

Green and Blue Infrastructure Strategy

Green and Blue Infrastructure Strategy

Herefordshire Council

Final Report

Prepared by LUC

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Green and Blue Infrastructure Strategy

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Chapter 1

Introduction

Green and Blue Infrastructure (GBI) forms an essential component of sustainable growth and is fast becoming recognised as a key feature in enabling both local and global communities to tackle environmental, societal and economic challenges.

1.1 LUC was commissioned in June 2022 to develop the Natural Environment Evidence for Herefordshire Council (herein referred to as the 'Council'), to support the delivery of the new Local Plan, providing a framework to guide sustainable development. The Herefordshire GBI Strategy (herein referred to as the 'Strategy') forms a component of this work and addresses the need for a unified approach to GBI across the county. The Local Plan covers the period 2021-2041 and will provide a key delivery mechanism for securing GBI enhancements across Herefordshire. The other workstreams forming part of the Natural Environment Evidence include the Herefordshire County Landscape Character Assessment, Herefordshire Open Space Assessment as well as data analysis and mapping of Habitat and Species. This Strategy plays a key role in tying together the findings and conclusions of these three other studies.

1.2 The Strategy will provide an update and refresh of the former Green Infrastructure (GI) Strategy [[See reference 1](#)] (herein referred to as the '2010 GI Strategy'). The overarching ambition is to guide and inform the investment and future delivery of GBI in the context of the county's future growth agenda. Through the delivery of an integrated approach to GBI across Herefordshire, it will enable a greater variety of **multifunctional** benefits to be achieved for a wider range of receptors. Furthermore, it will allow the Council to attain a strategic and holistic approach to the planning, design and management of GBI as part of a wider framework to guide sustainable development.

Structure of this report

1.3 The Strategy is structured as follows:

■ Chapter 1: Introduction

Outlines the structure of the Strategy and how it should be used by a range of audiences. The process of stakeholder consultation and the ‘themed’ approach are also described.

■ Chapter 2: Why is GBI Important to Herefordshire?

Provides an overview of GBI, its benefits, its context within Herefordshire and why an updated Strategy is required. The overarching vision for delivery of a county-scale GBI network is also outlined.

■ Chapter 3 - 5: GBI Themes

Explores the key strategic objectives, summary information to inform the development of GBI opportunities and key findings from stakeholder consultation. The three themes as listed below:

- Chapter 3: Place
- Chapter 4: Nature
- Chapter 5: People

■ Chapter 6: Holistic Analysis and Identification of Herefordshire’s Strategic Priority GBI Zones

Ties together the overarching critical analysis of Herefordshire’s GBI network and organises the county into 10 Strategic Priority GBI Zones.

■ Chapter 7: Delivery and Policy Recommendations

Identifies policy recommendations to shape the future planning, design, management and maintenance of greenspaces within Herefordshire.

- Appendix A: Methodology;
- Appendix B: Policy Context;
- Appendix C: Place – Baseline;

- Appendix D: Nature – Baseline;
- Appendix E: People – Baseline;
- Appendix F: Datasets used to inform data analysis;
- Appendix G: Developer Checklist;
- Appendix H: Glossary.

