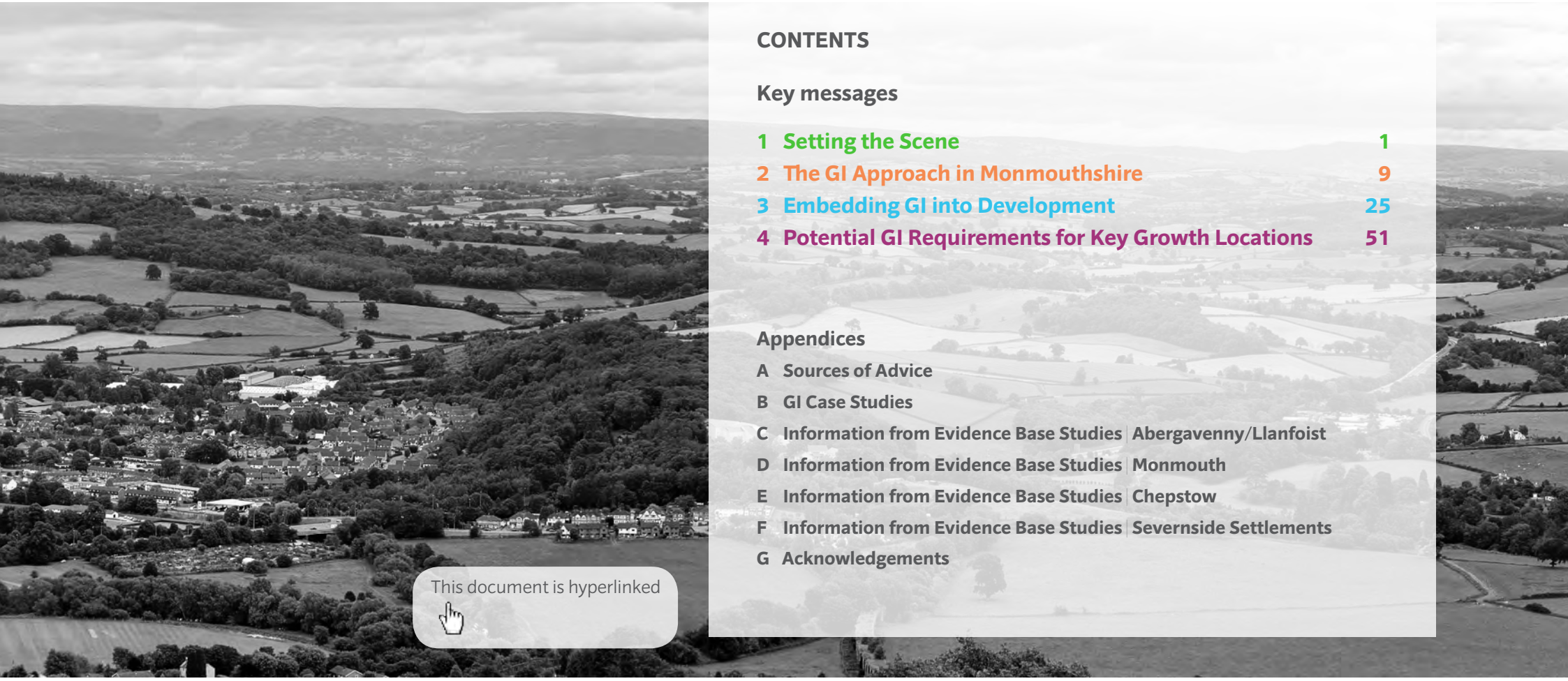
monmouthshire
sir fynwy

GREEN INFRASTRUCTURE

Supplementary Planning Guidance

Adopted April 2015

Monmouth



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Key Messages

- This Supplementary Planning Guidance supports the interpretation and implementation of green infrastructure policies S13 and GI1 of the Monmouthshire adopted Local Development Plan.

- Green infrastructure is the network of natural and semi-natural features, green spaces, rivers and lakes that intersperse and connect villages, towns and cities. When appropriately planned, designed and managed, green infrastructure has the potential to deliver a wide range of benefits for people and wildlife.

- The guidance is a material consideration in relation to planning applications and planning appeals. It helps guide the Council and applicants through initial pre-application discussions, the application process and the consideration of reserved matters and planning conditions relating to green infrastructure.

- Using a simple three-step approach as set out on page 25, the guidance outlines the Council's expectations for how on and off-site green infrastructure should be considered and embedded within development proposals.

- The Supplementary Planning Guidance provides practical design and planning checklists, supplemented by good practice case studies and signposts to further information and guidance.

- Potential green infrastructure requirements for the key growth locations in the Monmouthshire Local Development Plan (Abergavenny, Monmouth, Chepstow and the Severnside Settlements) are also identified.

Green Infrastructure Vision for Monmouthshire

Monmouthshire has a well-connected multifunctional green infrastructure network comprising high quality green spaces and links that offer many benefits for people and wildlife.

The network's integrity and connectivity is maintained, protected and enhanced in a planned and managed way, which recognises the interdependency and multifunctionality of landscape, heritage and biodiversity elements.

Investment in green infrastructure underpins the County's ongoing economic, social and environmental success by supporting sustainable growth, improving quality of life and place, delivering ecosystem services and tackling climate change.

Monmouthshire is a green and healthy place to live, with an increasingly coherent and resilient ecological network of wildlife habitats, helping conserve biodiversity.

1

Setting the Scene

Abergavenny

1.1 Introduction

The purpose of this Supplementary Planning Guidance (SPG) is to provide practical guidance to support the interpretation and implementation of key policies on green infrastructure (GI) contained within the Monmouthshire Local Development Plan (LDP), namely policies S13 and GI1 (set out in **Section 2.0**, **Box 2.1** and **2.2**). Guidance contained in this SPG does not relate to that part of the County contained within the Brecon Beacons National Park.

The chosen level of housing provision in the LDP is 4,500 dwellings over the plan period 2011-21. In support of this and other planned development, Monmouthshire County Council (MCC) is committed to providing appropriate infrastructure (to include community and recreational facilities, sewerage, water, transport, schools and health care etc). Going forward, the Council will promote a GI approach to land-use planning, design and management, where GI forms an integral and significant part of development and wider infrastructure proposals.

The concept of GI and the major contribution it can make towards solving a range of social, environmental and economic issues is well established in Wales. In recognising the wide-ranging benefits afforded by GI, its vital role in the delivery of high quality sustainable development and the essential ecosystem services it provides, the Council has included specific GI policies in the LDP.

There is great benefit to be gained from adopting a collaborative multi-disciplinary approach to the delivery of GI and its integration into development proposals. Consultation with as many relevant stakeholders as possible (see **Diagram 1.1**) is essential to the success of masterplans in GI terms. Stakeholder input is important for developing an understanding of the needs and opportunities for GI provision in and around the site and devising integrated solutions that deliver maximum benefits.

1.2 Using this SPG

Developers

The main audiences for this SPG are those individuals and organisations planning new development. The key principles for embedding GI into development are generally applicable at all scales of development.

Statutory decision makers and consultees

The SPG forms a point of reference for decision makers within MCC and its partner organisations. It provides a GI planning checklist to support the Council's assessment of planning applications.

Land owners/managers

Landowners and managers across the County are encouraged to use the information to guide land management activity.

General public/community groups

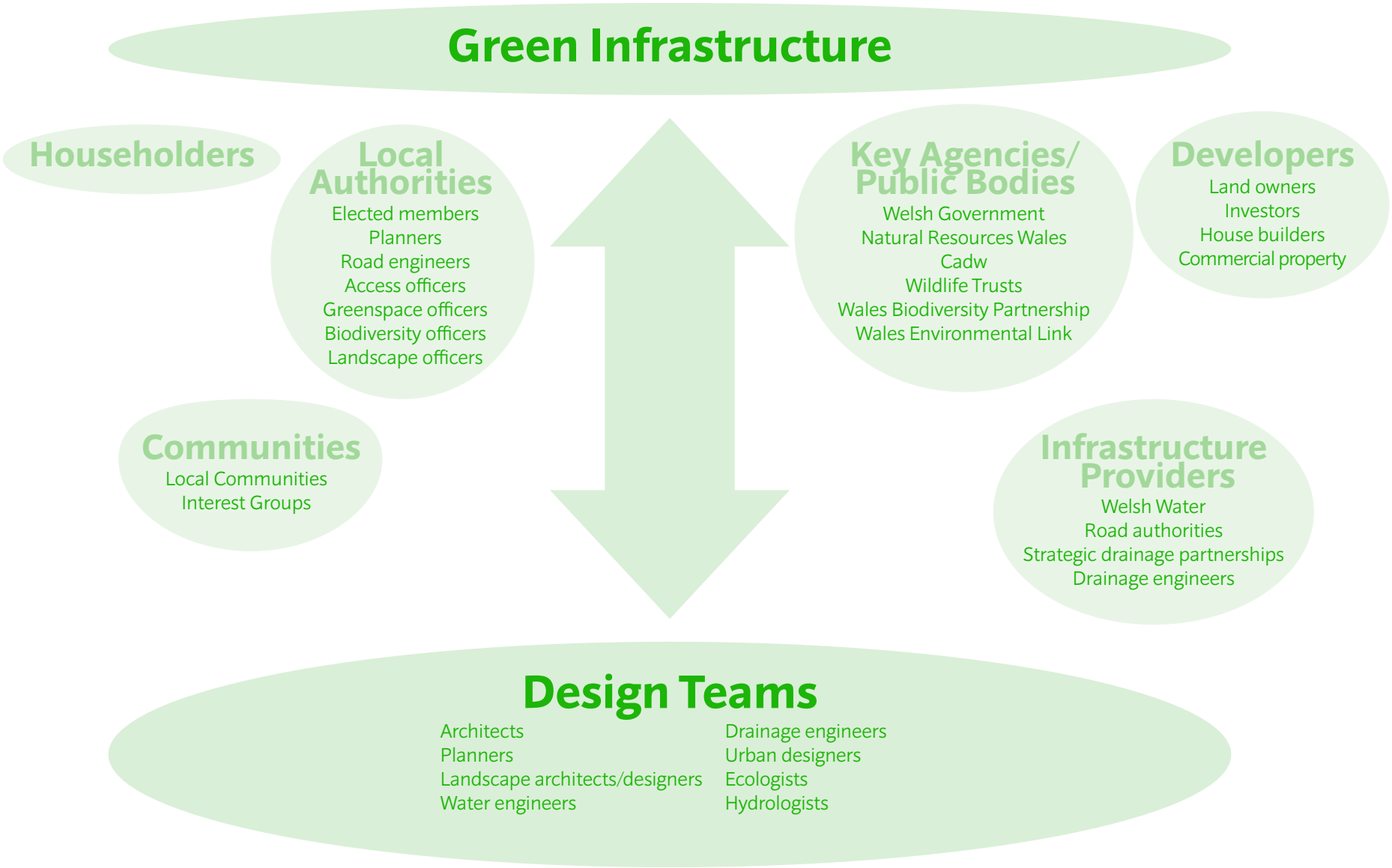
This SPG also provides guidance for the local community on what they should expect from new development in their community.

