and organisational knowledge of the costs of schemes and their long-term maintenance.

6.5 Any viability assessment of GI needs to be determined against both the policy requirements and also the functions which are being delivered. The decision to invest in green infrastructure can be a more cost-effective and more viable alternative to investment in more traditional grey infrastructure. The assessment also needs to take into account all the multi-functional characteristics of green infrastructure, to ensure functions are not costed twice.

6.6 Green infrastructure costs should be assessed as a part of site viability to determine if the site can support both the initial capital costs and the longer-term management costs to ensure that functionality is maintained.

Warndon Woods, Worcester ©crisdobbs

Section 7. Monitoring the success of the Green Infrastructure Strategy

7.1 The success of the Worcestershire Green Infrastructure Strategy will be monitored through the following indicators:

1. Endorsement of the Green Infrastructure Strategy by Worcestershire Green Infrastructure Partnership members.
   Key indicator/target: *The Strategy to be formally endorsed by 31st December 2013.*

2. Incorporation of green infrastructure principles into strategic approaches to the economy, health and wellbeing.
   Key indicator/target: *Inclusion in LEPs' Business Plans, forthcoming Local Nature Partnership Business Plan, Health and Well-being Strategy and retaining references in the Sustainable Community Strategy for Worcestershire.*

3. Adopted Local Plans that include green infrastructure policies based on the GI Strategy and Framework Documents.
   Key indicator/target: *Inclusion in all adopted Local Plans by 2018.*

4. Number of successful funding bids for green infrastructure by members of the Green Infrastructure Partnership.
   Key indicator/target: *2 successful bids annually for green infrastructure projects by the Partnership members*

5. Number of Green Infrastructure Concept Plans produced each year by the Worcestershire GI Partnership.
   Key indicator/target: *4 Green Infrastructure Concept Plans prepared for strategic development sites in Worcestershire each year*

7.2 Performance against these indicators will be reported to the Local Nature Partnership (LNP).

7.3 These indicators focus on projects and strategies, rather than 'on the ground' delivery of green infrastructure, as they are intended to monitor progress over the next 5 years. It is unlikely that many schemes will have been delivered in this time-scale, but the long-term delivery and maintenance of green infrastructure will need to be assessed.

Chapter Meadows, Worcester ©crisdobbs

Section 8. Next steps

8.1 Following the endorsement of the Worcestershire Green Infrastructure Strategy by the Worcestershire Green Infrastructure Partnership, partners will then take steps to implement the strategy in their organisations and through their own structures.

Worcestershire level

8.2 The Strategy has benefited from the recognition and support of the Worcestershire LNP throughout the development process. The Worcestershire LNP is a partnership of organisations working together to provide leadership on environmental issues and working with partners in other sectors (such as business and enterprise, landowners, health, and tourism), to ensure the future prosperity and health of our environment. The LNP will be an effective delivery mechanism for the Strategy in the future.

8.3 The Strategy will be endorsed by the Worcestershire County Council. A similar process may be followed by other partner organisations with similar decision-making structures. The final endorsement of the Strategy by Worcestershire County Council is expected by the end of 2013.

8.4 The development of the Worcestershire Green Infrastructure Strategy has highlighted the need for more work to explore viability and costing of GI, an issue which also lacks information on the national level. A subsequent GI Framework document considering these issues is planned to improve the evidence base.

8.5 The Strategy focuses predominantly on the rural area of Worcestershire. The assessment of urban GI assets and networks proved difficult, due to the absence of data. Further work on urban GI by the Partnership and individual partners is required to fill this gap. Notwithstanding the above, the GI principles identified through this Strategy should still be used to inform the identification of GI networks, including those in urban areas, at the district level.

8.6 Worcestershire County Council is preparing the Minerals Local Plan (MLP), with adoption anticipated in 2015. One of the Plan aims is to deliver integrated multifunctional GI through the restoration of mineral workings. A GI & Minerals Task Group will be meeting throughout the development process to make sure that this Strategy's priorities are appropriately reflected in the MLP.

District level

8.7 The Worcestershire Green Infrastructure Strategy is a strategic document and an important first step in the planning and delivery of GI in the county. The aim of the WGIP is for the strategic priorities to be reflected in adopted/emerging Local Plans across the county.

8.8 It is recommended that local councils will develop further work based on the vision and priorities established in this Strategy. A more localised assessment of the strategic priority areas should be undertaken by each authority.

8.9 District Councils should use the Strategy and further local analysis to inform their Local Plans. They should review the existing policies to encourage the implementation of the Strategy. The incorporation of GI priorities in other planning guidance, such as SPDs and design guides, is also encouraged.

8.10 The Strategy should be used to inform future economic development decisions at the district level. Other district functions such as sports and leisure or parks and countryside services should have regard to the principles and priorities identified in the Strategy.

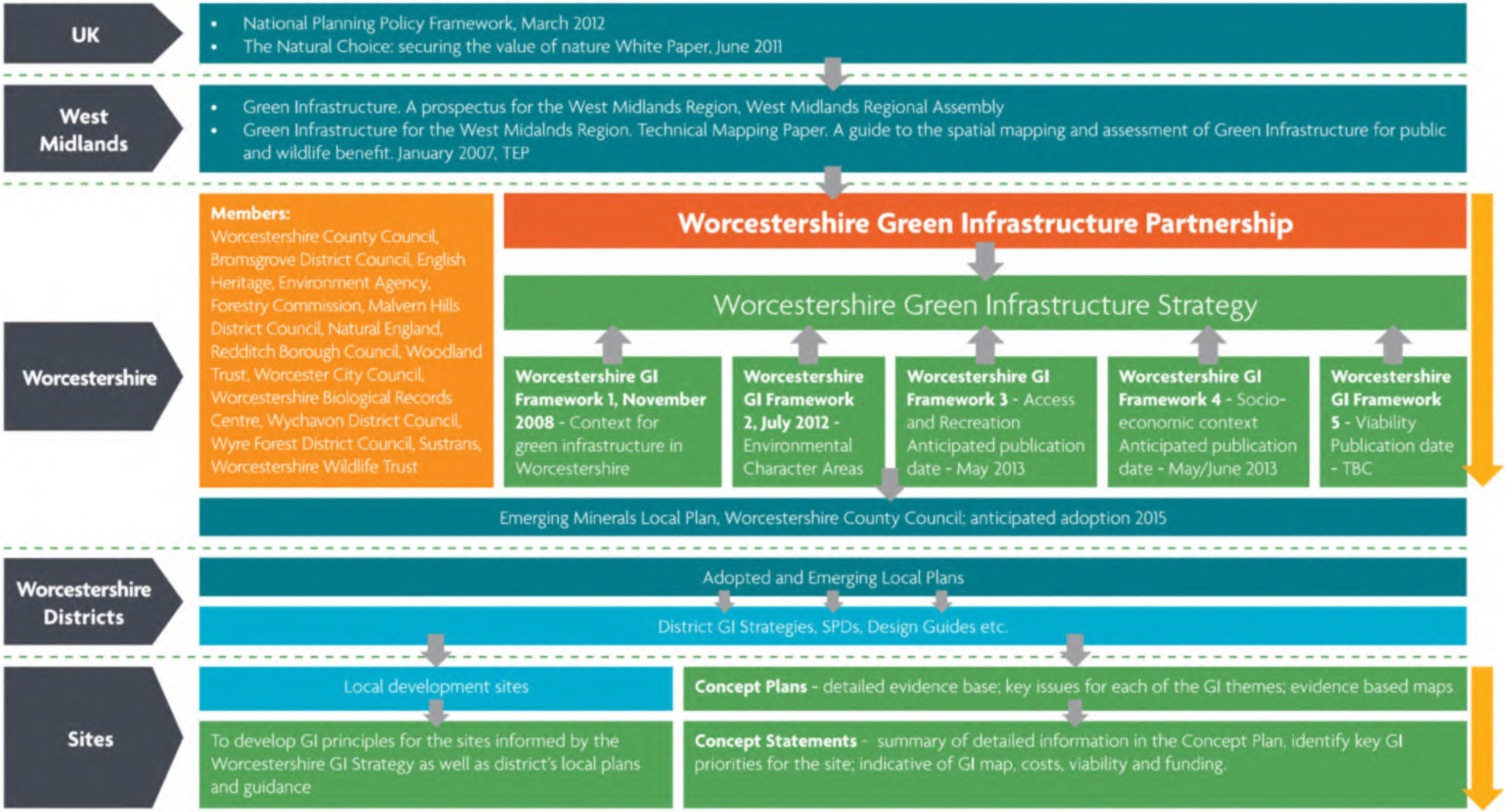
8.11 Over the years, local councils have worked closely with the WGIP and used the GI evidence base to inform the GI policies in their adopted/emerging Local Plans. Wyre Forest District Council have also developed a district-wide GI Study and GI Strategy. A full list of the district-level documents relevant to this GI Strategy can be seen in Appendix A.

Site level

8.12 The Worcestershire GI Partnership has been developing GI Concept Plans and Statements for strategic development sites in Worcestershire. Whilst District Councils are encouraged to be involved in this process, they can also produce guidelines for developing other specific sites and proactively engage with developers. This will help to ensure co-ordination of the wider Strategy delivery and will help to realise a site's green infrastructure potential.

Appendix A. Worcestershire Green Infrastructure Framework

Figure A : Worcestershire Green Infrastructure Framework – structures



GI Partnership

A.1 In 2008, organisations including Worcestershire County and District Councils, Worcestershire Wildlife Trust, and Natural England came together to form a cross-sectoral partnership to optimise planning and delivery of GI. The Worcestershire GI Partnership has subsequently expanded to cover the remaining Defra statutory agencies and voluntary organisations. The partners represent a diverse range of interests, all focused on the natural and historic environment, but encompassing sustainability, recreation and transport. In the near future the Partnership is aiming at expanding its membership to include representatives from the health and economic development sectors (see Figure A for the full list of partners).

A.2 One of the Partnership's roles is to develop the Worcestershire Green Infrastructure Strategy. The Strategy is a non-statutory county-wide guidance document which aims to:

- direct and drive the delivery of GI in Worcestershire; and
- inform relevant strategies and plans of partner organisations over the next five years.

Green infrastructure: Strategy and evidence base

A.3 The Worcestershire Green Infrastructure Strategy establishes a vision and priorities for Green Infrastructure provision in the county.

A.4 The WGIS is informed by four GI 'Framework documents', which form a detailed GI evidence base, covering:

- **GI Framework Document 1** (November 2008): provides an introduction to the concept of Green Infrastructure (GI) and identifies the need for the strategic planning of GI and the policy drivers that support GI planning at different spatial scales.
- **GI Framework Document 2** (July 2012): provides an introduction to the landscape, biodiversity and historic environment datasets and develops the concept of GI Environmental Character Areas based on the quality and quantity of these natural environment assets.
- **GI Framework Document 3** (May 2013): identifies the location, extent, and functionality of strategic recreational assets in Worcestershire. It also explores the potential need for new recreational assets and identifies areas of search and potential funding mechanisms for new facilities.
- **GI Framework Document 4** (draft November 2013): explores how multifunctional green infrastructure solutions can provide economic and health benefits, as well as contributing to climate change mitigation and adaptation.

A.5 The evidence base Framework documents benefit from scrutiny and input from the GI Partnership.

GI policy context

National Policy

A.6 **National Planning Policy Framework** (2012) encourages the creation, protection, enhancement and management of networks of biodiversity and green infrastructure.

A.7 **Natural Environment White Paper** (2011) recognises that economic growth is compatible with the natural environment and that there is a value in natural capital from services provided by the natural environment.

Local Plans

A.8 **Bromsgrove District Plan Proposed Submission** (2013) requires development to adopt a holistic approach to deliver the multiple benefits and vital services of GI, including improving connectivity and enhancing the quality of GI.