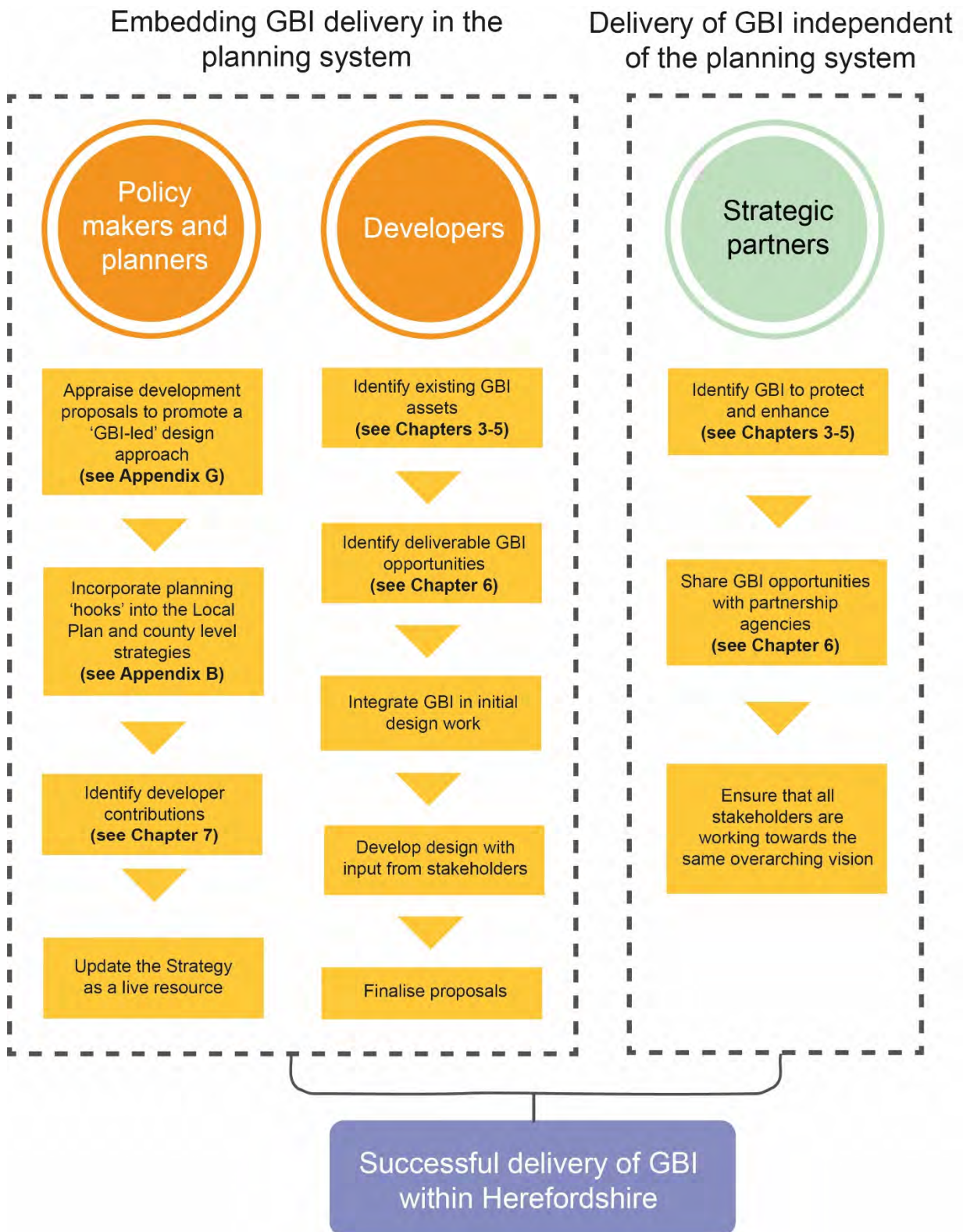
How to use this document

1.4 The Strategy provides a 'how-to' guide to help ensure that GBI is successfully delivered by the Council, developers and other interested parties. The Strategy has been undertaken in close cooperation with partners, with inputs gathered via virtual stakeholder workshops in September and November 2022. The workshops formed a key stage in the process for developing the Strategy and encouraged participants to provide feedback on the usability and effectiveness of the 2010 GI Strategy and how the document may be improved. These responses were used to inform the preparation of the emerging Strategy.

1.5 This document refers to the concept of 'GBI' rather than 'GI' to ensure consideration is provided to blue infrastructure as part of land use planning. However, reference to 'GI' during analysis of the Natural England GI Framework [See reference 2] should assume the inclusion of water elements.

1.6 Feedback from stakeholder consultation indicated that the delivery of GBI initiatives identified in the 2010 GI Strategy have been impacted by the lack of clarity on how to interpret the existing document in a planning context, by both planners and developers. Consequently, a user guide has been developed as part of this Strategy to demonstrate how the document should be used by various audiences and where it sits in the wider planning policy framework (see **Figure 1.1**).

Figure 1.1: How to use this Strategy - user guide



Consultation and engagement

1.7 Consultation was used to underpin the delivery of the Strategy, involving the provision of the following elements:

- Online residents' survey to provide insight into the public's use of spaces, nature, connectivity and community engagement;
- Stakeholder consultation via telephone calls, video conferences and emails;
- Two virtual stakeholder workshops.

Stakeholder workshops

1.8 Workshop invitations were extended to statutory bodies, stakeholders and local nature groups. All workshops were held on Microsoft Teams and supported by use of Miro, an online collaborative whiteboard. Details of the workshops are outlined below:

- Workshop 1 - structured around a series of exercises which focused on visioning, the identification of valuable features, key issues and existing initiatives.
- Workshop 2 – used to gain feedback on the draft overarching vision and strategic objectives, scoping of GBI opportunities and potential delivery mechanisms.

1.9 Key findings from the various strands of the consultation programme are considered within **Chapters 3-5**. An example of workshop outputs can be seen in **Figure 1.2**.

Figure 1.2: Example outputs from the stakeholder workshops



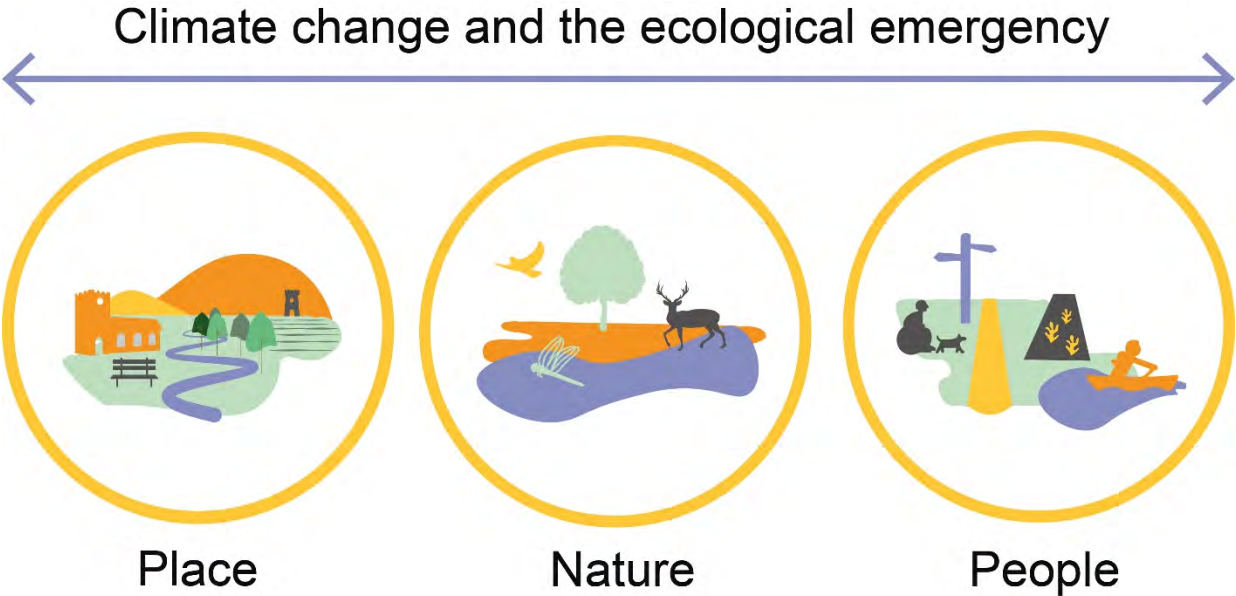
Public consultation

1.10 An online residents' survey was utilised to provide insight and gain an enhanced understanding of local needs, values and multi-functionality of Herefordshire's greenspace network. Hosted by the Council, the consultation was live for a period of five weeks in August / September 2022 and was divided into two sections. The first part of the survey asked respondents to answer site-specific questions relating to the performance of various open spaces via an interactive map. Views on the overall provision of open space were also gathered as part of the second part of the survey. This included factors such as accessibility, needs, facilities and maintenance.