The SPG is a material consideration in relation to planning applications and planning appeals. It helps guide the Council and applicants through initial pre-application discussions, the application process and the consideration of reserved matters and planning conditions relating to GI.

This document has been developed as a result of collaborative working between MCC, the Brecon Beacons National Park Authority and the Wye Valley Area of Outstanding Natural Beauty Unit (see **Appendix G** for further details). It was prepared by Chris Blandford Associates on behalf of the Council.

DIAGRAM 1.1 **Multidisciplinary Working**

(Adapted from *GI Design and Placemaking* (Scottish Government, 2011)



1.3 Structure of the SPG

The SPG contains the following information:

- The GI approach in Monmouthshire (**Section 2.0**) sets out the strategic framework for the GI approach in Monmouthshire, an explanation of some of the terminology surrounding GI and a summary of the County's existing GI assets/network.
- Embedding GI into development (**Section 3.0**) presents practical guidance for embedding GI into development proposals.
- Potential GI requirements for key growth locations (**Section 4.0**) sets out potential strategic GI requirements in the main growth locations and associated strategic sites.
- Sources of advice (**Appendix A**).
- GI case studies (**Appendix B**).
- Additional information, from relevant evidence base studies, for each of the key growth locations (**Appendices C-F**).
- Acknowledgements (**Appendix G**).

Links to other relevant SPG and guidance documents

A number of other SPG and guidance documents have been/will be produced by the Council which are interrelated with this SPG. These are listed in **Box 1.1** and shown on **Diagram 1.2**.

Links to the evidence base

A number of studies and assessments, carried out to inform the development of the LDP, provide valuable baseline GI information in respect of the location, quality, quantity and accessibility of a range of GI assets/types (see **Diagram 1.2** and **Boxes 1.2-1.5**). They also form an important starting point in terms of identifying local GI needs and opportunities.

BOX 1.1 Links to Other SPG and Guidance

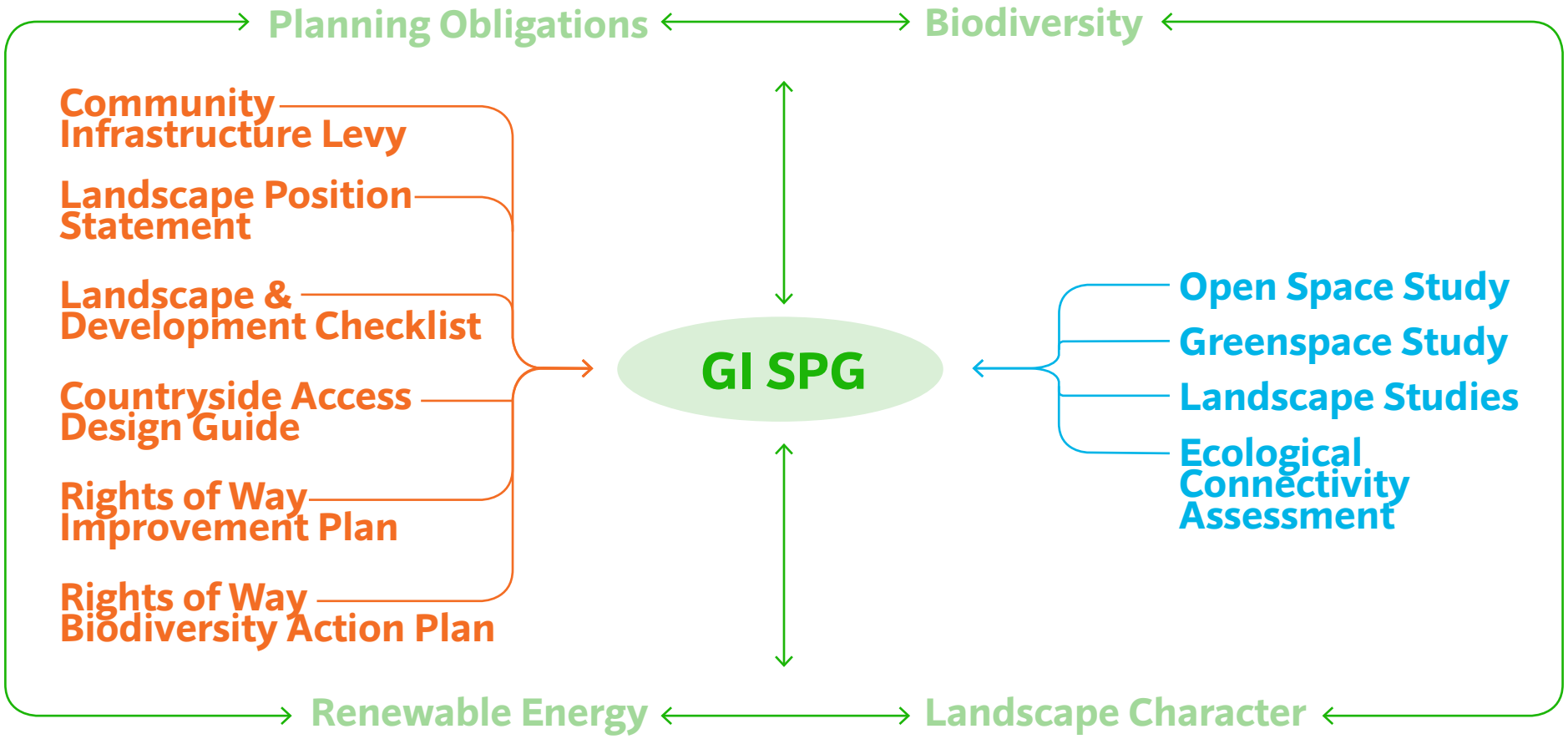
Supplementary Planning Guidance

Planning Obligations	MCC intends to produce a Planning Obligations SPG (work in progress). The Interim Policy on the Approach to Planning Obligations (March 2013) sets out an approach to guide negotiations for Section 106 planning obligations between MCC and applicants.
Biodiversity	MCC intends to produce a Biodiversity SPG (work in progress).
Renewable Energy	MCC intends to produce a Renewable Energy SPG (work in progress)
Landscape Character	MCC intends to produce a Landscape Character SPG (work in progress).

Other Guidance

MCC is progressing work on the preparation of a Community Infrastructure Levy (CIL)	
Interim Landscape Position Statement (2013)	Sets out a protocol to be followed, in the absence of supporting SPG on LANDMAP Landscape Character Assessment, in the interpretation of LDP policies S13 and LC5.
Landscape and Development Checklist (2013)	Identifies the main topic areas which a developer will need to be aware of in formulating landscape and environmental proposals, and for which information may need to be presented to the Council.
Countryside Access Design Guide (2012)	Intended to assist anyone installing countryside furniture on public rights of way (PRoW) and other access areas in Monmouthshire.
Monmouthshire Rights of Way Improvement Plan (2007)	Sets out the County's objectives and priorities for countryside access over a 10 year period.
Monmouthshire Public Rights of Way Biodiversity Action Plan	Aims to ensure that biodiversity is taken into account in the planning and carrying out of all maintenance operations, improvement schemes and other PRoW work. Sets out specific habitat and species action plans.

DIAGRAM 1.2 Links to SPG and Evidence Base



KEY SPG Other Guidance Evidence Base Study

BOX 1.2 Open Space Study (2008)

Sets out the results of an audit of all open space sites located within 13 settlements/ sub-areas in Monmouthshire. Findings relate to the quantity, quality and accessibility of sites/open space types. An assessment of provision against minimum standards is provided.

It should be noted that the definition given to natural/semi-natural greenspace differs to that in the Greenspace Study. This is likely to have a bearing on the levels of provision (surplus/deficiency) identified in the Study. Further advice can be sought from MCC (see **Appendix A**).

Allotments form part of the typology of open spaces in Monmouthshire

BOX 1.3 Greenspace Study (2010)

Identifies potential greenspace sites, natural sites and accessible natural sites within a 2km buffer zone of 10 settlements/sub-areas in Monmouthshire. An analysis of provision and assessment of opportunities for improvement in relation to accessible natural greenspace is provided.

It should be noted that greenspaces were identified on the basis of available datasets, which suggests that additional sites may exist. Further advice can be sought from MCC (see **Appendix A**).

The grounds of Caldicot Castle provide accessible greenspace

BOX 1.4 Ecological Connectivity Assessment (2010)

Provides an objective assessment of semi-natural habitat connectivity in and around eight settlements/sub-areas in Monmouthshire. This forms the basis for identifying and informing future habitat management and creation opportunities.

The value of the Assessment's maps and the accuracy with which predictions can be made will be enhanced as the baseline datasets are verified. Further advice can be sought from MCC (see **Appendix A**).

The Usk Valley is an important ecological corridor within Monmouthshire

BOX 1.5 Other Studies

Landscape Sensitivity and Capacity Studies (2009/2010)	These studies set out detailed assessments of sensitivity and capacity of local landscape character areas (around main settlements and villages) and candidate strategic sites.
Strategic Transport Study (2009)	Provides some baseline information relating to sustainable modes of transport and possible transport proposals around 24 candidate development sites.

The landscape setting of Llanellen

Where development proposals fall partly within an adjacent local planning authority area, the relevant LDP policies, adopted SPGs and related evidence base should be consulted, as appropriate.

2

The GI Approach in Monmouthshire

Four Castles Cycle Route, Monmouthshire

2.1 LDP Planning Policies

This SPG is intended to expand on policies S13 (see **Box 2.1**) and GI1 (see **Box 2.2**) of the LDP, which are central to the protection and delivery of GI as part of development in the County.

Other key LDP planning policies that refer or relate to GI matters are listed in **Diagram 2.1**.