A.9 **The South Worcestershire Development Plan Submission** (2013) (Policy SWDP 5) sets GI targets at 40% for greenfield sites exceeding 1ha gross and 20% for sites less than 1ha but more than 0.2ha for housing and mixed use proposals. All qualifying development will need to provide contributions towards the maintenance, improvement and connectivity of the Local Green Network.

A.10 **Borough of Redditch Local Plan No.4 Proposed Submission** (September 2013) *"will maintain and provide a high quality natural, rural and historic environment with a green infrastructure network which maximises opportunities for biodiversity value, wildlife and ecological connectivity".*

A.11 **Wyre Forest District Core Strategy** adopted in 2010 requires new development to contribute positively towards the district's green infrastructure network. New development should explore opportunities for enhancement and preservation of biodiversity and geodiversity on the site. Other related Wyre Forest District planning documents include the **Wyre Forest District Site Allocations and Policies Local Plan** and the **Kidderminster Central Area Action Plan**.

Other documents

A.12 **Bromsgrove District Green Infrastructure Baseline Report** (Updated 2013) identifies the existing GI assets in Bromsgrove district. It will help shape planning policies and inform future planning decisions within the district.

A.13 **Wyre Forest District Green Infrastructure Strategy** (October 2012) *"sets out general principles for green infrastructure across the Wyre Forest District but also focuses on the development areas and sites identified through the Local Development Framework (LDF) process and establishes how development within each of these areas, and where relevant, development on specific sites should contribute towards the green infrastructure network".*

A.14 **Wyre Forest District Green Infrastructure Study** (January 2010) provided the baseline information for considering green infrastructure within the district. The study will provide the strategic vision, aims and objectives for future green infrastructure requirements.

A.15 **Worcestershire Green Infrastructure Partnership** (October 2012) South Kidderminster Enterprise Park Green Infrastructure Concept Statement

A.16 **Worcestershire Green Infrastructure Partnership** (May 2013) Worcester South Concept Statement

Appendix B. Worcestershire context

B.1 This Appendix summarises the evidence base provided in the four GI Framework documents:

Environmental character

Biodiversity

B.2 Worcestershire has an important and varied biodiversity resource, including:

- 2 Special Areas of Conservation (SACs)
- 112 Sites of Special Scientific Interest (SSSIs)
- 593 Local Sites (designated for biodiversity or geodiversity)

B.3 The county is predominantly agricultural, with a range of diverse habitats including woodlands, wetlands, grassland and meadow and traditional orchards. Woodland accounts for 9.8% of Worcestershire's land cover, of which 3.6% is ancient woodland. The county includes 20-25% of the country's remaining neutral grassland and hay meadow - a rapidly declining nationally important habitat. The county also includes a significant resource of traditional orchards (a habitat largely restricted to the three counties of Gloucestershire, Herefordshire and Worcestershire). The Wyre Forest in the north of the county is one of the largest areas of lowland coppice woodland in the country.

B.4 The county council and partners have developed the Worcestershire Habitat Inventory which includes field-by-field analysis of habitats. From the initial analysis a biodiversity audit was undertaken to identify the areas with the greatest and least biodiversity interest.

B.5 Generally, biodiversity is highest in the west of the county, along the Teme Valley and into the Malvern Hills. In the east, the Forest of Feckenham is a hotspot for biodiversity, as are Bredon Hill and Longdon in the south.

B.6 Areas poorer in biodiversity include the Severn Valley to the south of Worcester and the central area of the county between Worcester, Bromsgrove and Redditch. The Vale of Evesham is also an area of poor biodiversity. This is the result of low quality or degraded habitats which have little ecological interest. Areas with a mosaic of different habitats with good connectivity or large areas of single habitat are of higher importance for biodiversity.

B.7 Connectivity between areas of biodiversity importance can be poor and fragmented, leading to isolation for species and habitats, increasing their vulnerability to adverse events such as impacts from the changing climate and any loss of sites.

Landscape

B.8 The landscape of Worcestershire is varied, with 22 different landscape types to be found in the rural areas of the county. The western county boundary is dominated by the Malvern Hills, which are the highest hills in the county, while to the south is Bredon Hill, an outlier of Cotswold limestone. Both these landscapes form part of designated Areas of Outstanding Natural Beauty (AONB). The central area of the county is characterised by the low-lying Severn Valley, with the valley of the Teme dominating the north west of the county and the Avon the south east.

B.9 Condition of the landscape for green infrastructure purposes has been assessed using three landscape condition indicators from the Worcestershire landscape character assessment. These are: tree cover pattern, field boundaries and enclosure pattern. Collectively, these three indicators give an overall score for landscape green infrastructure which has been classified as 'high', 'medium', or 'low', with the highest scoring landscapes those in the best condition and making the greatest contribution to green infrastructure. Additionally, the development potential of the landscape was considered based on topography, settlement pattern and planned/ancient character.

B.10 Geographically, there are two broad areas in the county whose landscape units fall into the lower categories of landscape green infrastructure condition. The first can be seen as a corridor that loosely links the major settlements on the north-south axis of the county, with Worcester at its centre. The second can be seen as the swathe of land that runs horizontally from Malvern in the west to Evesham in the east.

B.11 In these areas the landscape indicators are more disrupted, as a result of the expansion/intrusion of settlements, and changes in agricultural practices. Such areas also provide the opportunity to strengthen local green infrastructure and landscape character, by ensuring new development is sited and planned with connectivity and character of landscape features in mind.

Historic environment

B.12 Worcestershire has a diverse and intricate historic environment that has principally developed over the last 10,000 years. The county Historic Environment Record currently holds information on over 26,000 archaeological assets and historic buildings and this is being added to constantly. These records are set within the context of 14,942 Historic Landscape Character units, which provide details of landscape setting and time-depth, and 178 Historic Environment Character Zones that provide strategic setting, potential and assessment of historic landscape sensitivity.

B.13 Historic Landscape Characterisation has revealed that 50.28% of Worcestershire's landscape has experienced some degree of change since 1945. This has mainly been a result of settlement expansion and loss of field boundaries and permanent pasture due to changes in farming practice. Settlement expansion has been concentrated around the major urban areas. However, by contrast, boundary loss, and loss of archaeological earthworks under pasture has been widespread across Worcestershire.

B.14 Historic assets and their wider setting contribute towards the character and distinctive value of landscape. They strongly influence how people perceive and value place. Overall, this provides a vital identity that should inform the design and setting of development.

Blue infrastructure

Flood risk

B.15 The types of flooding that arise in Worcestershire include fluvial flooding (from water courses), rising groundwater and pluvial flooding (from surface water run-off). Pluvial flooding can occur anywhere in the county as it is the result of large amounts of rainfall being unable to drain away effectively.

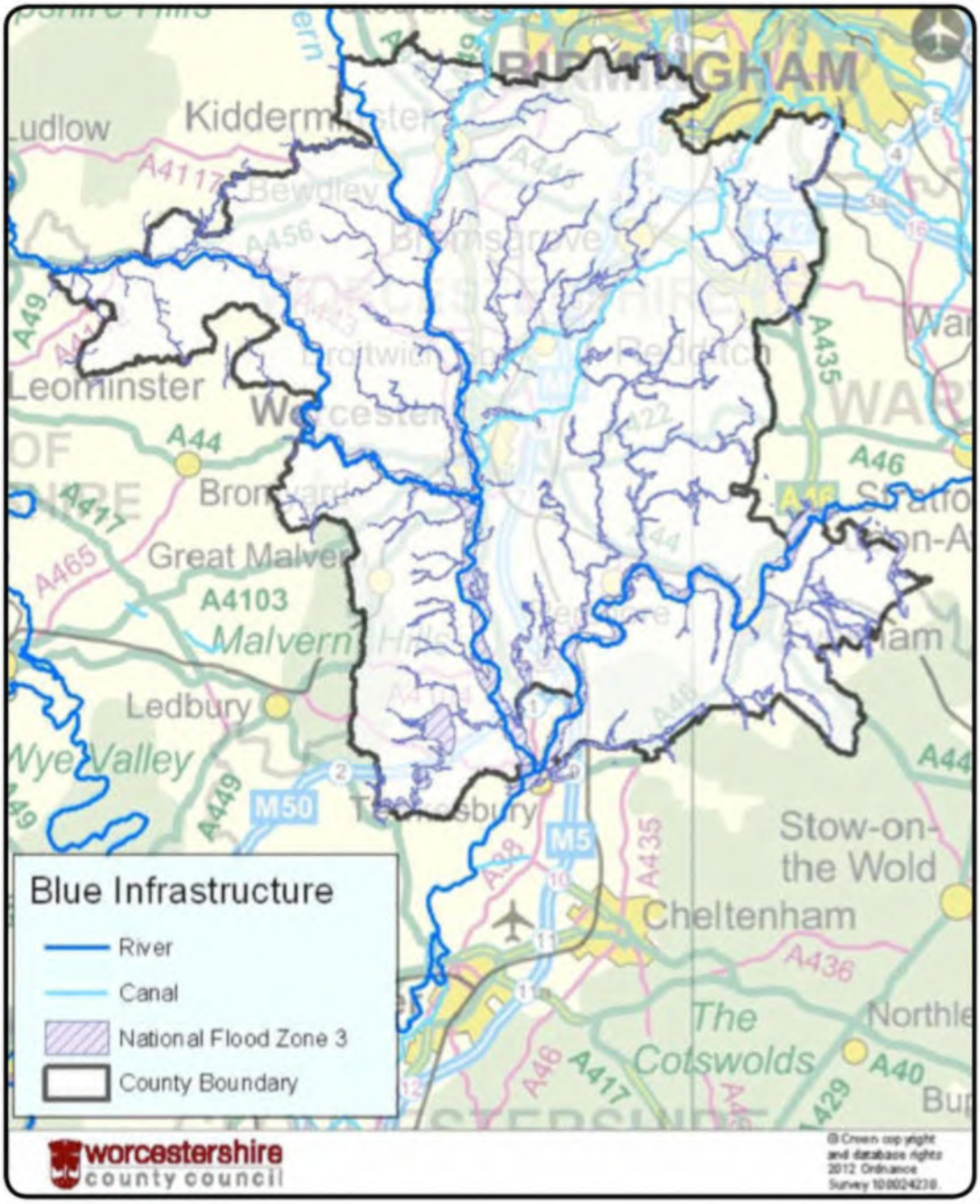
B.16 Approximately 10% of the land area of Worcestershire is at risk of fluvial flooding (about 167km^2). There are over 9,000 properties at risk of fluvial flooding, approximately 4% of the total number of properties in the county. 38% of these properties are at significant risk; 30% are at moderate risk; 32% are at low risk[31].

B.17 The map below illustrates areas of Worcestershire significantly affected by fluvial flooding which is linked to the water levels in the major watercourses (Environment Agency's Flood Zone 3). The map indicates that the parts of Worcestershire particularly prone to river flooding are located along the River Teme (e.g. Tenbury Wells), River Severn (e.g. Worcester, Bewdley, Upton-on-Severn, Kempsey) and the River Avon (e.g. Evesham).

B.18 Changes in conditions upstream beyond the county boundary can have an impact on conditions in Worcestershire. This was illustrated in 2007 with water travelling down the River Severn from Wales and Shropshire combined with intense, persistent rainfall resulting in flooding in Worcestershire and Gloucestershire. This affected the Mythe Water Treatment Works in Gloucestershire, which serves both Worcestershire and Gloucestershire.