Introduction to the 'themed' approach

1.11 In order to establish a comprehensive baseline, a 'themed' approach was adopted to explore the existing assets and considerations within Herefordshire. Three themes were selected and agreed with the Council to provide a holistic view of the GBI network. Climate change and the ecological emergency act as overarching themes, highlighting their importance as drivers of the Strategy. The three themes are indicated on **Figure 1.3** and summarised below:

Figure 1.3: The 'themed' approach



Place

Herefordshire’s distinctive local character, including the interaction of physical, cultural and perceptual influences, are outlined. This theme also examines the potential of GBI as a tool for the sensitive and sustainable incorporation of development into the county’s existing landscape fabric, providing resilient communities of the future.

Nature

Areas requiring protection, connection, creation and enhancement are identified, providing a framework for resilient networks of habitats and nature recovery within Herefordshire. The potential of Herefordshire's network of rivers, ditches, wetlands and open water in providing habitats and nature-based solutions to county-wide challenges are also examined.

People

GBI assets providing health and societal benefits, including wider connections to nature for both residents and visitors are considered. Furthermore, the distribution of easily accessible and high quality multi-functional open spaces is examined. The permeability of Herefordshire's landscape and potential for integration of sustainable travel to enhance access is also reviewed.

Chapter 2

Why is GBI Important to Herefordshire?

Defining GBI

2.1 Since the publication of the 2010 GI Strategy, the definition of GBI has evolved to incorporate wider environmental and societal assets and benefits. The concept has also become increasingly prevalent in national policy and the wider planning context, including with developers and transport authorities. In addition, GI has been promoted through the 2018 publication of the 25 Year Environment Plan [See reference 3]. The Landscape Institute, the chartered body for the landscape profession, has also urged that it has ‘never been more necessary to invest in GI.....the role of GI in addressing the challenges of the 21st century cannot be underestimated [See reference 4].

2.2 The term GBI is also now widely adopted and is used to describe the network of natural and semi-natural features as well as ‘blue’ assets such as rivers, ponds and lakes. GBI is not limited to traditional greenspaces such as parks and can involve various interventions to thread nature into streetscapes or to increase connectivity between assets at various landscape scales.

The National Planning Policy Framework (NPPF) 2021 [See reference 5] defines GI as: ‘A network of multi-functional green and blue spaces and other natural features, urban and rural, which is capable of delivering a wide range of environmental, economic, health and wellbeing benefits for nature, climate, local and wider communities and prosperity.’

2.3 GBI should function and connect as a living network at all scales. In recent years, increasing attention has been given to GBI as a central component of how the planning system can adapt to nature recovery challenges, the route to

net zero and climate change adaptation – as further described below and illustrated in **Figure 2.1**:

- Managed and natural greenspaces:
 - Public parks and gardens;
 - Formal and informal open space, including civic spaces, churchyards, amenity greenspace, play space, orchards, allotments, community gardens and sporting facilities;
 - Nature conservation sites.
- Linear linkages:
 - Public Rights of Way (PRoW), promoted routes and cycle infrastructure;
 - Disused railway lines;
 - River corridors.
- Elements of the built environment:
 - Road verges and street trees;
 - Private gardens;
 - Urban greening features, including green walls, roofs and Sustainable Drainage Systems (SuDS).
- Aspects of the wider landscape:
 - Farmland;
 - Floodplains, wetlands, forestry and woodland.

Figure 2.1: Components of GBI



Linear linkages
Public Rights of Way (PRoW), promoted routes, cycle infrastructure, disused railway lines and river corridors

Managed and natural green spaces
Parks, formal and informal open space, allotments and publicly accessible nature conservation sites

Elements of the built environment
Road verges, street trees, private gardens, amenity space, urban greening, bat / bird boxes

Aspects of the wider landscape
Farmland, wetlands, floodplains and wildlife habitat

The strategic GBI context in Herefordshire

2.4 The landscape character of Herefordshire is highly agricultural, with approximately 95% of Herefordshire's land classified as 'rural' [See reference 6]. The gently undulating fertile soils of Herefordshire's lowlands support an intensive mix of both arable and pastoral agriculture. Scattered across Herefordshire's rural landscape are traditional orchards, reflective of the county's fruit and cider production, as well occasional hop fields.

2.5 Herefordshire partially hosts two protected landscapes, the Malvern Hills Area of Outstanding Natural Beauty (AONB) within the east of the county and the Wye Valley AONB within the south. Brecon Beacons National Park lies adjacent to the south western border of the county, albeit outside the boundary of Herefordshire. The Shropshire Hills AONB is also located just north of Herefordshire in neighbouring Shropshire. The Malvern Hills forms a distinctive skyline in views eastward from some of Herefordshire's rolling lowlands. When upon the chain of hill summits, panoramic and distant views are afforded across the county. The Wye Valley AONB provides a more intimate landscape scale, with wooded valleys enclosing meandering riverbanks and hedgerow-lined fields.

2.6 Two major rivers, the River Wye and the River Lugg, dissect the county and create nationally and internationally significant ecological corridors. The River Wye originates within the Cambrian Mountains and enters Herefordshire at Hay-on-Wye. The snaking course of the river traverses west to south through the county and brings with it fertile floodplains and a rich mosaic of riparian habitats. The River Lugg, which rises in Radnorshire in Wales, also flows north to south through Herefordshire and merges with the River Wye just downstream of Hereford. The ecological value of these two river corridors is recognised through their designation under the River Wye Special Area of Conservation (SAC) and various Site of Special Scientific Interest (SSSI) designations.

2.7 Herefordshire hosts a number of other internationally significant ecological sites, including the Wye Valley Woodlands SAC, Downton Gorge SAC and River Clun SAC, as well as three National Nature Reserves (NNR), eight Local Nature Reserves (LNR) and over 80 SSSIs. However, this network of ecological sites is somewhat fragmented due to the extent of intensive agriculture land-use. A county-wide approach to nature recovery is therefore required to ensure these sites function to their full potential. The importance of working strategically in nature recovery includes benefits derived from working in partnership with local nature bodies, including Herefordshire Local Nature Partnership and the Climate and Nature Board.

2.8 Although approximately 95% of Herefordshire's land is classified as rural, only approximately half of the population resides in these rural areas. The other half of the population live in a number of settlements, including the market towns of Leominster, Ledbury, Ross-on-Wye, Kington and Bromyard, as well as the city of Hereford. It is therefore important to ensure GBI interventions, and their benefits, are successfully delivered across both Herefordshire's rural and urban contexts.