BOX 2.1 Strategic Policy S13
Landscape, Green Infrastructure & the Natural Environment

Development proposals must:

1 Maintain the character and quality of the landscape by:

(i) Identifying, protecting and, where appropriate, enhancing the distinctive landscape and historical, cultural, ecological and geological heritage, including natural and man-made elements associated with existing landscape character;

(ii) Protecting areas subject to international and national landscape designations;

(iii) Preserving local distinctiveness, sense of place and setting;

(iv) Respecting and conserving specific landscape features, such as hedges, trees and ponds;

(v) Protecting existing key landscape views and vistas.

2 Maintain, protect and enhance the integrity and connectivity of Monmouthshire's green infrastructure network.

3 Protect, positively manage and enhance biodiversity and geological interests, including designated and non-designated sites, and habitats and species of importance and the ecological connectivity between them.

4 Seek to integrate landscape elements, green infrastructure, biodiversity features and ecological connectivity features, to create multifunctional, interconnected spaces that offer opportunities for recreation and healthy activities such as walking and cycling.

BOX 2.2 Development Management Policy GI1
Green Infrastructure

Development proposals will be expected to maintain, protect and enhance Monmouthshire's diverse green infrastructure network by:

a) Ensuring that individual green assets are retained wherever possible and integrated into new development. Where loss of green infrastructure is unavoidable in order to secure sustainable development appropriate mitigation and/or compensation of the lost assets will be required;

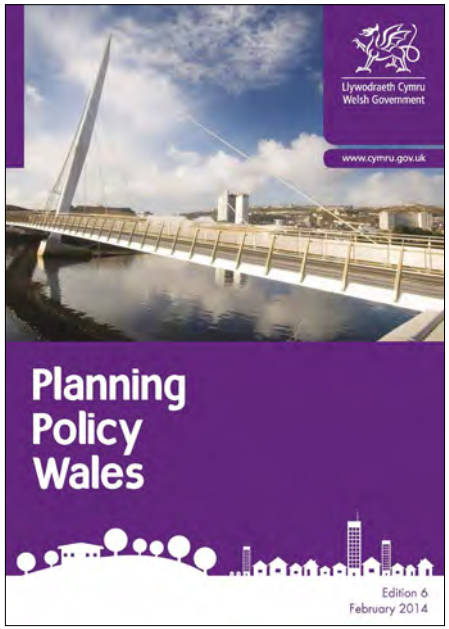
b) Incorporating new and /or enhanced green infrastructure of an appropriate type, standard and size. Where on-site provision of green infrastructure is not possible, contributions will be sought to make appropriate provision for green infrastructure off-site.

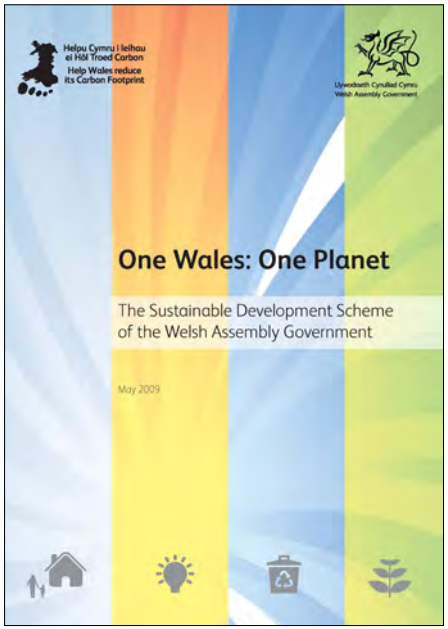
Residential development in Rogiet incorporating a sustainable drainage system

DIAGRAM 2.1 **Relevant LDP Policies**

2.2 National Legislative and Policy Context

The concept of a GI approach to land-use planning, design and management can deliver a wide range of policy outcomes (e.g. in relation to sustainable development, climate change, biodiversity, placemaking, economic growth and health and well-being). It is well established through the Welsh spatial planning system and provides a means to bring together and deliver policy and advice messages in a holistic way. National legislation and policies that provide the framework for the conservation, delivery and promotion of GI are listed in **Box 2.3**.





BOX 2.3 National Policy Context

The Natural Environment and Rural Communities Act (UK Government, 2006)	Act designed to help achieve a rich and diverse natural environment and thriving rural communities through modernised and simplified arrangements for delivering Government policy.
Proposed Environmental Bill, Draft White Paper (Welsh Government, October 2013)	Purpose is to ensure the right legislative framework is in place to manage Wales' natural resources in a way that will deliver lasting benefits for now and for future generations. The Bill will cover: • A joined-up approach to managing natural resources in a sustainable way. • Natural Resources Wales' functions and duties. • Ensuring the right tools are in place to deliver improvements in resource efficiency, such as waste collection. • Changes to promote simplification and clarify the law.
Draft Future Generations (Wales) Bill	The Bill (previously the Sustainable Development Bill) will help tackle the generational challenges Wales faces in a more joined up and integrated way - ensuring Welsh public services make key decisions with the long term wellbeing of Wales in mind.
One Wales: One Planet, a new Sustainable Development Scheme for Wales (Welsh Government, 2009)	Sets out the Government's vision for a sustainable Wales and the priorities attached to sustainable development.
Natural Living Framework 'A Living Wales' (Welsh Government, 2010)	The Living Wales Programme worked on developing a new approach to managing Wales' environment and natural resources between 2010 and 2013. The programme covered i) how to make future decisions to balance all the demands put on natural resources (Natural Resource Management) and ii) the creation of a new single body, called Natural Resources Wales (NRW) to take over the duties of the Countryside Council for Wales, Environment Agency in Wales and Forestry Commission in Wales. NRW became operational on 1 April 2013.

Ecosystems and the Ecosystems Approach: Quick Guide (National Assembly for Wales, 2012)	Explains some of the common terms that are used as part of the new 'ecosystems approach' to nature conservation and management.
Using the Ecosystems Approach: a Framework for Natural Resources Wales (Draft, Welsh Government, 2013)	Framework aimed at all staff in Natural Resources Wales. Its purpose is to help explain what the ecosystem approach is about and how to start applying it to everyday work.
People, Places, Futures: The Wales Spatial Plan (Welsh Government, 2004 updated 2008)	Aims to deliver sustainable development through its area strategies in the context of Wales' Sustainable Development Scheme. It sets out cross-cutting national spatial priorities, which provide the context for the application of national and regional policies for specific sectors, reflecting the distinctive characteristics of different sub-regions of Wales and their cross-border relationships.
Planning Policy Wales (Welsh Government, 2014)	Contains current land use planning policy in Wales and the policy framework for the effective preparation of local planning authorities' development plans.
Technical Advice Note 5: Nature Conservation and Planning (Welsh Government, 2009)	Provides advice about how the land use planning system should contribute to protecting and enhancing biodiversity and geological conservation. Supplements Planning Policy Wales and should be read in conjunction with it.
Technical Advice Note 12: Design (Welsh Government, 2008)	Provides advice on good design. Supplements Planning Policy Wales and should be read in conjunction with it.
Technical Advice Note 16: Sport, Recreation and Open space (Welsh Government, 2009)	Provides advice for communities, developers and local planning authorities in Wales preparing local development plans and taking decisions about planning applications with regards to sport, recreation and open space. Supplements Planning Policy Wales and should be read in conjunction with it.
Technical Advice Note 15: Development and Flood Risk (2004)	Provides advice in relation to development and flooding, advising on development and flood risk as this relates to sustainability principles. Supplements Planning Policy Wales and should be read in conjunction with it.

Natural Heritage: a Pathway to Health (Countryside Council for Wales Policy Research for the Welsh Assembly Government, 2007)	Sets out the findings of a 12 month study into the impact of the natural environment on health and wellbeing, conducted by the Institute of Rural Health. The study found that the natural environment can play a key role in improving public health and wellbeing.
A Walking and Cycling Action Plan for Wales 2009-13 (Welsh Assembly Government, 2008)	Summarises the key steps planned to secure a walking and cycling culture in Wales.
Framework for South East Wales Networked Environmental Regions(NER) (Countryside Council for Wales, Environment Agency Wales and Wales Environmental Link for Welsh Assembly Government, 2009)	First stage in a collaborative project to take the concept of an NER and turn it into reality. The report reviews the policy context which frames the conceptual NER, briefly describes the unique characteristics of the South East Wales landscape and considers opportunities and challenges across the city region. It also highlights the next steps needed towards implementing the networked environment region.
Welsh Government Consultation on improving the availability of allotments and community gardens	Proposals to improve the availability of land for allotments, to protect land for allotments and improve opportunities for community growing.

2.3 What is GI?

The Landscape Institute's GI Position Statement (2013) provides a number of useful definitions for key GI terms. Their definitions of GI, GI assets, GI functions and GI connectivity are set out on pages 12 and 16.

GI

'GI is the network of natural and semi-natural features, green spaces, rivers and lakes that intersperse and connect villages, towns and cities. Individually, these elements are GI assets, and the roles that these assets play are GI functions. When appropriately planned, designed and managed, the assets and functions have the potential to deliver a wide range of benefits – from providing sustainable transport links to mitigating and adapting the effects of climate change'.

GI assets

'GI assets range from country parks, lakes and woodlands to urban interventions such as green roofs and street trees. They can be specific sites at the local level or broader environmental features at the landscape scale within and between rural and urban areas such as wetlands, moors and mountain ranges' (see **Box 2.4**).

BOX 2.4 Examples of GI Assets

- Parks and gardens including urban parks; country and regional parks; formal and private gardens; and institutional (e.g. schools and hospitals) grounds (e.g Caldicot Country Park and the Linda Vista Gardens in Abergavenny).
- Amenity greenspaces including informal recreation spaces; play areas; outdoor sport facilities; housing green spaces; domestic gardens; village greens; urban commons; other incidental space; green roofs; hedges; civic squares and spaces; and highway trees and verges (e.g. Fairview open space Chepstow, Undy playing field and Dixton Field in Monmouth).
- Allotments, community gardens, city farms, orchards, roof gardens, and urban edge farmland (e.g. Usk Road allotments in Raglan and Sudbrook Road allotments in Portskewett/Sudbrook).
- Cemeteries and churchyards (e.g. Osbaston cemetery in Monmouth and St Mary's Churchyard in Abergavenny).
- Natural and semi-natural rural, peri-urban and urban greenspaces including woodland and scrub; grassland, heath and moor; wetlands; open and running water; brownfield sites; bare rock habitats (e.g. cliffs and quarries); coast and beaches; and Community Forests. It includes important and protected species and habitats such as existing national and local nature reserves and locally designated sites for nature conservation (e.g. Nedern Brook Wetlands SSSI and Fiddler's Elbow National Nature Reserve).
- Green corridors including rivers and canals and their banks; road and rail corridors; cycling routes; and public rights of way (e.g. Ifton Lane in Rogiet and the River Usk).
- Functional green space including sustainable urban drainage schemes and flood storage (e.g. residential development in Rogiet).
- Heritage sites including historic country estates; historic urban public parks; and historic sites and monuments (e.g. St Pierre near Chepstow and Abergavenny Castle and grounds).