31 Worcestershire County Council (2011) Planning for Water in Worcestershire: Technical Research Paper

Figure B1 - Blue infrastructure in Worcestershire (including pluvial flooding)



Water availability

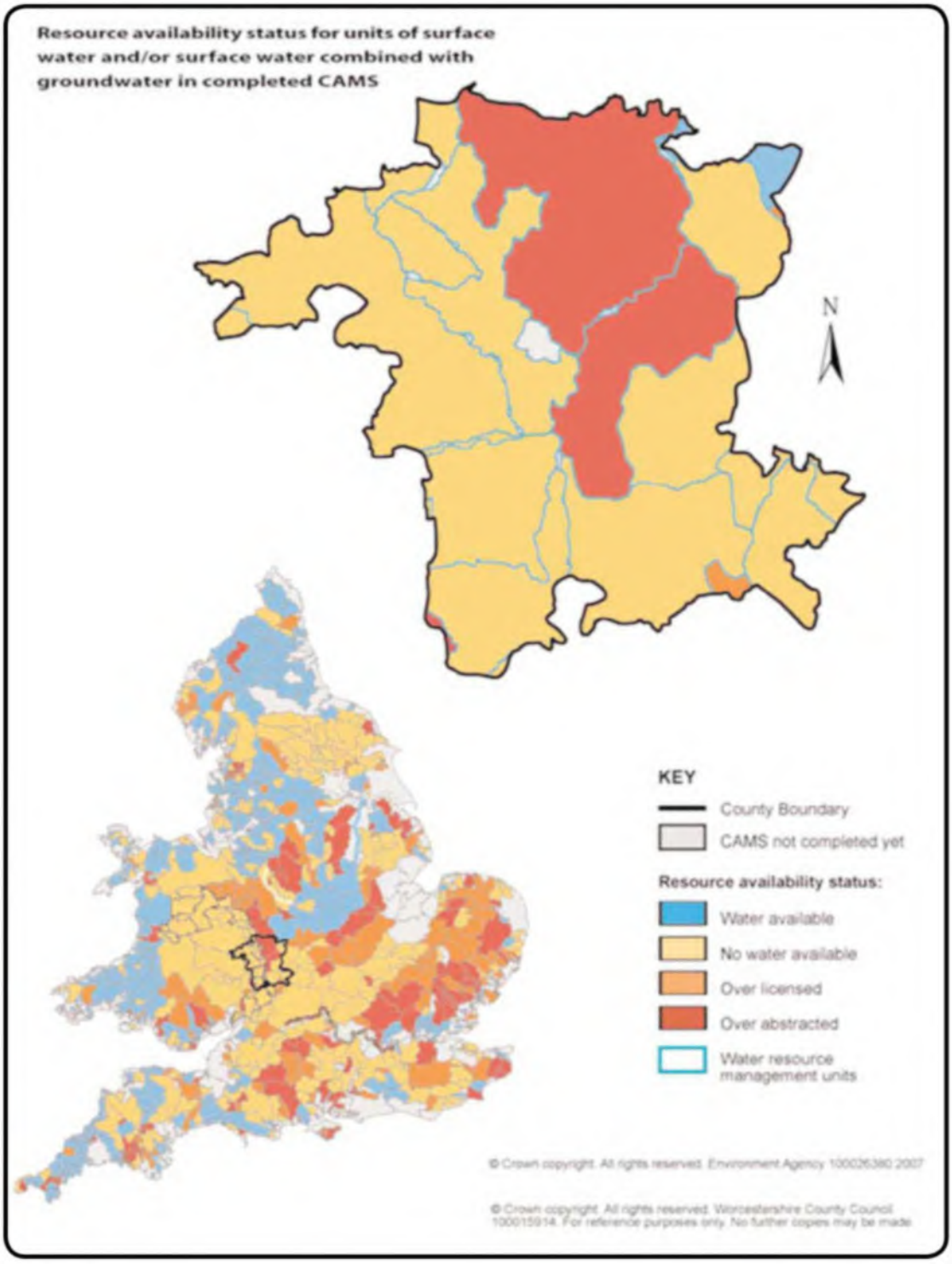
B.19 The latest assessment of supply/demand of water for the Severn Water Resource Zone identified sufficient supply to meet demand until 2013-14, but beyond this point the supply/demand balance becomes increasingly negative, reaching a projected shortfall of approximately 120 million litres per day by 2035. Aquifers are under pressure in many areas including Kidderminster and Bromsgrove. Climate change, long-term water quality trends, and projected growth in demand across this zone could all impact upon future available supply[32].

B.20 Figure 14 describes where water is available for further abstraction and where it needs to be reduced in order to conserve aquatic habitats and prevent damage to the environment. This was identified by Environment Agency in the Catchment Abstraction Management Strategies (CAMS)[33].

32 Worcestershire County Council (2012) Draft Worcestershire Infrastructure Strategy

33 Worcestershire County Council (2011) Planning for Water in Worcestershire: Technical Research Paper

Figure B2 - Water availability in Worcestershire



Water quality

B.21 The majority of watercourses in Worcestershire are at a medium or high risk of not meeting the Water Framework Directive (WFD) objective. The WFD has set a target that all surface and ground waters should aim to reach 'good status' by 2015 and all water bodies must reach 'good' or 'high' status by 2027. Diffuse pollution from phosphates and nitrates are causing the most problems in Worcestershire's watercourses, with Worcestershire having the highest levels of these pollutants in the West Midlands[34].

34 Worcestershire County Council (2011) 'Planning for Water in Worcestershire' Technical Research Paper

Climate change influence

B.22 A decrease in summer rainfall levels as a result of climate change may lead to an increase in the occurrences of drought episodes, with demand for water often peaking during drought periods as a result of persistent hot weather conditions. Droughts as well as floods have a detrimental effect on water quality through increasing the concentration of pollutants in watercourses in the county. Low water flows can result in restrictions on water abstraction.

B.23 There are multiple interactions between blue and green infrastructure which are explored more fully in the GI Framework documents.

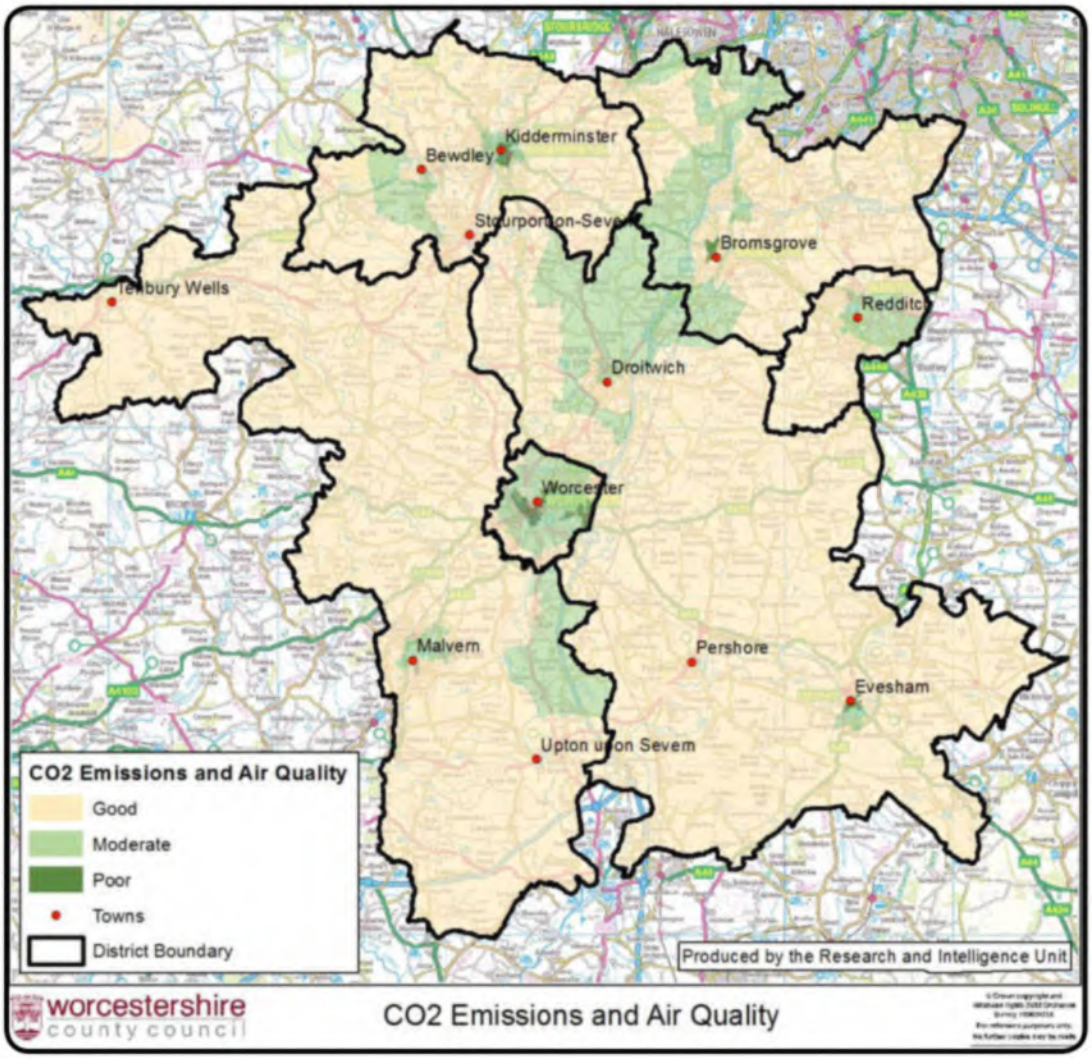
Climate change

Weather

B.24 It is expected that the county will experience significant changes in weather conditions as a result of climate change in the future. The projections indicate that by 2020 the temperature on the warmest day in summer could increase by as much as 5.5°C and the coldest day in winter could increase by as much as 3.8°C. Precipitation is predicted to decrease by approximately 20% in summer and increase by 20% in winter[35].

B.25 The map below illustrates the levels of CO_2 emissions and air quality in Worcestershire which are proxies for measuring the level of county's contribution to global climate change.

Figure B3 - CO_2 emissions and air quality



35 UK Climate Projections (UKCP09)

CO_2 emissions

B.26 In 2010, Worcestershire CO_2 emissions were 6.5t per capita. The emissions have dropped by 11% since 2005 to below the national average (which was 6.6t per capita in 2010). Worcestershire has higher emissions than the West Midlands average due to particularly high domestic and transport emissions. Emissions per capita vary between districts in Worcestershire with Worcester, Redditch and Bromsgrove having the lowest and Wychavon having significantly higher emissions. This could be due to it being distinctly rural and the sparse nature of the settlement resulting in greater use of private cars for travel and (as much of the district is off the gas grid) the use of emissions-intensive forms of fuel such as oil to heat homes[36].

B.27 Notwithstanding the above, generally higher concentrations of total CO_2 emissions are found around urban centres and along major transport corridors and lower emissions usually come from the more rural areas of the county.

Air quality

B.28 Air quality in Worcestershire is generally good. It is generally better in rural areas and worse around urban areas and major road infrastructure. National policy requires local authorities to declare Air Quality Management Areas (AQMAs) and to put reduction plans in place where concentration of nitrogen dioxide exceeds set limits. The AQMAs are hot-spots where there is traffic congestion, often in narrow streets that have buildings close to the kerbside forming 'canyons', or roads with high traffic flows. There are a total of 10 designated AQMAs located in four Worcestershire districts: Bromsgrove (4), Worcester (3), Wychavon (1) and Wyre Forest (2)[37].

Economic context for green infrastructure

Unemployment numbers

B.29 In Worcestershire, in September 2012 there were around 10,500 people claiming Jobseekers Allowance (JSA), representing 3.0% of the population aged 16-64; this is a lower percentage than for the West Midlands and England. Across Worcestershire Redditch, Worcester and Wyre Forest have has the highest claimant count rate at 3.7%, higher than the England average, and Malvern Hills has the lowest at 2.2%. Generally, concentrations of unemployment are found in the more built up areas of the county, in particular Kidderminster, Redditch and Worcester. The lowest job seeker allowance counts can be found in rural areas of the county with the exception of the Vale of Evesham along the A46, and the Southern Teme Valley[38].