Benefits of GBI

2.9 GBI is defined by its multifunctionality, with a single asset having the ability to provide a number of benefits to people, wildlife and wider environmental functions. It is this variety of societal, environmental and economic benefits that play an important role in the delivery of sustainable growth and should be achieved in mutually supportive ways.

Planning Practice Guidance [**See reference 7**] states that: 'GI is a natural capital asset that provides multiple benefits, at a range of scales. For communities, these benefits can include enhanced wellbeing, outdoor recreation and access, enhanced biodiversity and landscapes, food and energy production, urban cooling, and the management of flood risk. These benefits are also known as ecosystem services.'

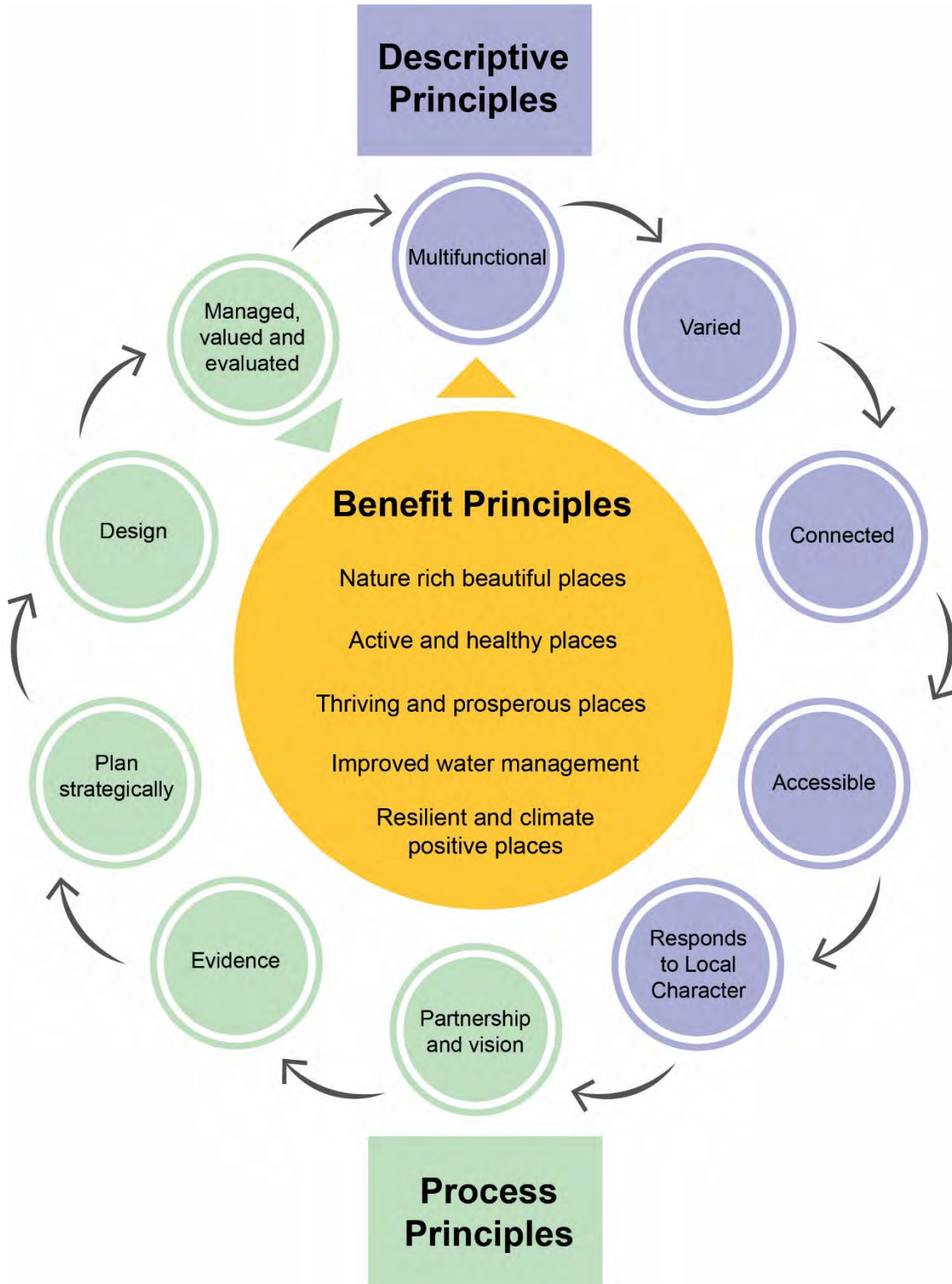
2.10 GBI provides a number of functions, of varying weight and importance. This is particularly relevant where differing purposes conflict with each other. For example, the delivery of biodiversity enhancements (favourable status of statutorily designated sites or species) at select locations should be balanced with the need for active transport or recreation.

2.11 To support the push for GBI on the planning agenda, Natural England has developed the GI Framework, a commitment made within the 25 Year Environment Plan. This framework, which includes GI Principles, GI Standards, GI Mapping, a GI Design Guide and GI Case Studies, will guide decision makers, policy makers and developers into delivering successful and good quality GBI.

2.12 The 'GI Principles Wheel' developed by Natural England (see **Figure 2.2**) outlines 15 principles to promote the successful delivery of GBI. These 15 principles are comprised of the following:

- Five 'Benefits of GI';
- Five 'Descriptive Principles';
- Five 'Process Principles'.

Figure 2.2: 'GI Principles Wheel', as developed by Natural England



2.13 The five 'Benefit Principles' summarise the role GBI can play in the creation of high quality attractive places, providing a setting for healthy, active day-to-day living. These are listed below and illustrated in **Figures 2.3 – 2.7**:

Nature rich beautiful places

- *GI supports nature to recover and thrive everywhere, in towns, cities and countryside, conserving and enhancing natural beauty, wildlife and habitats, geology and soils, and our cultural and personal connections with nature.*

Active and healthy places

- *Green neighbourhoods, green / blue spaces and green routes support active lifestyles, community cohesion and nature connections that benefit physical and mental health, wellbeing, and quality of life. GI also helps to mitigate health risks such as urban heat stress, noise pollution, flooding and poor air quality.*

Thriving and prosperous places

- *GI helps to create and support prosperous communities that benefit everyone and adds value by creating high quality environments which are attractive to businesses and investors, create green jobs, support retail and high streets, and to help support the local economy and regeneration.*

Improved water management

Chapter 2 Why is GBI Important to Herefordshire?