Adapted from the Town and Country Planning Association: '*The essential Role of Green Infrastructural: Eco-towns Green Infrastructure Worksheet*' (2008).


Heritage sites


Private gardens


Allotments


GI ASSETS

Green walls


Community greenspaces

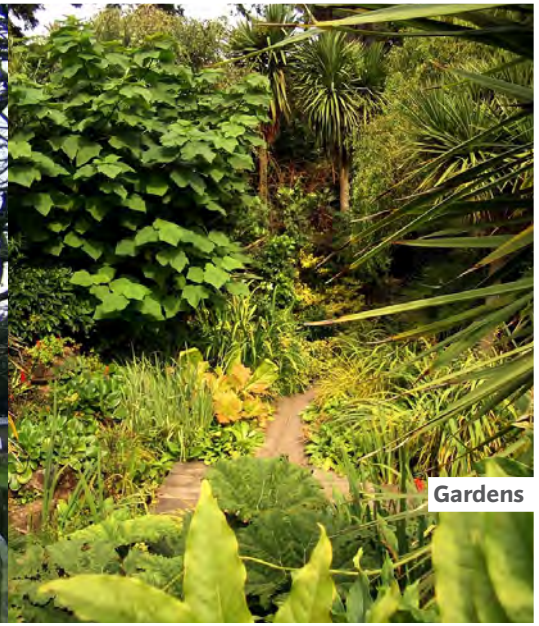

Sustainable drainage systems


Grasslands, heaths and moors

GI ASSETS


Green corridors


Churchyards


Gardens


Play areas

GI functions and ecosystem services

'*GI functions are the roles that assets can play if planned, designed and managed in a way that is sensitive to, and includes provision for, natural features and ecosystem services. They may have obvious primary functions, but each asset can perform different functions simultaneously – a concept known as multifunctionality*'. For the purposes of this SPG, the key functions of GI are summarised in **Box 2.5**.

Underpinning the multiple functions that GI assets perform is the concept of ecosystem services. Ecosystem services are defined as the benefits provided by environmental/GI that contribute to making life both possible and worth living (e.g. clean air, water, food and materials). They include:

- Supporting services (essential to the functioning of ecosystems and indirectly responsible for all other services; includes water and nutrient cycling, soil formation and the processes of plant growth).
- regulating services (includes regulating climate, flooding, water and air quality, erosion and pollination).
- provisioning services (includes the supply of goods such as food, timber, fresh water, fuel and pharmaceuticals).
- cultural services (non-material direct benefits of huge importance to the wider social and cultural needs of society; includes recreational space, tourism, spiritual enrichment, inspiration and employment).

Further information is set out in *Ecosystems and the Ecosystems Approach: a Quick Guide* (National Assembly for Wales, 2012). Since 2012 the Welsh Government has been actively promoting a new approach to natural resource management through the Living Wales programme, known as the ecosystem approach. This approach provides a framework for the integrated management of land, water and living resources that promotes conservation and sustainable land use in an equitable way. The adoption and implementation of this more holistic, integrated and sustainable approach to natural resource management is synonymous with a GI approach to land use management.

BOX 2.5 GI Functions

- **Landscape setting & quality of place**
- **Habitat provision & connectivity**
- **Green space provision, connectivity & enjoyment**
- **Sustainable energy use**
- **Local food production**
- **Flood attenuation & water resource management**

GI connectivity

Whilst individual GI assets can serve one or more functions, '*connectivity between different GI assets can help maximise the benefits that they generate. Well-connected GI assets create infrastructure that is adaptive and resilient to changes in climate. Physical connections make the most impact, often by creating ecological 'stepping stones' that encourage biodiversity migration and connect places with sustainable walking or cycling routes.*'

Linked together, GI assets form important multifunctional GI networks. GI assets and connections should be considered at all spatial scales, as illustrated on **Diagram 2.2**.

GI benefits

'*A GI approach enables landscapes to deliver social, economic and environmental benefits simultaneously and then looks at how those benefits can be multiplied by being connected to a wider network of spaces* (Landscape Institute *GI Position Statement*, 2013). GI benefits are wide-ranging, as illustrated in **Box 2.6**.

DIAGRAM 2.2 Range of GI Scales/Connectivity

Adapted from GI Design and Placemaking (Scottish Government, 2011)

BOX 2.6 GI Benefits

Adapted from GI Design and Placemaking (Scottish Government, 2011)

Wye Valley

Local distinctiveness

- Improving townscape, landscape quality and visual amenity.
- Heritage preservation and cultural expression.
- Reinforcing the local landscape character.
- Making places more interesting and distinctive.
- Giving places character and a strong identity.

Monnow Bridge in Monmouth

Economic

- Supporting a reduction in healthcare costs and increased productivity.
- Helping attract and retain a quality workforce.
- Supporting the local green economy.
- Reducing environmental costs such as those associated with the reduction of flood risk.
- Improving the image of a place.
- Boosting property values including house prices due to proximity to greenspace.
- Helping developers get the most out of the site by combining uses, e.g. open space & Sustainable Drainage Systems (SuDS), helping development viability.
- Attracting businesses and inward investors by creating attractive settings.
- Saving energy and money for residents and end users.
- Generating employment.

Cycling to work

Climate change

- Reducing CO_2 emissions by providing non-vehicular travel routes and encouraging walking and cycling.
- Providing carbon storage and sequestration in vegetation.
- Providing shelter and protection from extreme weather.
- Managing flood risk: living roofs, large trees and soft landscape areas absorb heavy rainfall.
- Providing for storage of surface water in times of peak flow in SuDS and other water features.
- Cleaning and cooling the air, water and soil, countering the 'heat island' effect of urban areas.
- Saving energy: through using natural rather than engineered solutions.
- Saving energy: living roofs insulate buildings, and large trees provide shade, reducing the need for air.
- Conditioning in the summer and raising ambient temperatures in the winter, reduction in heating costs in the winter due to slowing of wind speeds in urban areas.
- Supplying locally sourced timber, biomass or other bio-fuels to replace fossil fuels.

BOX 2.6 GI Benefits

(Adapted from GI Design and Placemaking (Scottish Government, 2011)

Countryside around Abergavenny

Environmental

- Protecting and enhancing biodiversity.
- Reducing pollution through use of SuDS and buffer strips.
- Providing new and linking existing habitats or natural features, to allow species movement and increase available habitat areas.
- Protecting aquatic species through appropriate management of waterside habitats.
- Preventing fragmentation of habitats.
- Allowing diverse habitats to be created which are rich in flora and fauna.

Tintern Old Station

Community and social

- Improving community cohesion and social inclusion.
- Creating green spaces for socialising, interaction and events.
- More opportunities and places for children to play.
- Providing improved physical connections through green networks to get between places; and to communities, services, friends and family and wider green spaces.
- Providing spaces for practising and promoting horticultural skills.
- Creating opportunities for community participation and volunteering.
- Providing spaces for education and training.

Canoeing along the River Wye

Health and well-being

- Encouraging exercise and physical activity by providing quality green spaces for walking, cycling, sports and play.
- Providing better opportunities for active travel and physical activity.
- Improving mental well-being by providing access to nature and attractive green spaces and breathing spaces.
- Providing opportunities for growing food locally and healthy eating.

2.4 GI in Monmouthshire

This section provides an overview of Monmouthshire's existing GI network and key needs and priorities for GI investment.

Monmouthshire's GI network

The County of Monmouthshire lies in South East Wales, between the major centres in South Wales and the South West of England and the Midlands. It covers an area of approximately 88,000 hectares and has an estimated population of 91,323 (2011 census); only 53% of which lives in wards defined as being in 'urban areas'. The main settlements are the three historic market towns of Abergavenny, Chepstow and Monmouth; Caldicot; Usk and Magor/Undy. The landscape is predominately rural with agriculture and tourism forming the main industries.

Monmouthshire is noted for its rural beauty and has a rich and diverse landscape stretching from the flat open coastline of the Gwent Levels in the south, to the exposed uplands of the Black Mountains in the north and the picturesque river corridor of the Wye Valley in the east (MCC, LDP). The Blaenavon Industrial World Heritage Site (WHS), Brecon Beacons National Park and Wye Valley Area of Outstanding Natural Beauty, landscapes of international/national value, are all distinctive features which partly fall within Monmouthshire.

The County includes a wealth of biodiversity/nature conservation assets such as the Severn Estuary, Fiddler's Elbow National Nature Reserve, 56 Sites of Special Scientific Interest,10 of which are designated as European Sites, 650 non-statutory Sites of Importance for Nature Conservation (SINC) and a wide range of species and important habitats. It is particularly well wooded with a range of extensive blocks of ancient, semi-natural, broadleaved and coniferous woodlands such as Trellech Forests, Hale Wood and Chepstow Park Woods. Numerous watercourses (and associated predominantly undeveloped floodplains) cross the County - the main rivers are the Usk, the Wye and the Monnow. Monmouthshire also contains a rich built heritage and historic environment which includes conservation areas, historic parks and gardens, scheduled ancient monuments and approximately 2200 listed buildings. As well as those GI assets already described, the County comprises a range of open/green spaces (e.g. allotments, parks and outdoor sport areas) located in and around the main settlements.

An extensive network of public rights of way provides a range of sustainable access routes for people (non-motorised users) and wildlife across Monmouthshire. It enables movement between settlements and GI assets, to the wider countryside and to amenities beyond the County boundary. This network is complemented by permissive paths, three long distance regional trails, a national trail and two national cycle routes. The All-Wales Coast Path also starts in Monmouthshire. Farmland, private gardens, street trees and other features (e.g. green roofs and SuDS) are other examples of GI assets in Monmouthshire.

As indicated by the above context analysis, Monmouthshire contains a wide range of GI assets. They include public and private assets, with and without public access. Grouped together they represent the County's existing GI resource, the extent of which (based on available GI datasets) is shown in **Diagram 2.3**. It should be noted that this diagram only illustrates GI assets within Monmouthshire. However, it should be recognised that some 'landscape- scale' assets extend across administrative boundaries, such as the Wye Valley and the coastline. It is therefore of primary importance that GI is strategically planned to provide a comprehensive and integrated network at the strategic scale.