Household income

B.30 The median household income[39] in Worcestershire is £30,000. This is higher than the median for the West Midlands and England. Household incomes are highest in the north east of the county, particularly in Bromsgrove district. This is may be attributed to the links that Bromsgrove has with the Birmingham and Black Country conurbation and its economy and employment market. The high income areas also extend to cover the eastern villages of the county. There are also smaller but still significant pockets of wealth at the edge of the Cotswolds, west of Worcester, and in the Wyre Forest - Abberley Hills area.

Employment deprivation

B.31 Twelve Lower Super Output Areas (LSOAs) in Worcestershire are in the top 10% of employment-deprived areas in England. This represents 3.3% of the LSOAs in the county, with 64 LSOAs (17.7%) in the top 30% of employment-deprived areas[40].

36 Department of Energy & Climate Change, Local and Regional CO2 Emissions Estimates for 2005-2010 http://www.decc.gov.uk/en/content/cms/statistics/climate_stats/gg_emissions/laco2/laco2.aspx

37 Worcestershire Partnership (2013) State of the Environment Report: Air Quality

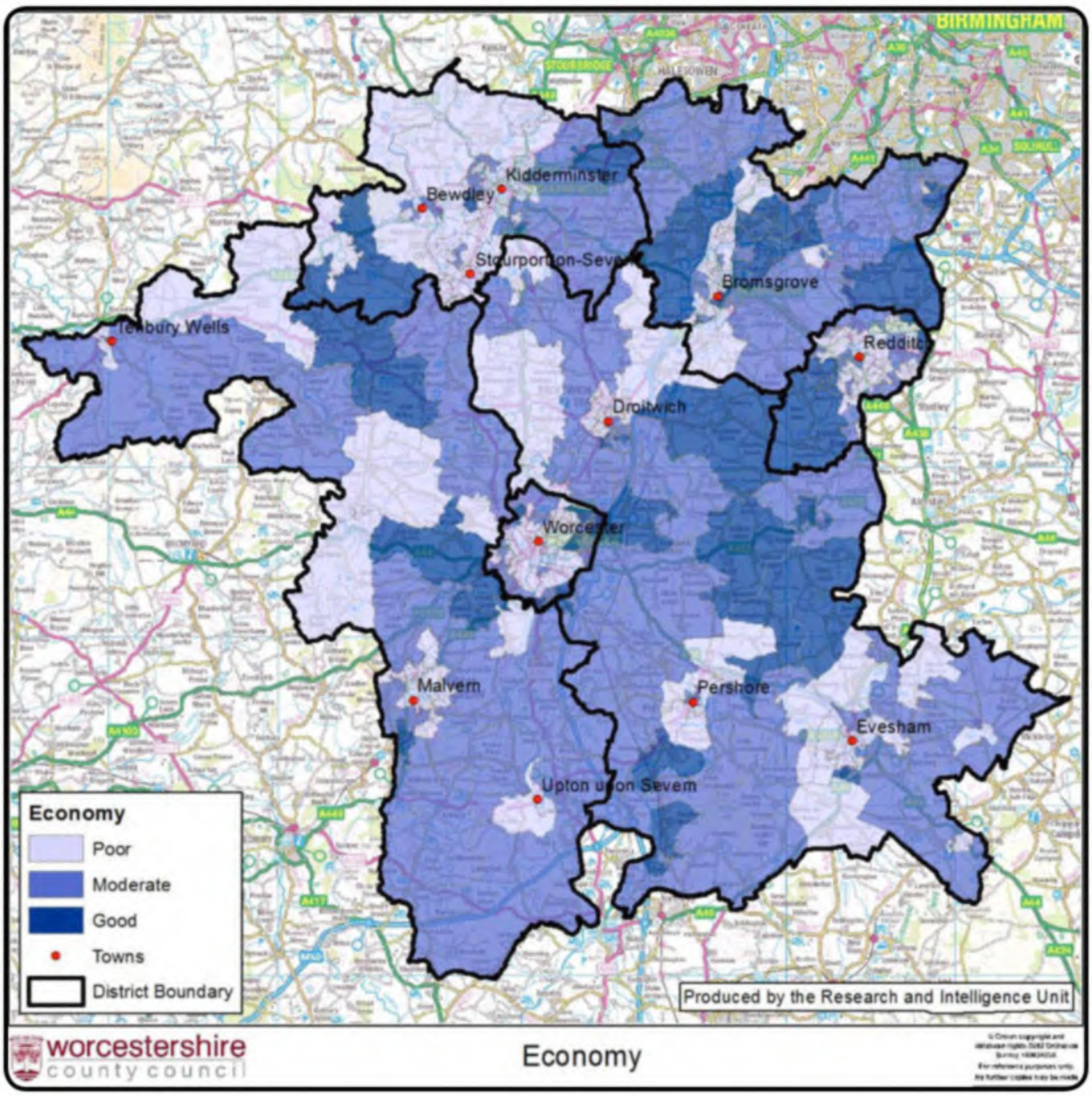
38 Office for National Statistics: Jobseeker Allowance (JSA) Data September 2012

39 Household income includes income from employment (earnings) as well as that from other sources, for example investments and savings. Source: CACI Ltd, 2010. Paycheck

40 Department for Communities and Local Government (March 2011) English Indices of Deprivation 2010 at Lower layer Super Output Area (LSOA) level

B.32 Rural fringes of the main urban settlements are generally performing well in terms of economic deprivation. The least deprived areas are those within picturesque countryside such as around the Abberley Hills, Bredon Hill, theedge of the Cotswolds and villages in the east of the county.

Figure B 4 - Economy



Social context for green infrastructure

Health

B.33 There is thought to be a link between green infrastructure and some aspects of health. The issues of obesity, respiratory conditions, mental health, heart disease and health deprivation have been considered in this context.

B.34 Health problems are a predominantly urban issue in Worcestershire. The rest of the county is performing well, however some pockets of poorer health can be found in the Vale of Evesham; the south-east of the county; the very north of Malvern district; a corridor between Droitwich, Bromsgrove and Redditch towns; and a Worcester-Pershore strip.

Obesity

B.35 26% (120,000) of Worcestershire's adult population is obese and another 40% is overweight. The adult obesity levels in Worcestershire are higher than the national average. The level of childhood obesity is around the national average, at 10% of five year olds and 18% of eleven year olds[41].

B.36 Geographically, obesity is an issue throughout the county. The least obese areas are the corridor to the West of Worcester; an area to the south of Malvern Hills; an area north from Bewdley and Kidderminster; the Worcester-Droitwich corridor; eastern villages; and areas in proximity to Bredon Hill.

Respiratory conditions

B.37 Between 2008 and 2010, there was an annual average of 743 deaths in Worcestershire with respiratory disease as the underlying cause. This represents 13.6% of deaths across the county, a slightly lower proportion than the England average of 13.8%. During the same time period in Worcestershire, there were an average of 1,800 deaths per year where respiratory disease was listed as either the underlying cause of death or as a contributory cause of death, a total of 32.8% of all deaths compared to 34.2% in England[42].

B.38 The spatial pattern for respiratory conditions is generally the same as the one for obesity problems in the county. The exceptions are parts of the Kidderminster and Bredon Hill corridor, which perform better against respiratory indicators.

Mental health

B.39 In Worcestershire one in eight (around 56,000) adults have some form of mental health issue. The most common disorder is mixed anxiety depression, followed by generalised anxiety disorder. Additionally, 10% of children have a clinically significant mental health problem[43].

B.40 In spatial terms, mental health problems are found in and around major settlements. There are also some pockets in the Vale of Evesham and in the eastern part of Bromsgrove District adjacent to Redditch.

Heart disease

B.41 Mortality rates from cardiovascular diseases are significantly lower than the national rate. The emergency admission rates in Worcestershire for heart failure are lower than both England and the West Midlands. In 2009/10 the emergency admission rate for heart failure was 199.7 persons per 100,000 (1635 admissions) in Worcestershire.[44]

B.42 Patterns of heart diseases are more dispersed than the other health indicators assessed, with poor performance across the county. Contrary to other health indicators, heart diseases are least prevalent in some of the urban areas. The rural area south of Evesham along the A46 also performs well against this indicator.

Health deprivation

B.43 Worcestershire has 13 LSOAs in the top 10% of areas for Health Deprivation, representing 3.6% of areas in the county, and 65 LSOAs (18%) in the top 30% of health deprivation.

B.44 Redditch is the district which is the most health-deprived in the county. 7 LSOAs in Redditch (12.7%) are in the top 10% deprived, with 27 LSOAs, almost half of all areas in Redditch, in the top 30% for health deprivation. Worcester City and Wyre Forest are also relatively heath deprived in comparison with the rest of the county, with each having around 20% of their LSOAs in the top 30% for health and disability deprivation[45].

41 Worcestershire Health and Well-being Board (2012) Joint Strategic Needs Assessment

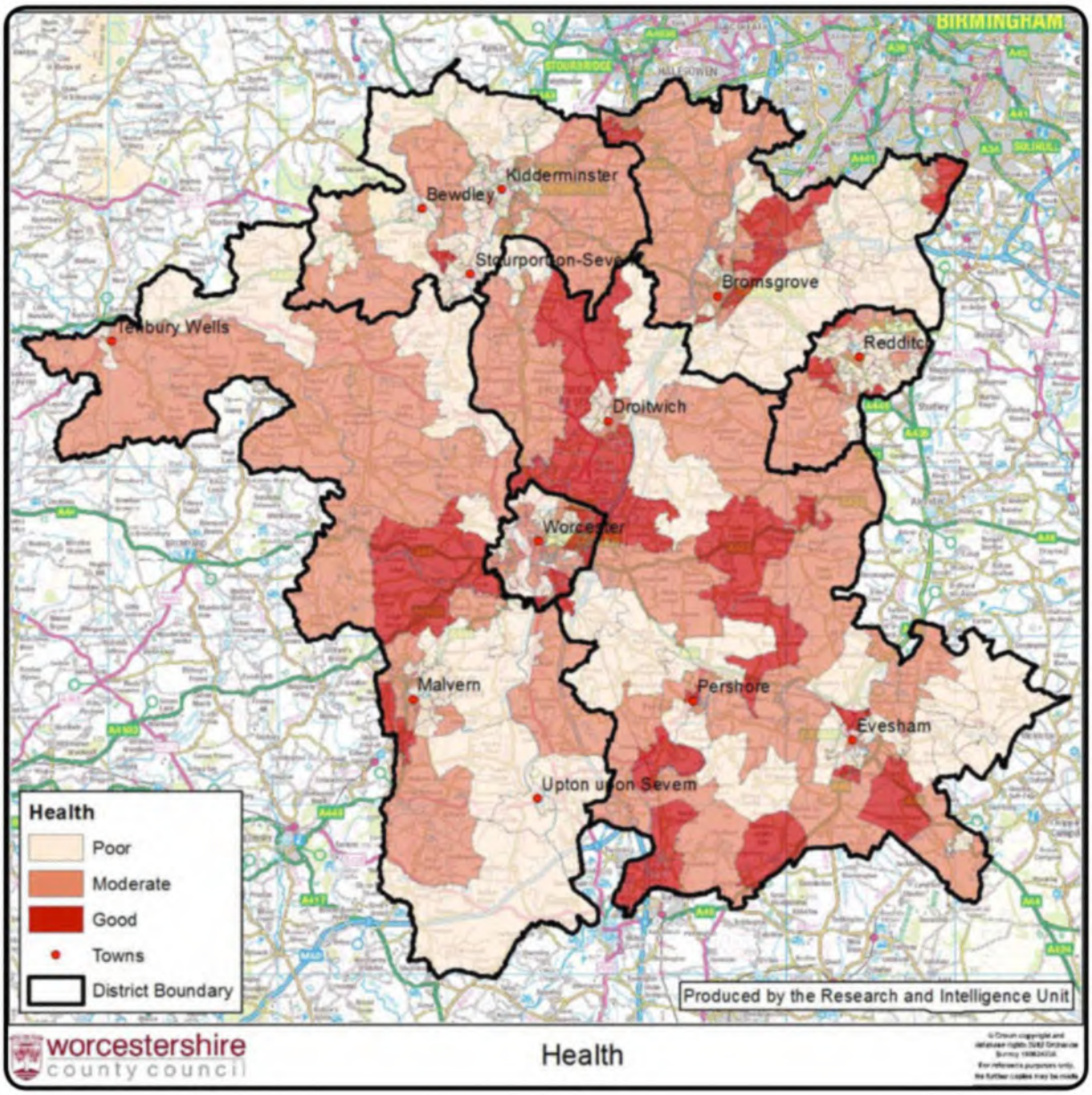
42 CACI and Kantar Health, Health ACORN data

43 As above

44 South East Public Health Observatory (SEPHO) http://www.sepho.org.uk/default.aspx

45 Department for Communities and Local Government (March 2011) English Indices of Deprivation 2010 at Lower Super Output Area (LSOA) level. This domain measures premature death and the impairment of quality of life by poor health. It considers both physical and mental health. The domain measures morbidity, disability and premature mortality but not aspects of behaviour or environment that may be predictive of future health deprivation.