- *GI reduces flood risk, improves water quality and natural filtration, helps maintain the natural water cycle and sustainable drainage at local and catchment scales, reducing pressures on the water environment and infrastructure, bringing amenity, biodiversity, economic and other benefits.*

Resilient and climate positive places

- *GI makes places more resilient and adaptive to climate change and helps to meet zero carbon and air quality targets. GI itself should be designed to adapt to climate change to ensure long term resilience.*

2.14 These five 'Benefit Principles' will drive the identification of GBI interventions within the Strategy and play an important role in guiding and informing the investment and future delivery of GBI in Herefordshire.

Figure 2.3: Overview of benefits - *nature rich beautiful places*

Nature rich beautiful places



- 1 Trees and vegetation within a landscape offer a wide range of habitat benefits. For example, one mature oak tree can support over 280 different species of insect¹.
- 2 Studies in South Carolina showed that after 18 years, connected wildlife networks had, on average, 200 more species than fragmented areas².
- 3 Nature-rich habitats support a variety of ecosystem services. 20kg of nectar sugar per year can be provided by just 1 mile of pollinator-rich grass verge. There are over 313,000 miles of rural road verge in the UK³.
- 4 Urban areas host approximately 20% of avian biodiversity worldwide⁴.

¹ Garden Organic (no year) Trees for London.

² European Scientist 2019) Reconnecting Fragmented Habitats Could Help Restore Biodiversity.

³ Plantlife (2021) The Good Verge Guide.

⁴ TCPA (no date) PERFECT Fact Sheet 8: Green Infrastructure and Biodiversity.

Figure 2.4: Overview of benefits - *active and healthy places*

Active and healthy places



- ① Greenspace is increasingly recognised as an important asset for supporting health and wellbeing. In the UK, evidence indicates that living in a greener environment can promote good health, aid in recovery from illness and help to manage poor health¹.
- ② Street trees and vegetation can improve air quality – particulate levels can be reduced by up to 60% on tree lined streets compared to those without any canopy coverage².
- ③ Outdoor activities such as therapeutic gardening can improve mental health. 90% of people who participated in Mind’s green exercise activities commented that the combination of nature and exercise was important in determining mood³.
- ④ Access to good quality green space reduces the financial pressure on the NHS by £2.1 billion in the UK⁴.

¹ Public Health England (2020) Improving Access to Greenspace.
² GreenBlue Urban (no date) Benefits of Urban Trees.
³ Forest Research (2010) Benefits of Green Infrastructure.
⁴ Public Health England (2020) Improving Access to Greenspace.

Figure 2.5: Overview of benefits - *thriving and prosperous places*

Thriving and prosperous places

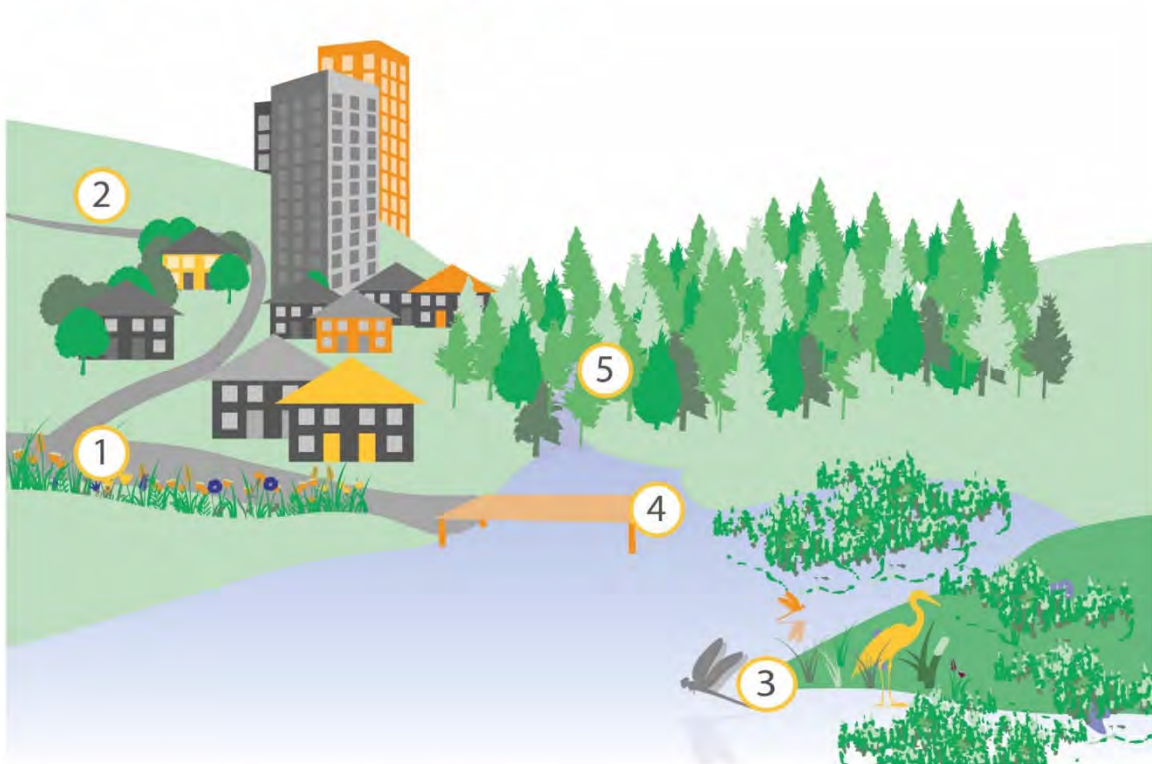


- 1 GBI can enhance the setting of places and make them more attractive for investment. Tree-lined streets have proven to increase house prices by as much as 15%¹.
- 2 Research found that apartment blocks surrounded by mature trees experienced 52% fewer reported crimes than those without greenery².
- 3 Numerous studies have shown that urban green areas support the inclusion of disadvantaged groups, including migrants and asylum seekers by enhancing social cohesion³.
- 4 Some studies have shown that incorporating GBI into public open spaces in city centres can improve commercial trading by 40%⁴.