The County is generally well provided for in terms of greenspace and accessible natural greenspace. From an ecological point of view, however, the network is fairly fragmented and could become further fragmented unless appropriate GI considerations and measures are included within future developments.

DIAGRAM 2.3 Monmouthshire's Existing GI Network

Needs and priorities for green infrastructure investment

The key priorities for investment in GI within Monmouthshire over the lifetime of the LDP are:

- Enhancing existing GI assets to prepare them for greater visitor numbers and likely increased pressure linked to growth.
- Maximising opportunities for GI assets outside the footprint of new development to bring together both existing and new communities through linking settlements and country parks, wildlife reserves, urban greenspaces, heritage sites and waterways.
- Recognising and maximising GI's multifunctionality and the benefits different assets can deliver. For example, local greenspaces can be used for food production, contribute to urban drainage and flood management or provide local parks for informal recreation.
- Generally improving access, linkages and facilities relating to greenspace sites.
- Reversing the erosion and fragmentation of natural and semi-natural habitats in Monmouthshire, in order to reduce biodiversity loss, provide resilience in the face of climate change and provide greater access to nature.
- Promoting high quality design of new development to enhance the integrity and local distinctiveness of its landscape and townscape context.

These priorities are reflected in the GI Vision for Monmouthshire...

*Diagram 2.3 represents relevant available information provided by stakeholders at the time of the Study, and may not be exhaustive. The accuracy of the digital datasets received, which have been used in good faith without modification or enhancement, cannot be guaranteed. The diagram is based on the following datasets: Greenspace Study (excluding non-natural greenspace), Open Space Study, county-wide public rights of way, county-wide designated sites of nature conservation value, county-wide designated features of historic value, county-wide watercourses and water bodies, predominantly undeveloped floodplains (flood risk areas), and county-wide woodlands.

Green Infrastructure Vision for Monmouthshire

Monmouthshire has a well-connected multifunctional green infrastructure network comprising high quality green spaces and links that offer many benefits for people and wildlife. The network's integrity and connectivity is maintained, protected and enhanced in a planned and managed way, which recognises the interdependency and multifunctionality of landscape, heritage and biodiversity elements. Investment in green infrastructure underpins the County's ongoing economic, social and environmental success by supporting sustainable growth, improving quality of life and place, delivering ecosystem services and tackling climate change. Monmouthshire is a green and healthy place to live, with an increasingly coherent and resilient ecological network of wildlife habitats, helping conserve biodiversity.

3

Embedding GI into Development

Residential development, The Hamptons, Surrey

3.1 Overview of the Process

This section of the SPG provides guidance on embedding high quality, sustainable and multifunctional GI into development.

GI requirements should be considered from the earliest phases of the masterplanning and design process. Ideally, this should happen as part of the initial thinking and research carried out by a developer to define needs, objectives and the key parameters for the development.

GI should be seen as critical infrastructure in the same way as utilities or local transport networks. If it can be incorporated at the start of a project it is possible to achieve substantial cost savings through combining uses and creating multifunctionality.

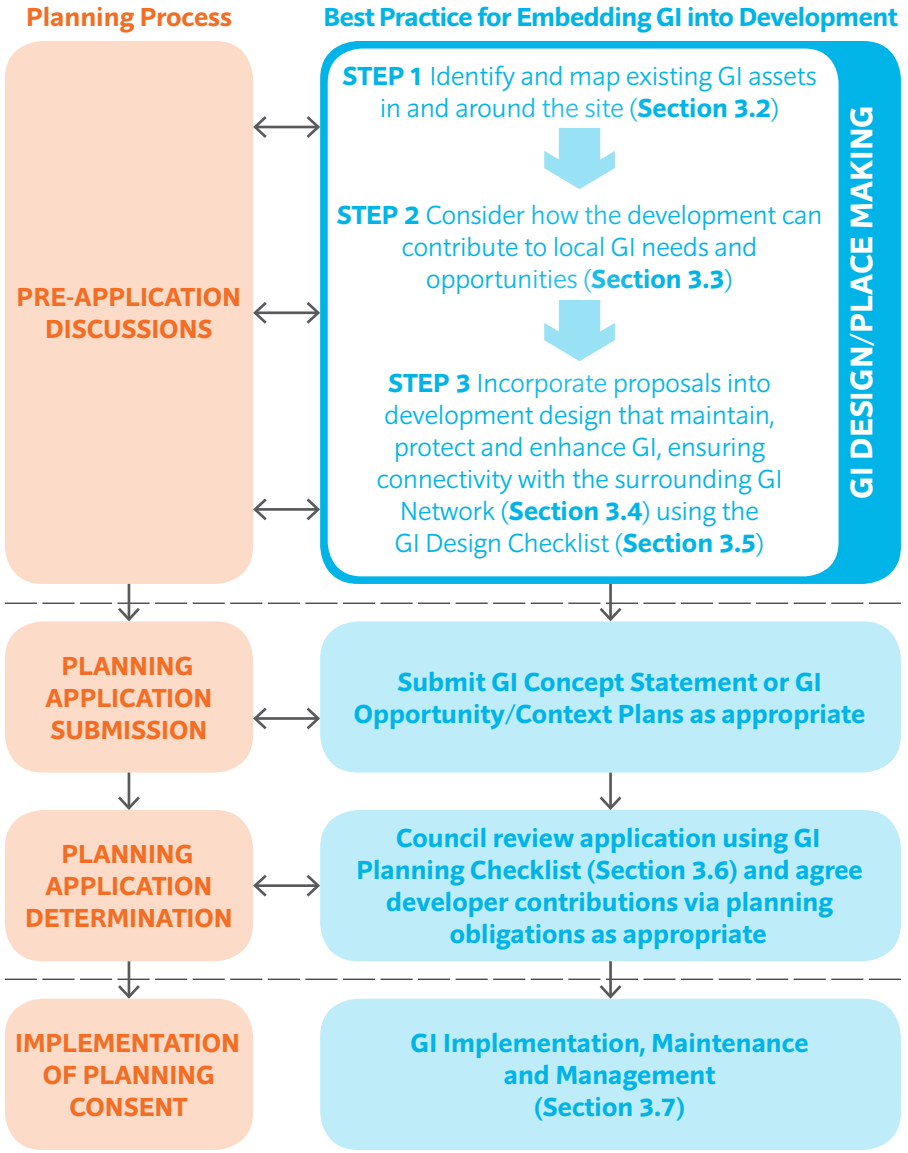
Incorporating consideration of GI from the outset allows the developer to think about what type and how much GI is required to meet local needs; how it complements and relates to existing GI; and how specific green elements can be linked to integrate with each other and the surrounding GI network.

In order to encourage best practice, developers should follow the process and principles for embedding GI into development outlined in this section of the SPG. The key steps are:

- 1: identify and map existing GI assets in and around the site
- 2: consider how the development can contribute to local GI needs and opportunities
- 3: incorporate proposals into development design that maintain, protect and enhance GI, ensuring connectivity with the surrounding GI network

The relationship of these steps to the planning process is shown in **Diagram 3.1**.

DIAGRAM 3.1 GI Design and the Planning Process



3.2 Step 1: Identify and map existing GI assets in and around the site

As a starting point, the existing GI assets in and around the development site should be identified and mapped. The different types of GI assets that may be relevant to consider are set out in **Section 2.3**. GIS digital datasets are available for some GI assets in Monmouthshire, and these may be obtained by contacting the Council (see **Appendix A**).

The functions (or ecosystem services) provided by existing GI assets should be appraised from site visits, and by reference to relevant data and information. This should include an appraisal of the connectivity of existing GI assets in and around the site for people and wildlife.

The appraisal should be proportional to the scale of the development proposal; smaller scale developments will usually only require limited survey and appraisal, except where the site is environmentally sensitive; larger scale developments involving large and complex sites are more likely to require a greater level of detail, and may require consideration of GI connectivity over a larger geographical area.

Countryside around Monmouth

In addition to helping identify GI opportunities in step 2, recording the key findings of the survey and appraisal on a GI Context Plan can be used to inform site layout design options for maximising benefits from existing GI assets in and around the development site (step 3). The use of a GI Context Plan as an aid for initial pre-application discussions with Council planning officers and statutory consultees is also considered best practice.

Countryside near Cross Ash

Woodlands and watercourses are key GI assets

3.3 Step 2: Consider how the development can contribute to local needs and opportunities

The next step involves considering how the development proposal and the site can contribute to meeting GI needs and opportunities in Monmouthshire.

Local GI provision needs should be identified by reference to:

- Monmouthshire Open Space Study
- Monmouthshire Green Space Study
- Monmouthshire Ecological Connectivity Assessment
- Monmouthshire LANDMAP Landscape Character Assessment
- Monmouthshire Landscape Sensitivity and Capacity Studies
- Monmouthshire Rights of Way Improvement Plan
- Monmouthshire Rights of Way Biodiversity Action Plan
- Local community and stakeholder consultations

Key messages from the Open Space Study, Greenspace Study, Ecological Connectivity Assessment and Landscape Sensitivity and Capacity Studies, for each of the key growth locations are set out in **Appendices C-F.**

Opportunities for addressing local GI needs should be informed by the survey and analysis of existing GI assets in and around the development site. The GI Design Checklist in **Section 3.5** provides a useful list of considerations to help developers to identify opportunities that may be appropriate to the site and its context. The provision, character and distribution of GI opportunities depends on the nature of the location, the type of development and the contribution it can make to connectivity and the provision of ecosystem services.