Figure B 5 - Health



Informal recreation and accessibility

B.45 There are over 11,750 ha of strategic natural[46] green spaces in Worcestershire which are available for use by the general public for free-to-access recreation during daylight hours. This includes strategic recreational provision[47] which is supplemented by access to smaller natural green spaces at a neighbourhood or district scale, the public rights of way network, and sites which charge for access. This strategy will focus on recreational green spaces of county or sub-regional significance using the ANGST criteria.[48]

46 Natural greenspace is defined as places where human control and activity are not intensive and a feeling of naturalness is allowed to predominate. Natural and semi-natural greenspace exist as a distinct typology but also as discreet areas within the majority of other greenspace typologies (Natural England, 2011. Nature Nearby; Accessible Natural Greenspace Guidance).

47 Sites of over 100ha are classified as strategic or county level recreational sites (see Framework Document 3, Informal Access and Recreation).

48 ANGST is the Accessible Natural Greenspace Standard, developed by Natural England in the early 1990s to:

- Improve access to natural greenspace
- Improve naturalness of greenspace
- Improve connectivity of greenspace

B.46 Overall 55.2% of Worcestershire residents are within 5km of sites that are 100ha or larger (county-scale sites) and 31.8% are within 10km of sites that are 500ha or larger (sub-regional scale sites). This falls short of the Natural England Target of 100% for each of these categories.

B.47 The proportion of households within 5km of county-scale sites is higher in the north of the county due to a cluster of assets including the Wyre Forest, Lickey and Clent Hills, and other facilities in neighbouring counties. Access to county-scale sites is also good in Malvern Hills district.

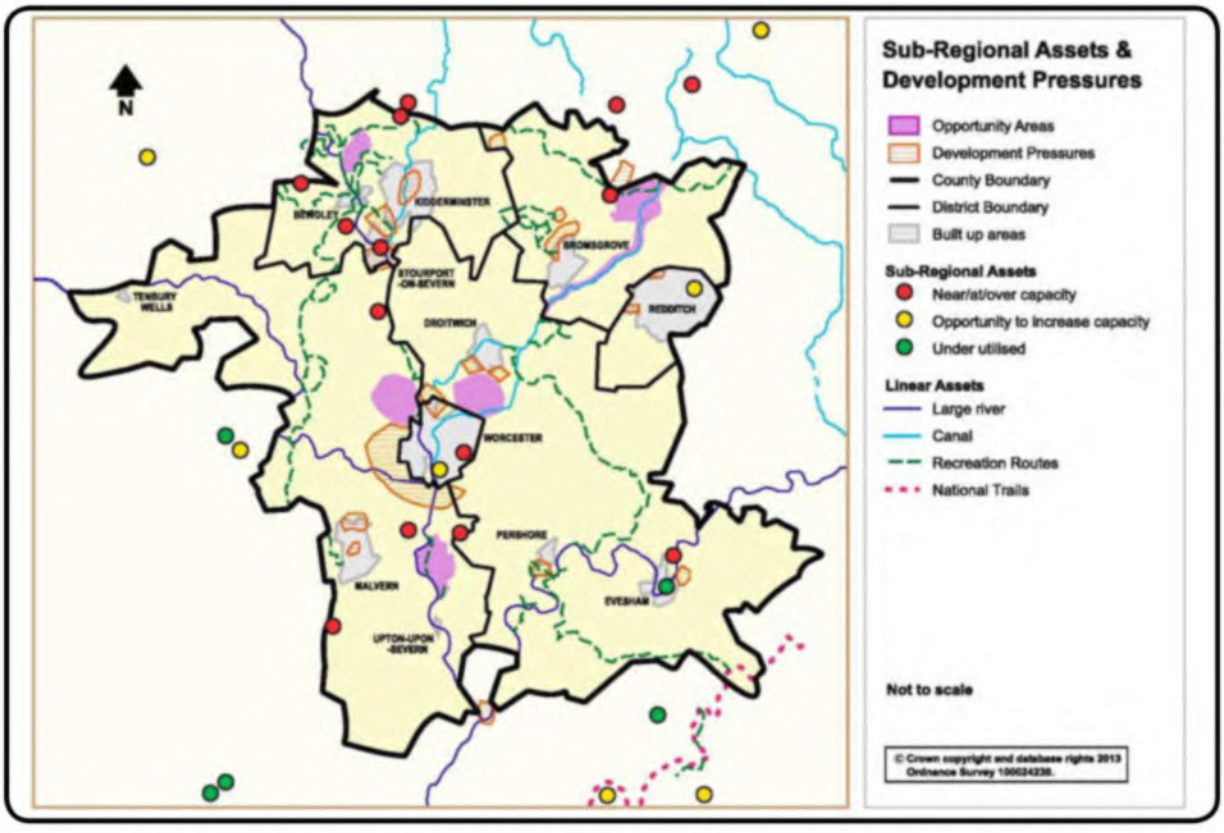
B.48 The proportion of households with access to sub-regional provision is also high in the Malvern Hills and Wyre Forest districts. Many of the county-scale recreational assets in these areas are, however, near to or over capacity and face significant visitor pressure from within the sub-region.

B.49 Wychavon is a rural district, but access to recreational assets is low and the network of rights of way is less dense than in the rest of the county. Access to county-scale and sub-regional assets is also poor in Worcester city, although access to neighbourhood-scale assets is good.

B.50 With future development pressures, all recreational assets within the county are expected to face increased development pressure. There is potential to change management practices to increase the capacity of some facilities such as Arrow Valley Country Park in Redditch borough and the Wyre Forest to absorb additional visitors. However there is little potential to increase the visitor capacity of other assets in the county such as the Malvern Hills. Given the limited opportunity which appears to be available to expand existing sites, it is likely that new informal recreation facilities will be required. Areas of search for new informal recreation sites are identified in Figure B 6 (below).

B.51 Public Rights of Way (PROW) are important recreational assets and can provide linkages between different GI assets. There are 3000 miles of PROW in the county, making it the third densest network in the country. Whilst the general provision of footpaths is good, other types of PROW such as bridleways or restricted byways are less prevalent when compared to the national average[49].

Figure B 6 - Sub-regional recreation assets



49 Worcestershire County Council (2007) Rights of Way Improvement Plan 2007-2017

B.52 Proximity and access to woodland is a key issue linking the environment with health and other social and economic issues that are addressed by green infrastructure provision. The Woodland Trust developed the Woodland Access Standard (WASt), a complementary policy tool for local authorities, which sets woodland accessibility standards.

B.53 It recommends that no person should live more than 500m from at least one area of accessible woodland of no less than 2ha in size and that there should also be at least one area of accessible woodland of no less than 20ha within 4km (8km round-trip) of people's homes[50].

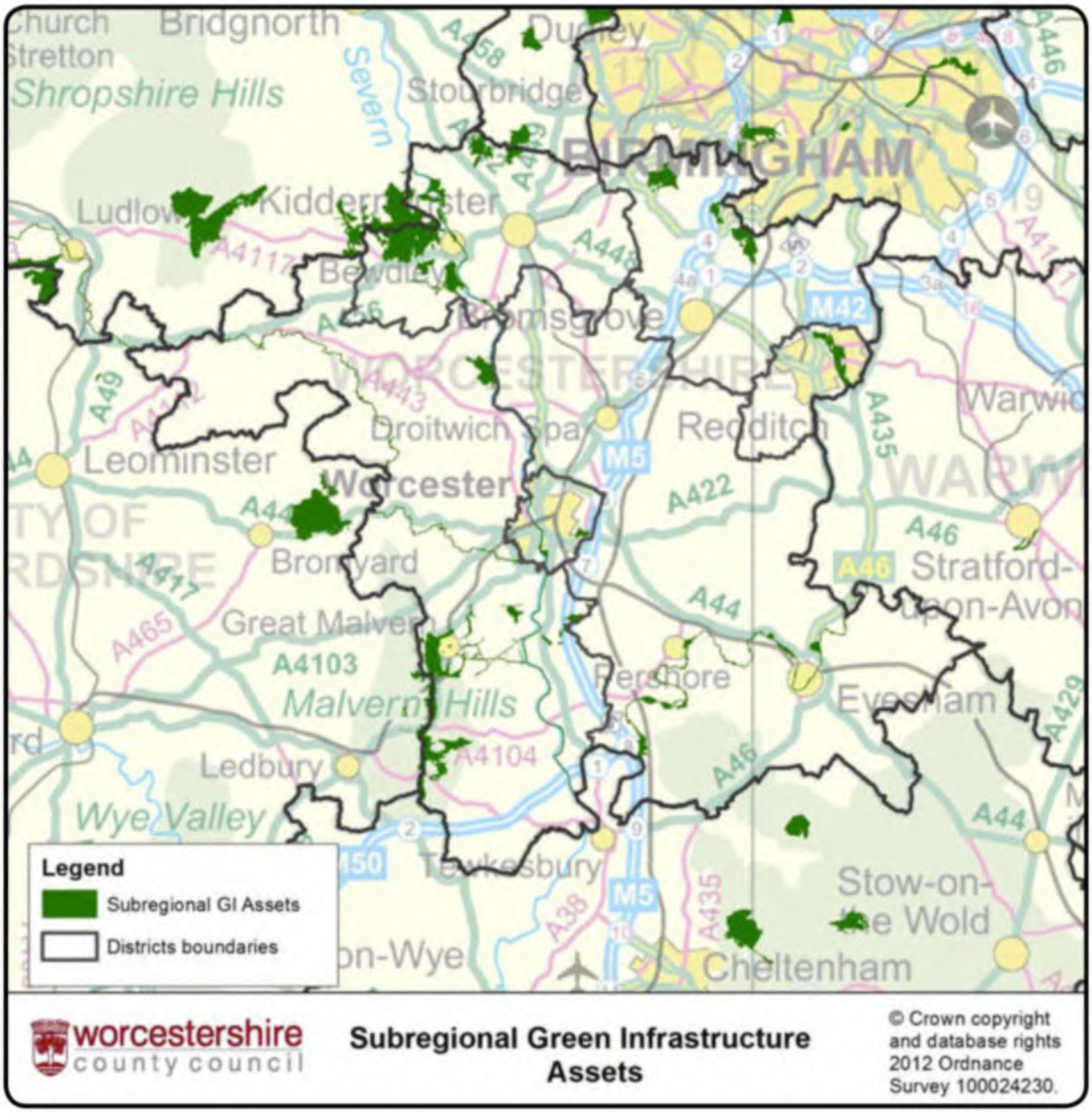
B.54 Applying this standard in Worcestershire shows a wide variation of accessibility to woodland, with particular deficits in Bromsgrove, Malvern and Wychavon.