¹ Treeconomics (2015). Results of the London i-tree Eco Project - Valuing London's Urban Forest.
² GreenBlue Urban (no date) Benefits of Urban Trees.
³ Heritage Fund (2021) Why Should we Invest in Parks? Evidence From the Parks for People Programme.
⁴ UK Green Building Council (2015) Demystifying Green Infrastructure.

Figure 2.6: Overview of benefits - *improved water management*

Improved water management



- 1 Approximately 1,000m³ of run-off can be retained by a rain garden of 0.5ha size¹.
- 2 A typical medium-sized deciduous tree can intercept over 10,000L of rainfall per year, helping to reduce surface water flooding².
- 3 Wetlands and water environments are vital for the survival of 100% of amphibians, 50% of birds and 30% of rare and endangered flora³.
- 4 Freshwater wetlands promote biodiversity, recreational benefits, improve aesthetic amenity and provide water quality improvements. These services have been valued at £1,300 per hectare per year⁴.
- 5 'Leaky dams' can reduce flow velocities and slow the peak of a flood by 15 minutes over 0.5km range⁵.

¹ TCPA (no year) PERFECT Factsheet 3: Green Infrastructure and Climate Change.

² Centre for Urban Forest Research (2002). Fact Sheet #4: Control Stormwater Runoff with Trees.

³ TCPA (no year) PERFECT Expert Paper 5: Green Infrastructure and Biodiversity.

⁴ Scottish Environmental Protection Agency (2016) Natural Flood Management Handbook.

⁵ Environment Agency (2018) Working with Natural Processes – Evidence Directory.

Figure 2.7: Overview of benefits - *resilient and climate positive places*

Resilient and climate positive places



- 1 Carbon sequestration of vegetation helps to mitigate the causes of climate change. It is estimated that one mature tree sequesters 22kg of CO₂ each year¹.
- 2 Urban greening interventions provide a notable cooling effect, for example a park is estimated to cool temperatures by 1.5 – 3.5°C².
- 3 In order to meet government climate targets, the use of private vehicles will need to reduce by between 20 and 60%. GBI can be used to promote active travel and reduce the reliance on cars³.
- 4 GBI offers insulating effects which reduce the need for heating and air conditioning. It is estimated that the sheltering effect of trees could save 3-9% of energy bills in the UK⁴.
- 5 Conversion of arable land to grassland can sequester between 4 and 12 tonnes of CO₂⁵. Grazed grassland sequesters more carbon than mown grassland⁶, although this has to be balanced against potential greenhouse gas emissions from livestock.

¹ Garden Organic (no year) Trees for London.

² Natural England (2020) A Rapid Scoping Review of Health and Wellbeing Evidence for the Framework of Green Infrastructure Standards.

³ Sustrans (2020) A Green and Just Recovery: Healthier Places and Better Transport.

⁴ TCPA (no year) PERFECT Factsheet 3: Green Infrastructure and Climate Change.

⁵ TCPA (no year) PERFECT Factsheet 3: Green Infrastructure and Climate Change.

⁶ Natural England (2021) Carbon storage and sequestration by habitat: a review of the evidence (second edition)

The vision for GBI in Herefordshire

The overarching vision

Deliver a multifunctional and connected green and blue network to guide sustainable growth and support Herefordshire's wildlife and communities for the benefit of people, place and nature for present and future generations.

2.15 The Strategy is guided by an overarching vision, developed in close collaboration with the Council and in response to feedback from stakeholder consultation. The vision has also been developed to ensure alignment with the three-fold underpinning ambitions (Environment, Community and Economy) of the Herefordshire County Plan (2020-2024). Specific aims of this document which are of relevance to the Strategy are listed below:

- *Protect and enhance the county's biodiversity, value nature and uphold environmental standards;*
- *Protect and promote our heritage, culture and natural beauty to enhance quality of life and support tourism;*
- *Improve and extend active travel options throughout the county;*
- *Invest in low carbon projects;*
- *Identify climate change action in all aspects of council operation;*
- *Seek strong stewardship of the county's natural resources.*

2.16 One of the exercises at the stakeholder workshop in September 2022 focussed on the development of the overarching vision for GBI within the

county. Participants at the workshop were asked to summarise their aspirations for GBI within Herefordshire. Analysis of the responses highlighted the following key principles to inform the development of the overarching vision and strategic objectives:

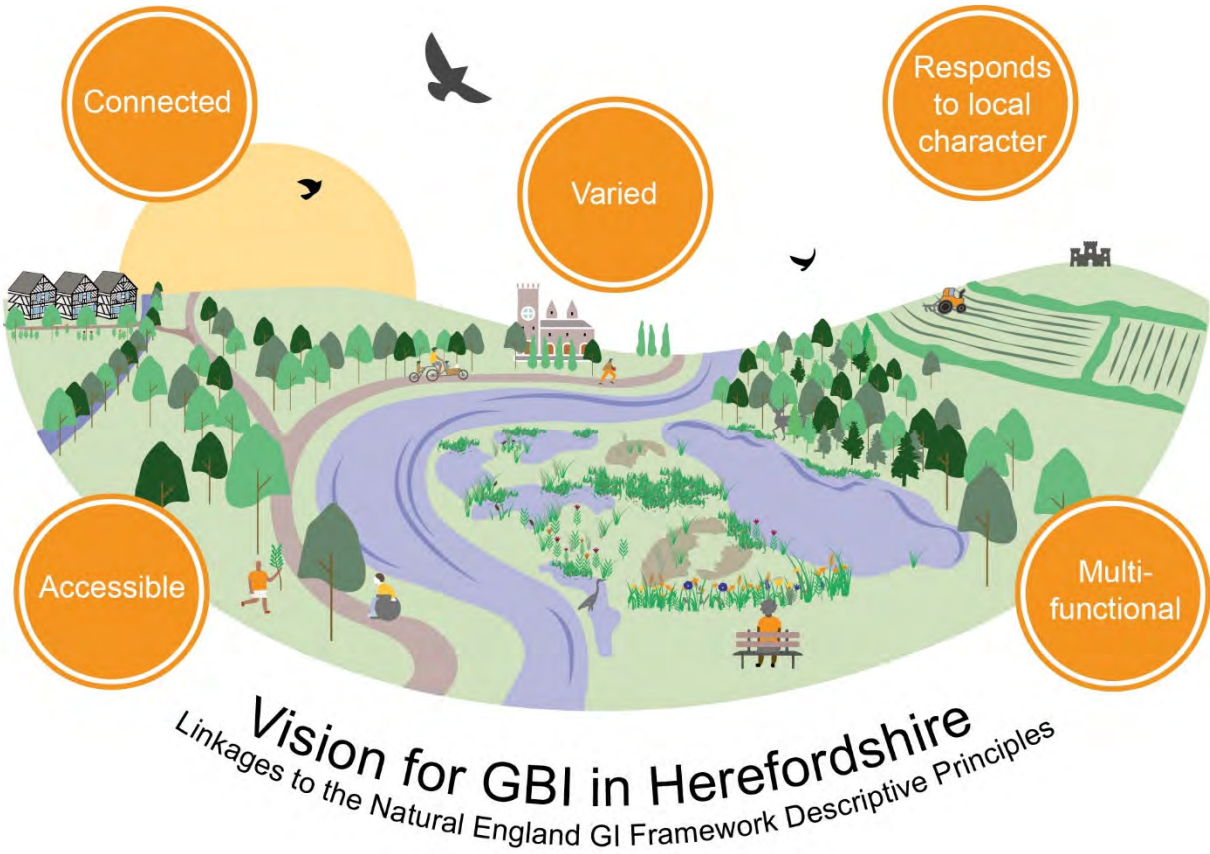
- Requirement for a concise ambitious statement which is specific to Herefordshire and reflective of a county-wide approach;
- Emphasis on the need for strategic objectives linked to the ‘thematic’ approach to support the delivery of the overarching vision;
- Importance of ensuring that the overarching vision and strategic objectives reflect the full range of potential users of the Strategy within the county;
- Need for the vision within the 2010 GI Strategy to be updated to emphasise the importance of blue infrastructure;
- Increased emphasis needed on the principles of climate mitigation and adaptation; and
- Requirement to enhance the user friendly features of the Strategy, including its appearance and usability to promote its use by a wide range of audiences.

2.17 The draft overarching vision and strategic objectives were then consulted on as part of the second stakeholder workshop in November 2022 to inform the final iteration and set the roadmap for the delivery of GBI across the county.

Overarching vision and strategic objectives

2.18 The overarching vision is supported by a series of 15 strategic objectives (see **Chapter 3-5**). These have been informed by the thematic analysis as well as the five ‘Descriptive Principles of GI’ (as defined by Natural England to underpin the GI Framework) and support the overarching vision for GBI within Herefordshire. Informed by feedback within the stakeholder workshops, each strategic objective is linked to the Strategy’s ‘themed’ approach which provides a useful framework to understand and plan for GBI within the county. The strategic objectives will aim to help deliver enhancements to the GBI network and form the basis for monitoring its success.

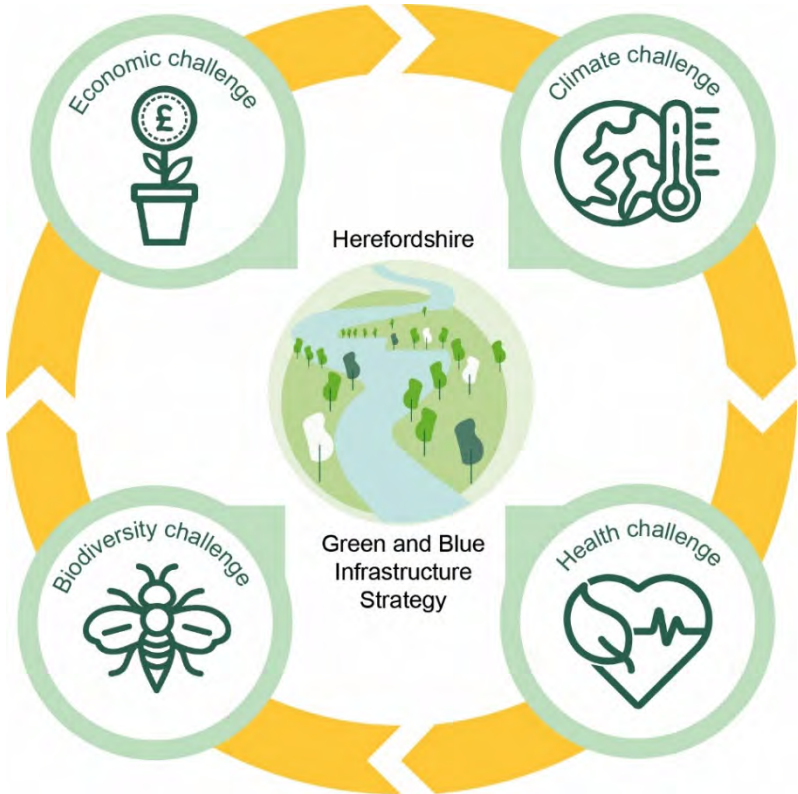
Figure 2.8: Overarching vision for GBI in Herefordshire and linkages to the Natural England GI Framework – Descriptive Principles



Addressing global issues at a local scale within Herefordshire

2.19 The updated Strategy is being developed against the backdrop of global challenges, that form the ‘backbone’ of key drivers for GBI opportunities. The role of the Strategy is to acknowledge these significant challenges and address them at a local scale, transforming the issues into opportunities for positive change. The 2021 Environment Act responds to the ‘triple challenge’ of the biodiversity crisis, the climate crisis and the health crisis. By introducing legally binding targets, the Act will enforce environmental enhancements across the country. This Strategy also references the ‘economic challenge’ and explores the opportunity for a green recovery, responding to the economic and societal impacts of COVID-19 (see **Figure 2.9**).