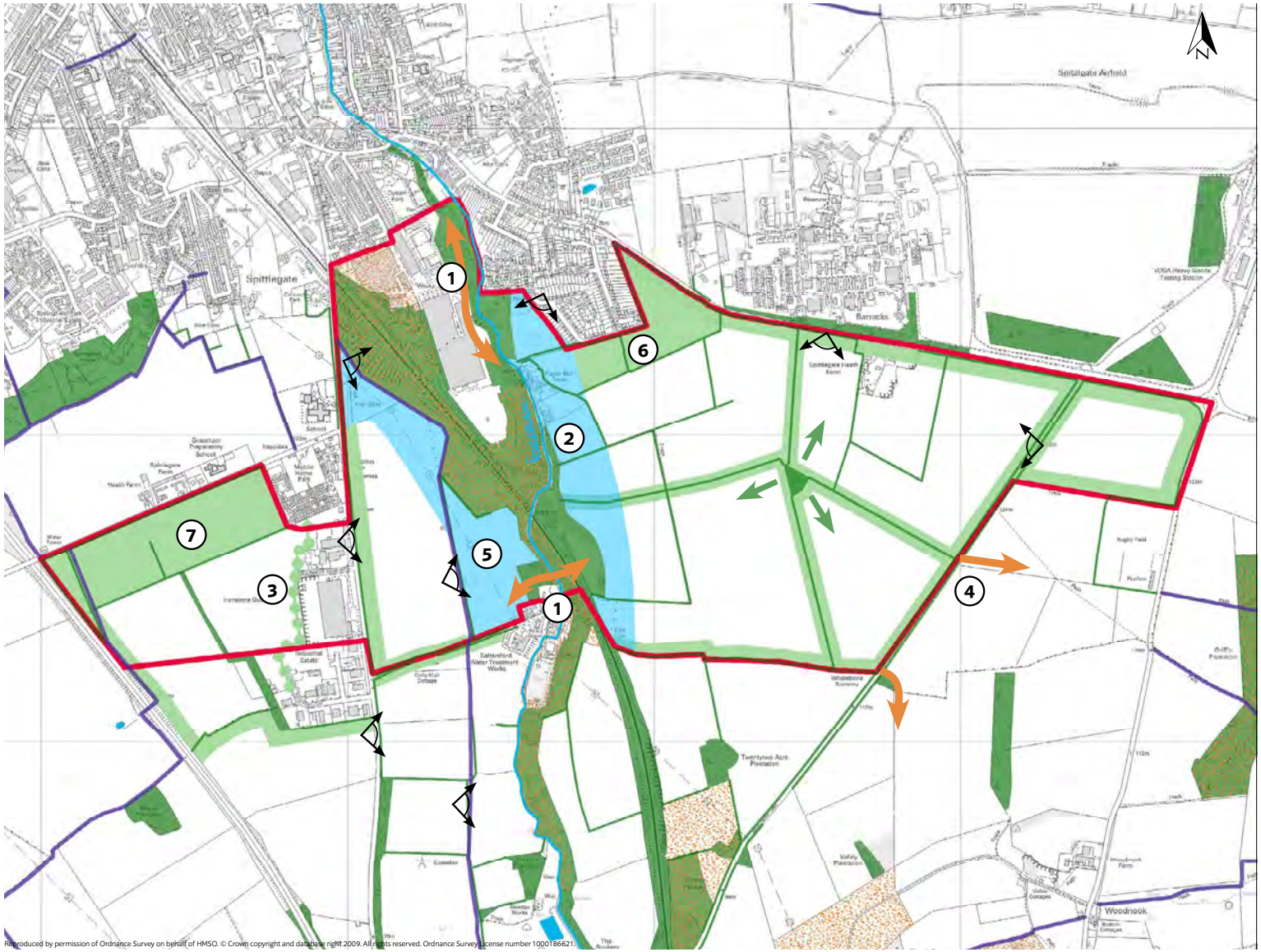
Section 4.0 sets out potential GI requirements for the LDP's key growth locations of Abergavenny, Chepstow, Monmouth and the Severnside Settlements. These potential requirements have been identified by the Council in order to ensure that the planned level of growth in these areas is supported by GI provision that meets future needs. Proposals for development within these locations should identify appropriate opportunities for contributing to the potential GI requirements.

It is considered best practice to identify and record opportunities for GI provision in and around the development site on a GI Opportunities Plan. In addition to being used to inform and shape site layout design options in step 3, the preparation of a GI Opportunities Plan is also a useful aid for initial pre-application discussions with Council planning officers and statutory consultees. An example of a GI Opportunities Plan is provided in **Diagram 3.2**.

Provision of public open space

Provision for biodiversity

DIAGRAM 3.2 **Example GI Opportunities Plan** (adapted from Grantham GI Strategy, South Kesteven DC, March 2011)



- Significant Vegetation/ Habitats
- Water Courses/Features
- Waterbodies
- Key Views to Landmarks/ Open Countryside
- Key Pedestrian Routes
- Designated Wildlife Sites
- Proposed Landscape Buffer Zones/Green Corridor
- Proposed Green Spaces Links
- Proposed Screen Planting
- Proposed Woodland Expansion
- Proposed Access Links
- Development Site Boundary

1. Provide improved links to river corridor and promoted routes.
2. Provide open water course for sustainable drainage and enhanced biodiversity.
3. Strong landscape buffer to soften development and enhance tree cover.
4. Enhance linkages to footpath network and wider countryside to the east.
5. New woodland/wetland planting to enhance existing water course and reflect typical character of woodland cover in the area. Woodland also acts as a backdrop to new housing.
6. Provide key open space and enhance pedestrian connections with existing housing areas.
7. Provide allotments/orchards for local food production linked to new green space.

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March 2011

3.4 Step 3: Incorporate proposals into development design that maintain, protect and enhance GI, ensuring connectivity with the surrounding GI network

The final step involves considering how proposals for maintaining, protecting and enhancing GI, and ensuring connectivity with the surrounding GI network, can be incorporated into the site layout design for the development by:

- Retaining and integrating existing GI assets into development
- Providing mitigation and compensatory measures where harm to/loss of existing GI assets is unavoidable
- Incorporating new and enhanced GI provision of an appropriate type, standard and size

The proposals should be informed by the GI Context Plan (step 1) and respond to the GI Opportunities Plan (step 2). The GI Design Checklist in **Section 3.5** provides a useful list of considerations to help developers incorporate proposals appropriate to a site and its context.

Retaining and integrating existing GI assets into development

The design of development should aim to reflect and reinforce the area's locally distinctive character by conserving and integrating existing landscape features into a scheme (e.g. features of biodiversity, historical or cultural interest, such as ancient woodland and hedgerows, or the remains of historical settlements and routes). In this way, GI can be used as a positive 'place-making' tool and, where appropriate, can also help positively transform local character.

Wherever possible, full consideration should be given to retaining and integrating the site's GI assets (as identified on the GI Context Plan) into the structural landscape framework for the development. Consideration of the opportunities for inclusion of a site's existing GI assets into the layout and design of a development at an early stage will help to maximise the multifunctional benefits/ecosystem services that these provide. It will also help the development proposal ensure compliance with relevant legislation and policy.

Incorporating greenspace into residential development

Providing mitigation and compensatory measures where harm to/loss of existing GI assets is unavoidable

Development proposals which harm the GI network will need to provide comprehensive mitigation and compensatory measures to ensure that the overall functionality and connectivity of the GI network is maintained. Such measures could be delivered off-site where on-site provision is not possible to remedy local deficiencies.

Where there is a risk of harm to existing GI assets as a result of development, mitigation will be sought to reduce such harm as far as practicable through use of appropriate measures in accordance with current best practice, legislation and policy.

Where unavoidable in order to meet development objectives, any residual loss of existing GI assets will need to be compensated for by provision of new or enhanced GI. Where on-site mitigation measures cannot be provided, or only provided in part, then off-site compensation will be sought to help reinforce GI connectivity and/or improve the GI network for the benefit of the local community and the County's environment. The nature, scale and location of off-site GI compensatory measures will normally be determined on a case-by-case basis to reflect the functions/ecosystem services provided by the GI assets lost as part of the development proposals.

Compensatory measures may be achieved through a financial contribution to maintaining a local GI site (such as a country park), and/or through a contribution to improving connectivity for people and wildlife between the proposed development site and the wider GI network (such as a greenway). Financial contributions from developers to an appropriate level of GI provision will be sought through planning obligations in accordance with LDP Policy S7. In doing so, developers will be expected to contribute to the GI requirements identified for specific strategic sites and also the general place-making GI requirements set out in the LDP's Infrastructure Plan as appropriate. Financial contributions will be secured under a Section 106 Agreement and/or through the Community Infrastructure Levy (CIL) (see **Box 3.1**) should this be progressed by the Council. Costings guidance for landscape assets and priority habitats within Monmouthshire has been developed by the Council. These provide a framework for calculating commuted sums payable by a developer for the provision of new, enhanced and/or restored landscape features and habitats where compensatory measures are necessary.

BOX 3.1 Community Infrastructure Levy

CIL was introduced in the Planning Act 2008 to permit local authorities in England and Wales to levy a charge on new developments in their area as a contribution to funding local community infrastructure needs, including GI requirements. This will require developers of most types of development, not just housing, to pay into a general community infrastructure fund based on the square metres of the proposal. It will be up to the Council to determine priorities for spending in any given year. Unlike planning obligations secured under a S106 Agreement, CIL is not tied to a specific development site and can be used to support wider GI and other place-making needs. The Council is currently progressing work on the preparation of a CIL.

Incorporating new and enhanced GI provision of an appropriate type, standard and size

Where required to meet local needs identified in the relevant evidence studies and/or through site-specific surveys, proposals for new and enhanced GI provision of an appropriate type, standard and size should be incorporated into the development (informed by the GI Opportunities Plan).

As highlighted in **Section 2.3**, GI comprises natural and managed green spaces within urban and rural areas which provide benefits for the economy, local people and biodiversity. The quantity of GI assets that should be provided, along with their character and location, ultimately depends on the specific nature of the site's context and particular circumstances, the type of development, and the contribution they can make to improving connectivity with the overall GI network in Monmouthshire.

The cost and scale of GI provision incorporated into a scheme should reflect the scale and type of development proposed. For example, a major housing development scheme could include the provision of extensive sustainable drainage systems, food production areas and a large proportion of accessible

green space. Smaller developments on the scale of a single dwelling could contribute by providing a green roof, a garden or bird/bat nesting boxes.

The extent of GI which the Council would expect to see within a proposed development is also determined by its location. In urban areas where there is a deficiency of accessible greenspace, residential developments will be expected to provide a greater quantity of greenspace than residential developments in rural areas where there is a surplus of accessible greenspace.

Proposals for new and enhanced GI should aim to reflect and enhance the locally distinctive character of a place, taking into account the type of GI assets in and around the site and the functions/ecosystem services that these provide. Identification of appropriate types of GI should be informed by the process and principles for embedding GI into development outlined in this section of the SPG.