50 Woodland Trust (2010) Space for People http://www.woodlandtrust.org.uk/en/about-us/publications/Pages/ours.aspx.

Appendix C. Strategic green infrastructure assets

C.1 Green Infrastructure can be considered at different spatial scales, from small local sites at a neighbourhood scale through to larger strategic sites which are considered on a county or sub-regional scale.

Figure C 1: Strategic green infrastructure assets in Worcestershire



C.2 Table C1: lists the strategic assets in Worcestershire.

Table C1: Strategic green infrastructure assets in Worcestershire

Site name	District
Wyre Forest (incl Earnwood, Maxfields, Eyemore Copses, Woodlands for People and Section 16 land)	Wyre Forest
The Malvern Hills (incl Malvern Common, North Hill, Sugar Loaf Hill and Worcestershire Beacon, Castlemorton Common, Coombe Green, Hollybed, Shadybank Commons)	Malvern Hills
River Avon	Wychavon
River Severn	Malvern Hills & Worcester City
River Teme	Malvern Hills
River Stour	Wyre Forest
Staffordshire and Worcestershire Canal	Wyre Forest
Worcester and Birmingham Canal	Bromsgrove & Worcester City
Droitwich Canals	Wychavon
Arrow Valley Country Park	Redditch
Lickey Hills	Bromsgrove
Clent Hills	Bromsgrove
Ribbesford Wood also known as Arley Wood	Wyre Forest
Shrawley Wood	Malvern Hills
Arley Birch and Coldridge Wood	Wyre Forest
Kempsey Common	Malvern Hills
Waseley Hills Country Park	Bromsgrove
Worcester Woods Country Park	Worcester City
Riverside Meadows (Stourport-on-Severn)	Wyre Forest
Bewdley Riverside Corridor	Wyre Forest

Appendix D. Green infrastructure profiles

Table D1 – Green infrastructure profiles

1. Teme Valley and Wyre Forest	
Strategic GI Approach	Protect and enhance environmental quality / invest in socio-economic enhancements.
Overarching principles – Environment	Enhance stream and river corridors. Protect ancient countryside character. Protect and enhance the ancient woodland habitats of the Wyre Forest. Enhance and expand acid grassland habitats.
Overarching principles – Socio-Economic	Enhance economic wealth and address health inequalities. Main economic issues: below average household income. Main health issues: respiratory, heart diseases and mental health.

2. Severn Valley North	
Strategic GI Approach	Protect and enhance environmental quality / invest in socio-economic enhancements.
Overarching principles – Environment	Restoration of the Severn floodplain.
Overarching principles – Socio-Economic	Enhance economic wealth and address health inequalities. Main economic issues: below average household income. Main health issues: heart diseases.

3. North Worcestershire Hills	
Strategic GI Approach	Protect and enhance environmental quality / support socio-economic enhancements.
Overarching principles – Environment	Maintain wooded character, linking and buffering existing sites.
Overarching principles – Socio-Economic	Primary focus on supporting overall health of residents with particular focus on prevention of heart diseases, obesity and respiratory conditions in the area adjacent to Redditch. Support employment creation across the area.

4. Forest of Feckenham and Feckenham Wetlands	
Strategic GI Approach	Protect and enhance environmental quality / maintain socio-economic status.
Overarching principles – Environment	Protect the traditional field patterns, boundaries and small woodlands. Enhance stream corridors.
Overarching principles – Socio-Economic	Maintain the current economic performance Some improvements and prevention of health issues around heart diseases, obesity and respiratory conditions.

5. Lenches Ridge	
Strategic GI Approach	Protect and enhance environmental quality / support socio-economic enhancements.
Overarching principles – Environment	Enhance the functionality and habitats of the Avon floodplain.
Overarching principles – Socio-Economic	Support both health and economic wealth. Aim to increase household income and decrease unemployment, and address health deprivation, concentrating on heart diseases, obesity and mental health.

6. Bredon	
Strategic GI Approach	Protect and enhance environmental quality / support socio-economic enhancements.
Overarching principles – Environment	Protect and enhance Bredon Hill National Nature Reserve and enhance links between areas of biodiversity interest through links and buffering.
Overarching principles – Socio-Economic	Primary focus on enhancements to support overall health of residents. Support for employment creation.

7. Severn Valley South	
Strategic GI Approach	Protect and enhance environmental quality / support socio-economic enhancements.
Overarching principles – Environment	Protect and enhance the Severn Valley floodplain and its functionality.
Overarching principles – Socio-Economic	Increase economic wealth and address health inequalities. Economic enhancements including employment creation, household income improvements and overall economic deprivation reduction in areas beyond the M5 corridor. Health improvements for heart diseases, respiratory diseases and obesity. Address overall health deprivation.

8. Bushley	
Strategic GI Approach	Protect and enhance environmental quality / support socio-economic enhancements.
Overarching principles – Environment	Maintain wooded character, linking and buffering existing sites.
Overarching principles – Socio-Economic	Primary focus on enhancements to support overall health of residents. Support improvements to household income.

9. Malvern Chase and Commons

Strategic GI Approach	Protect and enhance environmental quality / support socio-economic enhancements.
Overarching principles – Environment	Protect and enhance acid and neutral grassland habitats and wooded landscape of orchards, woodlands and scrub.
Overarching principles – Socio-Economic	Support the tackling of and prevention of obesity, respiratory and heart disease beyond the area between the A44 and A4103. Support improvements to household income.

10. Hagley Hinterland

Strategic GI Approach	Restore environmental quality / maintain socio-economic status.
Overarching principles – Environment	Maintain and restore habitat connectivity. Protect and restore acid grassland and wooded habitats.
Overarching principles – Socio-Economic	Maintain both health and economic wealth. The main economic issues are low household incomes for most of this area and unemployment and economic-related deprivation to the north of Kidderminster. The health issues include above-average obesity, heart and respiratory diseases.

11. Hollywood and Wythall

Strategic GI Approach	Restore environmental quality / support socio-economic enhancements.
Overarching principles – Environment	Protect and restore historic pattern of small enclosures.
Overarching principles – Socio-Economic	Primary focus on reduction in the incidence of health problems related to heart disease.

12. Bromsgrove-Redditch Corridor

Strategic GI Approach	Restore environmental quality / support socio-economic enhancements.
Overarching principles – Environment	Protect and restore the ancient countryside character.
Overarching principles – Socio-Economic	Primary focus on overall health-related improvements.

13. Mid Worcestershire Corridor	
Strategic GI Approach	Restore environmental quality / support socio-economic enhancements.
Overarching principles – Environment	Protect and restore neutral grasslands, orchards and semi-natural ancient woodland, wet woodland and stream corridors.
Overarching principles – Socio-Economic	Support enhancements to both health and economic wealth. Address health issues including heart diseases, obesity and respiratory problems. Low household income and unemployment issues are the major economic issue.

14. East Wychavon	
Strategic GI Approach	Restore environmental quality / maintain socio-economic status.
Overarching principles – Environment	Protect and restore hedges and field boundaries and hedge, ditch and watercourse trees.
Overarching principles – Socio-Economic	Primary focus on above-average incidence of health problems related to heart disease.

15. Bow Brook South	
Strategic GI Approach	Restore environmental quality / invest in socio-economic enhancements.
Overarching principles – Environment	Enhance the Bow Brook, its water quality and valley.
Overarching principles – Socio-Economic	Enhancements across both health and economic GI related issues.

16. Evesham Valley	
Strategic GI Approach	Restore environmental quality / invest in socio-economic enhancements.
Overarching principles – Environment	Protect and restore the River Avon corridor and functional floodplain habitats.
Overarching principles – Socio-Economic	Enhancements across both health and economic GI related issues.

17. Broadway and Cotswold Corridor	
Strategic GI Approach	Restore environmental quality / support socio-economic enhancements.
Overarching principles – Environment	Protect and restore the characteristic Cotswold landscape and its key features including neutral and calcareous grasslands and field boundaries.
Overarching principles – Socio-Economic	Primary focus on overall health related improvements. Support opportunities to address low household incomes.

18. Carrant Brook Corridor	
Strategic GI Approach	Restore environmental quality / maintain socio-economic status.
Overarching principles – Environment	Protect and enhance the Carrant Brook, its water quality and stream side habitats.
Overarching principles – Socio-Economic	Opportunities for enhancements to both health and economic wealth. Address health issues including heart diseases and respiratory problems. Low household income and unemployment issues are the major economic issues.

19. Longdon Hinterland	
Strategic GI Approach	Protect and enhance environmental quality / invest in socio-economic enhancements.
Overarching principles – Environment	Protect and restore the Longdon and Bushley Brook corridors.
Overarching principles – Socio-Economic	Enhancements across both health and economic GI related issues.

20. Kempsey Plain	
Strategic GI Approach	Restore environmental quality / invest in socio-economic enhancements.
Overarching principles – Environment	Protect and restore neutral grassland habitats and traditional field boundaries.
Overarching principles – Socio-Economic	Enhancements across both health and economic GI related issues.

21. River Teme Corridor	
Strategic GI Approach	Restore environmental quality / maintain socio-economic status.
Overarching principles – Environment	Protect and restore multi-functional river valley corridor and floodplain.
Overarching principles – Socio-Economic	Opportunities to reduce the incidence of health problems related to heart disease.

22. Severn Meadows Corridor	
Strategic GI Approach	Restore environmental quality / invest in socio-economic enhancements.
Overarching principles – Environment	Protect and enhance multi-functional Severn river corridor.
Overarching principles – Socio-Economic	Opportunities to reduce the incidence of health inequalities and increase household incomes.

23. Eardiston	
Strategic GI Approach	Restore environmental quality / support socio-economic enhancements.
Overarching principles – Environment	Protect and restore networks and connectivity to the wider Teme Valley landscape.
Overarching principles – Socio-Economic	Support enhancements to both health and economic wealth. Address health issues including heart diseases and respiratory problems. Low household income and unemployment issues are the major economic issues.

24. Bewdley Fringe	
Strategic GI Approach	Restore environmental quality / invest in socio-economic enhancements.
Overarching principles – Environment	Protect and enhance multi-functional Severn river corridor.
Overarching principles – Socio-Economic	Opportunities to reduce the incidence of health inequalities and increase household incomes.

25. Birchen Coppice	
Strategic GI Approach	Restore environmental quality / invest in socio-economic enhancements.
Overarching principles – Environment	Protect and restore networks and connectivity to the wider Teme Valley and Wyre Forest landscape.
Overarching principles – Socio-Economic	Opportunities to reduce the incidence of health inequalities and increase household incomes.

26. Birlingham	
Strategic GI Approach	Restore environmental quality / maintain socio-economic status.
Overarching principles – Environment	Protect and restore the River Avon corridor and functional floodplain habitats.
Overarching principles – Socio-Economic	Opportunities to reduce the incidence of health inequalities and increase household incomes.