Figure 2.9: Key global challenges



2.20 The following section identifies the key drivers and ‘needs’ for GBI within Herefordshire, updated to reflect the post-2010 context. Positively addressing these challenges alongside the pressures of future housing growth will help to strengthen the GBI network across the county and its ability to accommodate future change.

Climate challenge

2.21 In March 2019, the Council established a Task and Finish Group and declared a ‘climate emergency’. The aim of this response was to contribute to the delivery of the Council’s new climate change commitments and net-zero carbon targets by 2030. These goals are due to be delivered through a series of actions and initiatives, many of which relate directly to the GBI network. For instance, the Carbon Management Action Plan [\[See reference 8\]](#) has set an ambitious interim target for a 75% reduction in carbon from the baseline level in 2008/09 by 2025/26. The ‘climate emergency’ declaration was strengthened to a ‘climate and ecological emergency’ in December 2019, in recognition of the Council’s commitment to protecting the county’s environment, biodiversity and wildlife [\[See reference 9\]](#).

2.22 The GBI network provides the opportunity to mitigate and adapt to climate change. However, consideration is required to understand the impacts on the network which are set to amplify due to climate change, such as the increased frequency and magnitude of extreme weather. Links to climate change are referred to throughout, but the key emphasis in the Strategy relates to:

- Role of woodland and trees in sequestering carbon, improving air quality, alleviating flooding and providing shade;
- Ensuring habitats (and associated wildlife) are resilient to the impacts of climate change, and restoring habitats to help adapt (e.g. hedgerow and wetland restoration);
- Large extent of agricultural land which can be used in ways to mitigate and adapt to climate change, but also may be impacted by drought and flooding;

- Enhancing the water environment – water quantity and quality, as well as mitigating flood and drought risk, and the associated impacts on agriculture;
- Urban greening to help settlements store carbon and adapt (e.g. providing shade and SuDS to reduce surface water flooding); and
- Reducing transport emissions by encouraging sustainable active travel.

Climate Change - Opportunity for GBI in Herefordshire?

The effective delivery of GBI will aim to provide a positive response to the 'climate and ecological emergency'. The GBI network will play a vital role in climate change mitigation and adaptation through contributions such as surface water and flood management, storage of greenhouse gases, improvements to air quality and provision of habitats for wildlife. GBI can also help mitigate against other predicted effects of climate change by sequestering carbon, promoting greenways for active travel and helping to target reductions to the urban heat island effect.

Biodiversity challenge

2.23 Globally, nature is facing an unprecedented decline: natural ecosystems have declined by 47%, over 1 million species are now threatened with extinction and the global biomass of wild mammals has declined by 82% since pre-history [See reference 10]. Similar impacts have been felt in Herefordshire, with intensive agriculture and development in particular leading to habitat loss and fragmentation. In addition, infrastructure can act as a barrier to the movement of wildlife. However, the opportunity exists to address these issues within the Strategy through the identification of opportunities for habitat protection, connection, enhancement and creation at the local and county scale. The network will need to accommodate future population growth, balancing the need

for protection of habitats and species most sensitive to disturbance and therein, promote the delivery of locally appropriate BNG.

2.24 Herefordshire has a rich ecological network. However, local habitat conservation can also occur outside the boundaries of designated (legally protected) sites. Delivering nature recovery is therefore underpinned by the need for natural spaces to become bigger, better and more joined up. The twin crises of climate change and biodiversity loss are also inextricably linked – species struggle to adapt to changing global temperatures and the destruction of ecosystems undermines nature's ability to regulate carbon emissions. Without a good quality network of GBI, we undermine nature's ability to be productive, resilient and adapt to a changing climate.

Biodiversity Challenge - Opportunity for GBI in Herefordshire?

To protect, enhance and expand the ecological resource during the timescales of the Local Plan, it will be necessary to ensure existing habitats are resilient to the effects of climate change and form a coherent nature network. Provision of GBI in Herefordshire should be informed by the need for natural spaces to become bigger, better and more joined up. It must also recognise variation in local character (including biodiversity imperatives and duties) and broaden the complexity and reach of biodiversity through the urban areas of the county.

Health challenge

2.25 Moving into a post-pandemic world, it is important to remember the significant effect access to greenspace has on our health and wellbeing. Evidence recognises the role of greenspaces and active travel networks – both key components of a successful GBI network – in tackling health challenges. Public Health England (PHE) highlights that people who have greater exposure to greenspace have a range of more favourable physiological outcomes,

however competing demands for space is putting pressure on these resources [See reference 11]. The Strategy can therefore help to enable healthy lifestyles both within urban and rural areas, through the implementation of active travel corridors and improvements to air quality. The benefits of GBI on people's mental wellbeing should also not be overlooked, with possibilities to use GBI as an asset for social prescribing within the county.

Health Challenge - Opportunity for GBI in Herefordshire?

The potential benefits of GBI are far reaching, including the development of priorities in relation to the health and wellbeing of Herefordshire's residents. The expansion and improvement of GBI interventions offer the potential to support the delivery of both physical and mental health benefits within the county.

Economic challenge

2.26 The opportunity for a green recovery from the economic and societal impacts of COVID-19 should be examined within the Strategy. The network's role in creating attractive places to live, work and invest should also be explored, particularly within areas of growth and development for both residential and employment spaces. GBI also offers a number of economic benefits. At 50 years, the total cumulative benefits provided by both open grown and street trees are estimated, at £1,223 and £1,060 respectively [See reference 12].

2.27 Increased housing demand across the county will place pressure on the existing GBI network and will require a strategic approach to landscape planning to ensure new GBI is successfully delivered as part of new development. For this growth to be sustainable, GBI must be considered alongside other forms of infrastructure and built development. Planned housing and economic growth will therefore require mitigation through provision of new

strategic GBI and enhancements to retain the quality of existing provision and avoid exacerbating current deficiencies.

Economic Challenge - Opportunity for GBI in Herefordshire?

Through the provision of ecosystem services, GBI can help alleviate many of the challenges faced by a growing population. Responding to issues such as unprecedented urban growth, affords the opportunity to successfully integrate GBI to provide future resilience. Well-planned GBI can also help to create cohesive neighbourhoods, which is a fundamental requirement to accompany the county's projected housing growth.