In line with accepted practice, the SPG does not include quantitative standards for all types of GI (e.g. green corridors, cemeteries and functional green space). Proposals for new and enhanced GI must meet the adopted minimum standards for provision set out in LDP Policy CRF2 – Outdoor Recreation/Public Open Space/Allotment Standards and Provision (see **Box 3.2**). Charges for financial contributions expected from housing developers in lieu of on-site provision of recreation and public open space are set by the Council on an annual basis. Developers should check with the Council to obtain the latest available information.

It is considered best practice to present the proposals for maintaining, protecting and enhancing GI as part of the layout and design for the proposed development in a GI Concept Statement. The provision of a draft GI Concept Statement is a useful aid for pre-application discussions with Council planning officers and statutory consultees. An example of the structure/contents of a GI Concept Statement is provided in **Box 3.3**.

In the case of a larger scale development (or a proposal in an environmentally sensitive location) a GI Concept Statement would normally be required for submission with a planning application. In certain circumstances, it may also be beneficial to provide one as part of a planning application for smaller scale development, where identified through pre-application discussions with the Council planning officer.

BOX 3.2 LDP Policy CRF2 – Outdoor Recreation/Public Open Space/ Allotment Standards and Provision

Development proposals will be assessed against the Council's standards for recreation and open space and allotments, as follows:

Public recreation and open space

- NPFA minimum standard for outdoor playing space of 2.4 hectares per 1,000 population and 0.4 hectares of public open space per 1,000 population, which are accessible to residential areas.

Allotments

- Spatial standard of 0.25 hectares of allotment space per 1,000 population.

Proposals for new residential development should provide appropriate amounts of outdoor recreation and public open space in accordance with the above standards. Any provision should be well related to the housing development that it is intended to serve, however the exact form and type will be determined having regard to the nature and size of the development proposed. Proposals for new residential development on the strategic sites listed in Policy S3 and any development exceeding 50 dwelling units per site, should also make provision for allotments if required in accordance with the above standards.

BOX 3.3 GI Concept Statement - Example Structure/Contents

1. Existing GI Assets (GI Context Plan)
2. Local GI Needs and Opportunities (GI Opportunities Plan)
3. GI Concept Plan
4. Implementation

3.5 GI Design Checklists

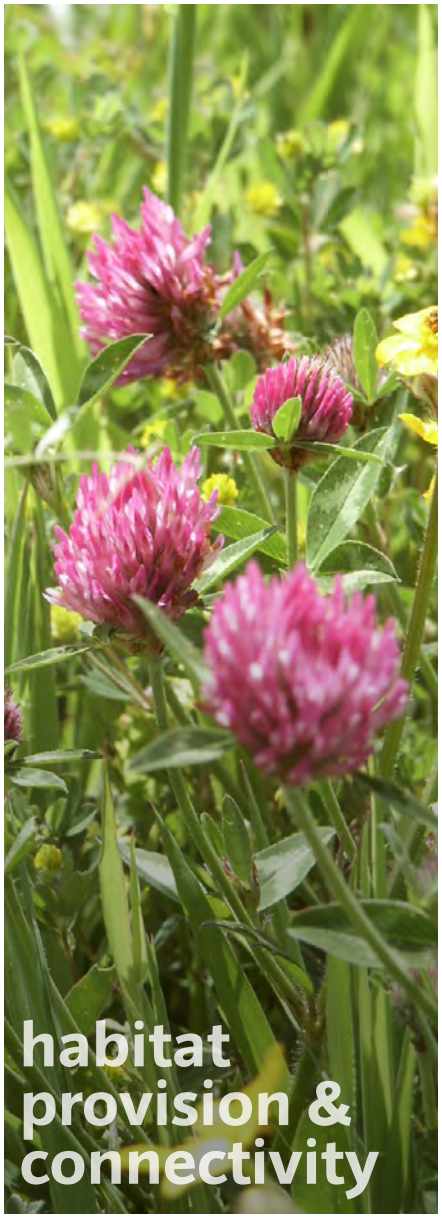
The design phase is an iterative process. It involves a wide range of analysis, consultations, testing and refinements as outlined by the steps set out in **Sections 3.2 – 3.4**. GI design should be considered as an integral element of the vision for the site's overall layout and design. Importantly, a network of well-designed and managed greenspaces and links can make a significant contribution to creating a distinctive identify and sense of place for the development.

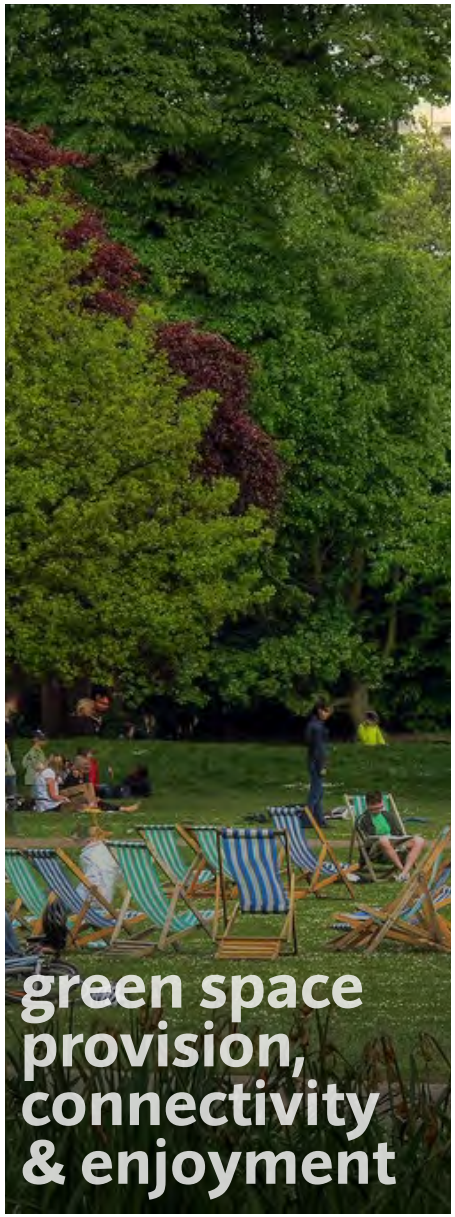
Opportunities for incorporating GI provision through the evolution and testing of the site masterplan should be considered alongside options for the layout of street grids and blocks, movement routes, public spaces and soft landscaping areas. In addition, GI thinking can also influence proposals for the massing, heights, densities and orientations of buildings in respect of creating optimum micro-climatic conditions for green roof systems and roof gardens, and/or green walls to provide insulation or shading and cooling for example.

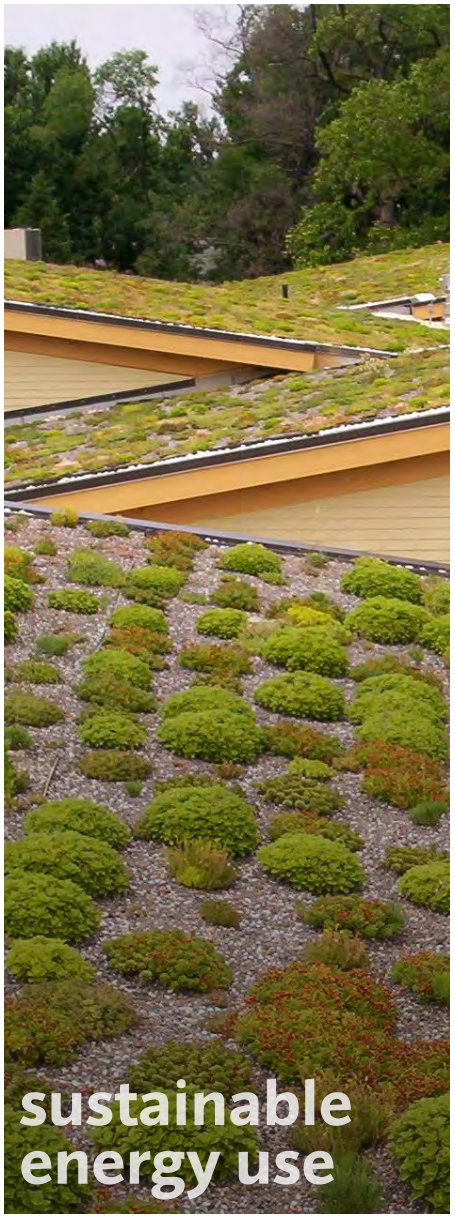
It is important that sufficient time is spent studying and understanding how a place works before starting to design. Studies involving urban design, site planning and infrastructure/connectivity analysis should consider the current GI in a holistic way. It should identify what functions existing GI assets within and around a site are providing, where it is functioning well and needs to be maintained and where it functions less well and would benefit from improvement.

The GI design checklists set out in this section highlights key design considerations for embedding GI into development proposals. They aim to provide a stimulus for inspiring thinking about how to reflect GI needs and opportunities in the design and place-making process. The checklists are not intended to be treated as prescriptive or rigid guidance.

The GI design considerations are illustrated by a range of case studies (see **Appendix B**) that demonstrate best practice from Wales, England and Germany.




green space provision, connectivity & enjoyment


sustainable energy use


local food production


flood attenuation & water resource management

GI Function | landscape setting and quality of place

GI Benefits

Economic 'New development which is set in a high quality landscape is more valuable and more likely to be long lived. Research shows a direct connection between high quality greenspace and increased land and property values'.

Framework for the South East Wales Networked Environmental Region (Welsh Government, 2009)

Environmental GI reinforces local landscape character and provides an opportunity to reinstate lost features and/or enhance existing ones.

Social 'GI assets that engage local communities and which relate to landscape character and heritage can enhance the local sense of place and foster community spirit'.

GI Position Statement (Landscape Institute, 2013)

Key design considerations

- How does the site respond positively to the adjacent landscape character and context whilst complementing existing GI functions?
- Have existing views into and out of the site been safeguarded and are there opportunities to create new views and vistas within the proposed development?
- What design measures have been incorporated into the masterplan to protect and preserve the surrounding landscape setting and enhance the distinctiveness of existing settlements?
- Has an overarching landscape framework been developed and does it respond in design terms to local landscape character assessments?
- Have existing landscape and historic features been identified and incorporated into the proposed GI and are there opportunities to conserve and enhance the setting of these features within the site?
- What landscape edge treatments have been considered for the site boundary and do they provide sensitive and appropriate levels of integration to the surrounding area?
- How will the scheme connect with the wider GI network in visual terms?
- Does the provision of GI within the masterplan create lasting value, identity and a distinct sense of place for the scheme?