27. Crowle	
Strategic GI Approach	Further investigation requires.
Overarching principles – Environment	Restore and create wet pasture and marshland.
Overarching principles – Socio-Economic	

28. Defford	
Strategic GI Approach	Further investigation required.
Overarching principles – Environment	Restore and create landscape links and connectivity to estate farmlands landscape.
Overarching principles – Socio-Economic	

29. Bickmarsh	
Strategic GI Approach	Further investigation required.
Overarching principles – Environment	Maintain traditional orchards, restore connectivity.
Overarching principles – Socio-Economic	

30. Long Marston	
Strategic GI Approach	Further investigation required.
Overarching principles – Environment	Maintain traditional orchards, restore connectivity.
Overarching principles – Socio-Economic	

Appendix E. Priorities and delivery

ECA	Quality of the Natural Environment	Socio-economic Status	Recreation and Access Need	GI Priority	Delivery Mechanisms	Overall Approach
1. Teme Valley & Wyre Forest	High	Medium/Low	Strategic area of search: Wyre Forest extension	• Enhance stream and river corridors • Protect ancient countryside character • Protect and enhance the ancient woodland habitats of the Wyre Forest • Enhance and expand acid grassland habitats • Provision of a strategic asset for access and recreation	• New development proposed in emerging Local Plan: • Economic: Malvern Technology Park • Local Transport Plan: Upton to Malvern cycle route • Agri-environment funding • England Woodland Grant Scheme	**Average:** Protect and enhance environmental quality / invest in socio-economic enhancements
2. Severn Valley North	High	Medium/Low	Neighbourhood/ local	• Restoration of the Severn floodplain	• Agri-environment funding • England Woodland Grant Scheme • New development proposed in emerging Local Plan • Housing at Gwilliams Farm site	**Average:** Protect and enhance environmental quality / invest in socio-economic enhancements
3. North Worcestershire Hills	High	Medium	Strategic area of search: Lickey Hills extension	• Maintain wooded character, linking and buffering existing sites • Provision of a strategic asset for access and recreation	• New development proposed in emerging Local Plan: • Redditch Eastern Gateway • Agri-environment funding • England Woodland Grant Scheme	**Good:** Protect and enhance environmental quality / support socio-economic enhancements

4. Forest of Feckenham & Feckenham Wetlands	High	Medium/High	Neighbourhood/ local	• Protect the traditional field patterns, boundaries and small woodlands. • Enhance stream/ordinary watercourse corridors.	• New development proposed in emerging Local Plan: • Housing: Webheath, Brockhill East, Foxlydiate, Brockhill • Agri-environment funding • England Woodland Grant Scheme	**Premium:** Protect and enhance environmental quality / maintain socio-economic status
5. Lenches Ridge	High	Medium	Neighbourhood/ local	• Enhance the functionality and habitats of the Avon floodplain.	• New development proposed in emerging Local Plan: • Housing: Cheltenham Road, Pershore Road • Agri-environment funding • England Woodland Grant Scheme	**Good:** Protect and enhance environmental quality / support socio-economic enhancements
6. Bredon	High	Medium	Neighbourhood/ local	• Protect and enhance Bredon Hill National Nature Reserve	• Agri-environment funding • England Woodland Grant Scheme	**Good:** Protect and enhance environmental quality / support socio-economic enhancements
7. Severn Valley South	High	Medium	Neighbourhood/ local	• Protect and enhance the Severn Valley floodplain and its functionality	• New development proposed in emerging Local Plan: • Housing: Worcester South, Station Road/Wyre Road • Agri-environment funding • England Woodland Grant Scheme • Emerging Minerals Local Plan	**Good:** Protect and enhance environmental quality / support socio-economic enhancements
8. Bushley	High	Medium	Neighbourhood/ local	• Protect and enhance the irregular field pattern, boundary hedges and orchard habitats	• Agri-environment funding • England Woodland Grant Scheme	**Good:** Protect and enhance environmental quality / support socio-economic enhancements

9. Malvern Chase and Commons	High	Medium	Neighbourhood/ local	• Protect and enhance acid and neutral grassland habitats and wooded landscape of orchards, woodlands and scrub.	• Agri-environment funding • England Woodland Grant Scheme	**Good:** Protect and enhance environmental quality / support socio-economic enhancements
10. Hagley Hinterland	Medium	Medium/High	Neighbourhood/ local	• Maintain and restore habitat connectivity. Protect and restore acid grassland and wooded habitats.	• New development proposed in emerging Local Plans: • Housing: Kidderminster and Stourbridge Road, Hagley • Agri-environment funding • England Woodland Grant Scheme	**Good:** Restore environmental quality / maintain socio-economic status
11. Hollywood & Wythall	Medium	Medium	Neighbourhood/ local	• Protect and restore historic pattern of small enclosures	• New development proposed in emerging Local Plan • Housing: Bleakhouse Farm, Wythall • Agri-environment funding • England Woodland Grant Scheme	**Average:** Restore environmental quality / support socio economic enhancements
12. Bromsgrove – Redditch Corridor	Medium	Medium	Neighbourhood/ local	• Protect and restore the ancient countryside character.	• New development proposed in emerging Local Plan: • Housing: Perryfields • Bromsgrove Brooks project • Agri-environment funding • England Woodland Grant Scheme	**Average:** Restore environmental quality / support socio economic enhancements
13. Mid-Worcestershire Corridor	Medium	Medium	Strategic area of search: Worcester-Droitwich corridor	• Protect and restore neutral grasslands, orchards and semi-natural ancient woodland, wet woodland and stream corridors. • Provision of strategic asset for access and recreation	• New development proposed in emerging Local Plan: • Housing: Copcut Lane • Land adjacent to wagon Works • Economic: Worcester Technology Park • Bromsgrove Brooks project • Agri-environment funding • England Woodland Grant Scheme	**Average:** Restore environmental quality / support socio economic enhancements

14. East Wychavon	Medium	High	Neighbourhood/ local	• Protect and restore hedges and field boundaries and hedge, ditch and watercourse trees.	• Agri-environment funding • England Woodland Grant Scheme	**Good:** Restore environmental quality / maintain socio-economic status
15. Bow Brook South	Medium	Low	Neighbourhood/ local	• Enhance the Bow Brook, its water quality and valley.	• Agri-environment funding • England Woodland Grant Scheme	**Average:** Restore environmental quality / invest in socio-economic enhancements
16. Evesham Valley	Medium	Medium/Low	Neighbourhood/ local	• Protect and restore the River Avon corridor and functional floodplain habitats.	• Agri-environment funding • England Woodland Grant Scheme	**Average:** Restore environmental quality / invest in socio-economic enhancements
17. Broadway & Cotswold Corridor	Medium	Medium	Neighbourhood/ local	• Protect and restore the characteristic Cotswold landscape and its key features including neutral and calcareous grasslands and field boundaries.	• Agri-environment funding • England Woodland Grant Scheme	**Average:** Restore environmental quality / support socio economic enhancements
18. Carrant Brook Corridor	Medium	Medium/High	Neighbourhood/ local	• Protect and enhance the Carrant Brook, its water quality and stream side habitats.	• Agri-environment funding • England Woodland Grant Scheme	**Good:** Restore environmental quality / maintain socio-economic status
19. Longdon Hinterland	Medium	Medium	Neighbourhood/ local	• Protect and restore the Longdon and Bushley Brook corridors	• New development proposed in Local Transport Plan: Upton to Malvern cycle route, Upton to Uckinghall cycle route, Tewskesbury to Upton cycle route • Agri-environment funding • England Woodland Grant Scheme	**Average:** Restore environmental quality / support socio economic enhancements

20. Kempsey Plain	Medium	Medium/Low	Strategic area of search: Clifton Water Park	• Protect and restore neutral grassland habitats and traditional field boundaries. • Provision of a strategic asset for access and recreation	• Agri-environment funding • England Woodland Grant Scheme • Emerging Minerals Local Plan	**Average:** Restore environmental quality / invest in socio-economic enhancements
21. River Teme Corridor	Medium	High	Neighbourhood/ local	• Protect and restore multi-functional river valley corridor and floodplain.	• Agri-environment funding • England Woodland Grant Scheme	**Good:** Restore environmental quality / maintain socio-economic status
22. Severn Meadows Corridor	Medium	Low	Neighbourhood/ local	• Protect and enhance multi-functional Severn river corridor.	• New development proposed in emerging Local Plan: • Housing: West Worcester • Agri-environment funding • England Woodland Grant Scheme • Emerging Minerals Local Plan	**Average:** Restore environmental quality / invest in socio-economic enhancements
23. Eardiston	Medium	Medium	Neighbourhood/ local	• Protect and restore networks and connectivity to the wider Teme Valley landscape.	• Agri-environment funding • England Woodland Grant Scheme	**Average:** Restore environmental quality / support socio-economic enhancements
24. Bewdley Fringe	Medium	Low	Neighbourhood/ local	• Protect and enhance multi-functional Severn River corridor.	• Agri-environment funding • England Woodland Grant Scheme	**Average:** Restore environmental quality / invest in socio-economic enhancements
25. Birchen Coppice	Medium	Low	Neighbourhood/ local	• Protect and restore networks and connectivity to the wider Teme Valley and Wyre Forest landscape.	• New development proposed in emerging Local Plan: • Economic: South Kidderminster Enterprise Park	**Average:** Restore environmental quality / invest in socio-economic enhancements

26. Birlingham	Medium	High	Neighbourhood/ local	• Protect and restore the River Avon corridor and functional floodplain habitats.	• Agri-environment funding • England Woodland Grant Scheme	**Good:** Restore environmental quality / maintain socio-economic status
27. Crowle	Low	High	Neighbourhood/ local	• Restore and create wet pasture and marshland	• Agri-environment funding • England Woodland Grant Scheme	Further investigation required
28. Defford	Low	Medium	Neighbourhood/ local	• Restore and create landscape links and connectivity to estate farmlands landscape	• Agri-environment funding • England Woodland Grant Scheme	Further investigation required
29. Bickmarsh	Low	Medium	Neighbourhood/ local	• Maintain traditional orchards, restore connectivity	• Agri-environment funding • England Woodland Grant Scheme	Further investigation required
30. Long Marston	Low	Medium	Neighbourhood/ local	• Maintain traditional orchards, restore connectivity	• Agri-environment funding • England Woodland Grant Scheme	Further investigation required
Bewdley	Unsurveyed	Insufficient detail	Insufficient detail	• Insufficient detail	• Small-scale new development proposed in Local Plan , housing and economic development	Further investigation required
Bromsgrove	Unsurveyed	Insufficient detail	Insufficient detail	• Insufficient detail	• New development proposed in emerging Local Plan, housing and economic development	Further investigation required
Droitwich	Unsurveyed	Insufficient detail	Insufficient detail	• Insufficient detail	• New development proposed in emerging Local Plan, housing and economic development	Further investigation required
Evesham	Unsurveyed	Insufficient detail	Insufficient detail	• Insufficient detail	• New development proposed in emerging Local Plan, housing and economic development	Further investigation required
Kidderminster	Unsurveyed	Insufficient detail	Insufficient detail	• Insufficient detail	• New development proposed in Local Plan, housing and economic development	Further investigation required

Malvern	Unsurveyed	Insufficient detail	Insufficient detail	• Insufficient detail	• New development proposed in emerging Local Plan, housing and economic development	Further investigation required
Pershore	Unsurveyed	Insufficient detail	Insufficient detail	• Insufficient detail	• New development proposed in emerging Local Plan, housing and economic development	Further investigation required
Redditch	Unsurveyed	Insufficient detail	Insufficient detail	• Insufficient detail	• New development proposed in emerging Local Plan, housing and economic development	Further investigation required
Stourport	Unsurveyed	Insufficient detail	Insufficient detail	• Insufficient detail	• New development proposed in Local Plan, housing and economic developmen	Further investigation required
Upton upon Severn	Unsurveyed	Insufficient detail	Insufficient detail	• Insufficient detail	• New development proposed in emerging Local Plan, housing and economic development	Further investigation required
Worcester	Unsurveyed	Insufficient detail	Insufficient detail	• Insufficient detail	• New development proposed in emerging Local Plan, housing and economic development	Further investigation required

Appendix F. Other relevant documents

Bromsgrove District and Redditch Borough Councils (2012) Water Cycle Strategy

Bromsgrove District and Redditch Borough Councils (2009) Strategic Flood Risk Assessment - Level 1

Bromsgrove District and Redditch Borough Councils (2012) Strategic Flood Risk Assessment - Level 2

Coventry, Solihull and Warwickshire (2013) Sub Regional Green Infrastructure Study Consultation Draft

Department for Environment, Food and Rural Affairs (2012) Emerging National SuDS Standards

European Union (2000) European Water Framework Directive

Environment Agency (2003) Severn Corridor Catchment Abstraction Management Strategy

Environment Agency (2005) Teme Catchment Abstraction Management Strategy

Environment Agency (2006) Warwickshire Avon Catchment Abstraction Management Strategy

Environment Agency (2006) Worcestershire Middle Severn Catchment Abstraction Management Strategy

Environment Agency (2008) Severn Catchment Flood Management Strategy

Environment Agency (2008) Severn Vale Catchment Abstraction Management Strategy

Environment Agency (2009) Severn River Basin Management Plan

Environment Agency (2011) National Flood Risk and Coastal Erosion Management Strategy

Herefordshire County Council (2010) Green Infrastructure Strategy

Parks and Countryside Task Group (2009) Worcestershire Access and Informal Recreation Strategy 2009-2019

Solihull Council (2012) Green Infrastructure Study

South Worcestershire Councils (2010) Water Cycle Study

South Worcestershire Councils (2012) South Worcestershire Strategic Flood Risk Assessment

South Worcestershire Councils (2013) Water Cycle Study – Final Addendum Report

TEP (2007) Green Infrastructure for the West Midlands Region: Technical Mapping Paper

West Midlands Regional Assembly (2007) West Midland Green Infrastructure Prospectus

Wetlands West (nd) Aims and Objective

Worcestershire County Council (2007) Rights of Way Improvement Plan 2007-2017

Worcestershire County Council (2011) Local Transport Plan 3

Worcestershire County Council (2012) Planning for Infrastructure in Worcestershire, Worcestershire Infrastructure Strategy: Consultation Draft

Worcestershire County Council (2012) Worcestershire Preliminary Flood Risk Assessment

Worcestershire County Council (2012) Worcestershire Landscape Character Assessment

Worcestershire County Council (2012) Worcestershire Partnership Climate Change Strategy Consultation Draft

Worcestershire County Council (2012) Waste Core Strategy Local Plan

Worcestershire County Council (2013) Draft Renewable Energy Strategy for Worcestershire

Worcestershire Health and Well-being Board (2012) Joint Health and Well-being Strategy

Worcestershire Local Enterprise Partnership (2012) Business Plan

Wyre Forest District Council (2008) Strategic Flood Risk Assessment Level One - Final Report

Wyre Forest District Council (2010) Water Cycle Strategy

Wyre Forest District Council (2010) Strategic Flood Risk Assessment Level Two

Appendix G. Glossary

Accessible Natural Greenspace Standard (ANGSt) - tool developed by Natural England based on the minimum distances people would travel to green spaces.

Agri-environment schemes - Environmental stewardship funding schemes designed to encourage farmers and land managers to manage their land for the benefit of wildlife and habitats. The scheme includes Entry Level and Higher Level Stewardship. This scheme is part of the wider Rural Development Programme for England (RDPE) funding programme.

Air Quality Management Areas (AQMAs) - areas declared by local authorities in which national air quality objectives are not likely to be achieved. AQMAs could be just one or two streets, or could be much bigger.

Blue infrastructure - otherwise known as water infrastructure, is a network of water assets such as rivers, pond and ditches. Blue infrastructure is concerned with use, quantity and quality of water and other water-related issues including flood risk.

Community Development Trusts (CDTs) - CDTs are independent, not for profit organisations which aim to respond to local needs and are intended to bring about lasting social, economic and environmental benefits to the local community. The overall aims of a CDT include the ownership, maintenance and effective management of GI and other facilities, encouraging healthy lifestyles and the use of sustainable transport by residents and businesses and encouragement of community cohesion.

Community Infrastructure Levy - a new levy that local authorities in England and Wales can choose to charge on new developments in their area. The levy is designed to be fairer, faster and more transparent than the system of agreeing planning obligations between local councils and developers under section 106 of the Town and Country Planning Act 1990 (although Section 106 agreements will remain, albeit in a more limited role).

Country Park - accredited natural green spaces which have been granted Country Park status by Natural England after demonstrating 15 essential criteria and 10 desirable criteria. Some of the essential criteria include: at least 10 ha in size, readily accessible to the population which they intend to serve, entry free of charge, must predominantly consist of natural or semi-natural landscape, buildings must account for less than 5% of the land, and they should provide opportunities for the local community to have an influence over the management and development of the site.

Ecological network - representation of the interactions in an ecosystem, in which species are connected. Ecological networks are used to describe and compare the structures of real ecosystems, while network models are used to investigate the effects of network structure on properties such as ecosystem stability.

Endowments - a transfer of money and/or property donated to an institution. The total value of an institution's investments is often referred to as the institution's endowment and is typically organised as a public charity, private foundation, or trust.

England Woodland Grant Scheme - payments for farmers to compensate for the agricultural income foregone as a result of planting and managing woodlands. This scheme is part of the wider Rural Development Programme for England (RDPE) funding programme.

Fluvial flooding - flooding which occurs in the floodplains of rivers when the capacity of water courses is exceeded as a result of rainfall or snow and ice melts within catchment areas further upstream.

Green economy - business activity which delivers economic growth whilst reducing environmental and ecological risks and contributing to human wellbeing. The term is usually used in relation to economic sectors such as renewable energy, sustainable transport, water and waste management.

Green Infrastructure Environmental Character Areas (ECAs) - 30 areas identified in Worcestershire, divided into three categories:

- Protect and enhance (greatest existing green infrastructure value)
- Protect and restore (medium existing green infrastructure value)
- Restore and create (lowest existing green infrastructure value)

The quality of these areas has been considered in terms of landscape character, biodiversity and historic environment, to arrive at score for each ECA.

Green roof - (also known as a living roof) is a roof on which vegetation is intentionally grown and/or habitats for wildlife are established. Green roofs provide different types of biodiversity habitats, water storage capacity, flood alleviation and energy saving potential.

Grey infrastructure - traditional infrastructure, e.g. roads, rail, sewers, pipes, etc.

Historic Environment Character Zones - strategic character areas derived from an integrated assessment of the historic environment. The assessment amalgamated data from the county Historic Environment Record (HER) with landscape character mapping to generate zones of distinctive character, which included an assessment of potential and sensitivity to change.

Historic Environment Characterisation - is the over-arching term for a suite of integrated or specific historic environment characterisation projects that include: Historic Environment Character Zones (HECZ), Historic Landscape Characterisation (HLC), Villages Historic Environment Resource Assessment (VHERA) and Historic Farmsteads Characterisation (HFC).

Hypothecated taxes - the dedication of the revenue from a specific tax for a particular expenditure purpose (also known as ring-fencing).

Informal recreation spaces - are flexible recreation spaces. They typically include a combination of flat open grassy areas, play spaces, picnic zones or benches.

Lead Local Flood Authority (LLFA) - Lead Local Flood Authorities (unitary authorities or county councils) are responsible for developing, maintaining and applying a strategy for local flood risk management in their areas and for maintaining a register of flood risk assets. They also have lead responsibility for managing the risk of flooding from surface water, groundwater and ordinary watercourses.

Local Enterprise Partnership (LEP) - voluntary partnerships between local authorities and businesses formed in 2011 by the Department for Business, Innovation and Skills. LEPs help determine local economic priorities and lead economic growth and job creation within their local areas. In Worcestershire there are two LEPs: the Worcestershire LEP covers all of the county, whilst the northern districts/boroughs of Wyre Forest, Bromsgrove and Redditch also sit within the Greater Birmingham and Solihull LEP.

Local Nature Partnership - Local Nature Partnerships (LNPs) are partnerships of a broad range of local organisations, businesses and people who aim to help bring about improvements in their local natural environment.

Local Plans - a plan prepared by a local planning authority which sets the rules for how the local area will develop over time. The Local Plan, along with any Neighbourhood Plans, forms the overall development plan for the local area. Planning decisions must normally be taken in accordance with the development plan.

Lower Super Output Areas (LSOA) - a sub-area of the Super Output Area, a geographical area to facilitate the calculation of the Indices of Deprivation. LSOAs typically contain 4 to 6 Output Areas, with a total population of around 1500.

Passive solar gain - use of the sun's energy for the heating and cooling of living spaces. In this approach, the building itself or some element of it takes advantage of natural energy characteristics in materials and air created by exposure to the sun.

Payment for Ecosystem Services (PES) - payments to land managers or owners to undertake actions that increase the levels of desired ecosystem services.

Pluvial flooding - surface water flooding caused by rainwater run-off from urban and rural land with low absorbency.

Public Rights of Way (PROW) - All rights of way are legally highways and anyone may use them at any time.There are different types, such as paths, byways and bridleways. The permanence of a ProW is guided by the principle "once a highway, always a highway", so it remains a highway until there is a legal event to close, divert or extinguish it as a PRoW. A PRoW can be established in one of three ways:

- express dedication - where the landowner has given the public a right of use over their land;
- presumed dedication - where the public have used a right of way for a longer time than anyone can remember; or
- deemed dedication - where a right of way has been in use for 20 years or more.

Rural Development Programme for England (RDPE) - a 7 year funding programme with a budget which aims to support rural areas in ways that recognise the connection between agriculture and the environment. The RDPE concentrates on the 4 'axes' or objectives of the European Rural Development Regulation. Those objectives are:

- improving the competitiveness of agriculture and forestry
- improving the environment and the countryside
- improving the quality of life in rural areas and encouraging the rural economy to diversify
- increasing capacity for employment and diversification.

Section 106 Agreements - Planning obligations under Section 106 of the Town and Country Planning Act 1990 (as amended), commonly known as s106 agreements, are mechanisms which make an otherwise unacceptable development proposal acceptable in planning terms. They are focused on site specific mitigation of the impact of development. S106 agreements are often referred to as 'developer contributions', along with highway contributions and the Community Infrastructure Levy.

SuDS Approval Body (SAB) - under the Flood and Water Management Act 2010 the SAB will be an organisation within County Councils and Unitary Authorities specifically established to deal with the design, approval and adoption of sustainable urban drainage systems (SuDS) within any new development consisting of two or more properties. This new role will commence once the relevant parts of the Act are enacted.

Super Output Areas (SOA) - are a set of geographical areas developed following the 2001 census, initially to facilitate the calculation of the Indices of Deprivation. They are an aggregation of adjacent Output Areas with similar social characteristics.

Supplementary Planning Documents (SPDs) - provide additional information on planning policies in a development plan.

Sustainable development - Sustainable development means encouraging economic growth while protecting the environment and improving people's quality of life - all without affecting the ability of future generations to do the same.

Sustainable Drainage Systems (SuDS) - a sequence of water management practices and facilities designed to drain surface water in a manner that will provide a more sustainable approach than the conventional practice of routing run-off through a pipe to a watercourse.

The National Lottery: Big Lottery - funds raised by the National Lottery and distributed to support projects which help communities and people in need. The Big Lottery provides grants to health and education projects, and to the environment and charitable sectors.

The National Lottery: Heritage Lottery Fund - using money raised through the National Lottery, the Heritage Lottery Fund (HLF) gives grants to sustain and transform our heritage. This includes museums, parks, historic places, archaeology, the natural environment and cultural traditions.

Water Storage Reservoirs - are reservoirs to store water at times of high flows to provide a secure resource for the following dry period.

Woodland Access Standard (WASt) - an assessment of the extent of permissively accessible woodland in the UK.

Please contact us if you need this document in another format, or if you have any questions.

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