Signposts to case studies

- Ashley Vale homes (Bristol)
- Crewe Park business park (Cheshire)
- Gateway Monmouth public realm (Monmouthshire)
- Lakeshore flats (Bristol)
- Water Colour homes (Surrey)

(hyperlinked)

Signposts to planning and design guidance

- Monmouthshire Landscape and Development Checklist (MCC, 2012)
- Interim Landscape Position Statement (2013)
- Landscape Character SPG (MCC, in preparation)
- Monmouthshire Landscape Sensitivity and Capacity Studies (MCC, 2009/2010)

(hyperlinked)

Signposts to further information

- www.landscapeinstitute.org
- www.naturalresourceswales.gov.uk
- www.tcpa.org.uk

(hyperlinked)

GI Function | habitat provision & connectivity

GI Benefits

Economic 'Carefully provided access to nature conservation sites can create tourism which has been shown to help diversify local economies, supplement incomes and encourage people to continue to settle'.

Framework for the South East Wales Networked Environmental Region (Welsh Government, 2009)

Environmental 'Helps to ensure that urban and rural areas continue to function ecologically. Also provides opportunities to link fragmented habitats and landscape features to make them more viable, restore degraded sites and habitats, create new wildlife havens and provide new spaces for recreation to reduce human impact on sensitive sites'.

Nature Nearby (Natural England, 2010)

Social Participation in activities that improve the environment is known to have a beneficial impact on people's health and well-being and can help foster community cohesion, helping to cement contacts between different generations.

Natural Heritage: a Pathway to Health (Institute of Rural Health, 2008)

Key design considerations

- Has an Ecological Appraisal been carried out and used to inform the masterplan and does it take into account the habitats beyond the site boundary?
- What existing habitats and landscape features such as hedgerows, tree groups, water bodies and corridors such as rivers and canals have been integrated into the scheme and how has the balance between accessibility and preservation been addressed?
- Have new accessible areas of habitat been created and do these contribute to local targets e.g. Biodiversity Action Plans?
- Have native species of local provenance been specified within the landscape proposals?
- How have natural play, education or interpretation opportunities been incorporated into the scheme to connect people to nature?
- Has the biodiversity value of different GI elements been maximised (e.g. green roofs)
- Have robust funding, management/maintenance and conservation plans been produced for the scheme?
- How does the scheme connect with the wider GI in ecological and habitat terms?
- Has the potential damage and impact on designated/sensitive sites and protected species been considered, and has the necessary mitigation been considered?
- Does the scheme contribute towards meeting local biodiversity needs/targets?
- What local wildlife groups and other stakeholders have been consulted and have they informed the masterplan?

Signposts to case studies

- Ashley Vale homes (Bristol)
- Cley Marshes visitor centre (Norfolk)
- Crewe Park business park (Cheshire)
- Lakeshore flats (Bristol)
- Sharrow School (South Yorkshire)
- National Wetland Centre for Wales (Carmarthenshire)
- Water Colour homes (Surrey)

(hyperlinked)

Signposts to planning and design guidance

- Monmouthshire Ecological Connectivity Assessment (MCC, 2010)
- Biodiversity SPG (MCC, in preparation)
- Priority Habitat Costing Study (MCC, 2012)

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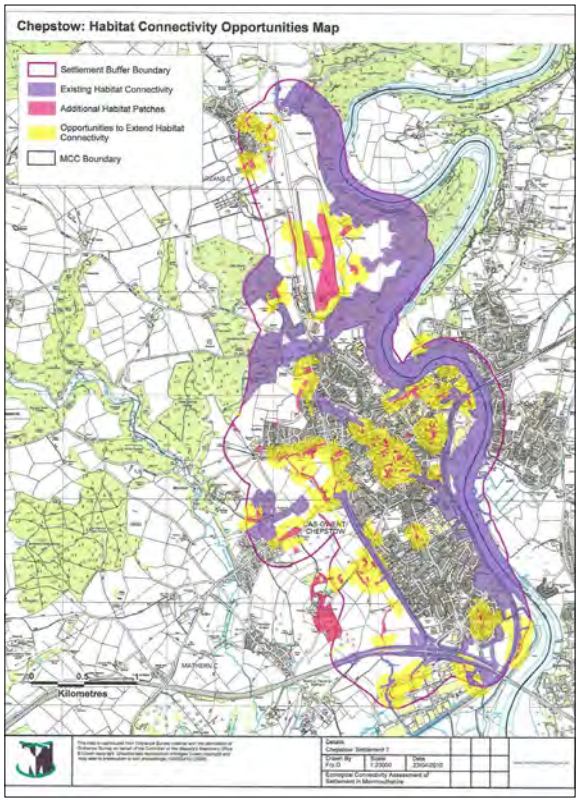

Signposts to further information

- www.biodiversitywales.org.uk
- www.landscapeinstitute.org
- www.naturalresourceswales.gov.uk
- www.tcpa.org.uk
- www.wildlifetrusts.org

(hyperlinked)

GI Function | green space provision, connectivity & enjoyment

'There is growing evidence that greenspace in urban areas, as well as access to the wider countryside, enhances child development, and improves physical and mental health outcomes for all.'
UK National Ecosystem Assessment (UNEP-WCMC, 2011)

GI Benefits

Economic Attractive and convenient pedestrian and cycle routes between existing and proposed settlements can support the local economy.

Environmental GI can provide good walking and cycling opportunities for recreation and as a means of transport, offering a quick route from homes to services – and so helping to discourage the use of private cars.
Planning for a Healthy Environment: Good Practice Guidance for GI and Biodiversity (Town and Country Planning Association, 2012)

Social Greenspaces provide opportunities for social interaction and play an important role in the health and well-being of residents and visitors.

Key design considerations

- Has an audit of existing GI assets (green spaces and links) on and off-site been undertaken and do proposals complement, enhance and support these assets?
- Have opportunities for providing a range of functions, facilities and activities been considered in relation to local needs for open/green space? For example, recreation grounds and sports pitches can incorporate ecological areas and can be used by both school and public users as part of the wider GI network.
- What provision has been made within the scheme to connect beyond the red line boundary into the wider access/green network? Do these links also connect into other off-site community facilities and green spaces offering opportunities for the wider community?
- Have connections and linkages been made between the scheme and any existing settlements and do these promote a reduction in car use and safe routes to school as well as contributing to the health and wellbeing of its residents?
- Where and what type of new access routes/green connections are being provided on-site? How best can these strengthen, enhance and join up with the existing green network?
- What consideration has been made between balancing the need for access and protecting areas of ecological and biodiversity value and how will this be managed?
- What consideration is there for 'access for all' and is it possible for all residents to access a range of GI from their home easily and conveniently?
- Has a management and maintenance plan been produced and is it funded robustly so the long term quality of the GI is ensured?
- Which local community groups and other stakeholders have been consulted and have they informed the masterplan? Have opportunities for community involvement in the future management of green spaces been explored (e.g. providing support for the establishment of a 'friends group' if appropriate)?
- How will the scheme connect with the wider GI network?

Signposts to case studies

- Crewe Park business park (Cheshire)
- Gateway Monmouth public realm (Monmouthshire)
- Lakeshore flats (Bristol)
- National Wetland Centre for Wales (Carmarthenshire)
- Sharrow School (South Yorkshire)
- Vauban sustainable urban extension (Germany)
- Water Colour homes (Surrey)

(hyperlinked)

Signposts to planning and design guidance

- Monmouthshire Countryside Access Design Guide (MCC, 2012)
- Monmouthshire Greenspace Study (MCC, 2010)
- Monmouthshire Open Space Study (MCC, 2008)
- Monmouthshire Rights of Way Improvement Plan (MCC, 2007)

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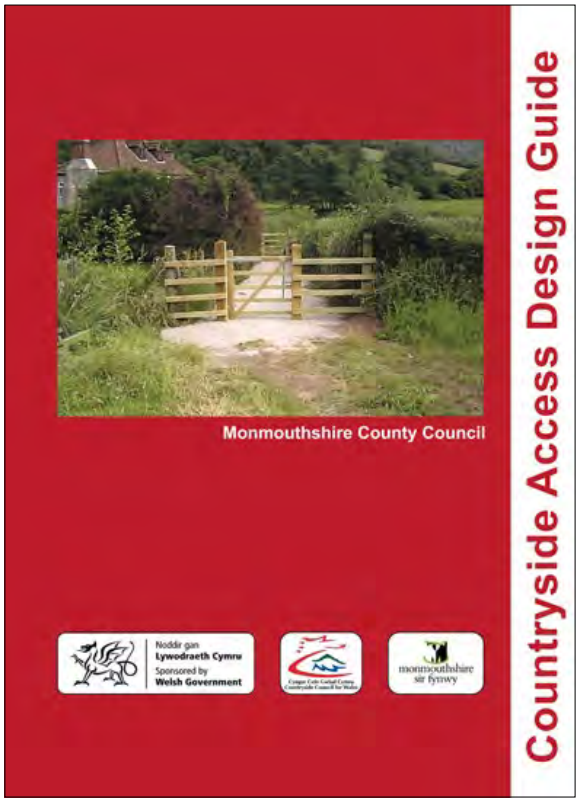


Signposts to further information

- www.fieldsintrust.org
- www.naturalresourceswales.gov.uk
- www.sustrans.org.uk

(hyperlinked)

GI Function | sustainable energy use

Research published by the Canadian National Research Council found that 'an extensive green roof reduced the daily energy demand for air conditioning in the summer by over 75%.'
(Green Roofs for Healthy Cities website: www.greenroofs.org, 2014)

GI Benefits

Economic Industries providing green roof technologies can create high value, high skilled local employment. Provision of appropriate vegetation for shade and protection against prevailing winds can both reduce the need for cooling in the summer and heating during the winter months resulting in energy cost savings.

Environmental Reduction in carbon emissions and opportunities for climate change adaptation. By reducing local temperatures and shading building surfaces, GI lessens the cooling and heating demand for buildings, reducing energy needs and decreasing emissions from power plants.

Social Helps create a more comfortable urban environment during hot summer months and filter air pollutants, improving air quality.

Key design considerations

- Do proposals for the site make best use of off-site places nearby where energy or fuel is produced? i.e. short rotation coppice, bio fuels and wind generation?
- Have green/brown roofs and green walls been incorporated into buildings within the scheme to increase energy efficiency, conservation and provide shade? Green roofs and PV panels can be mutually beneficial - green roofs create a microclimate that enhances the operating efficiency of PV panels, while the panels can help to create greater habitat diversity on the roof.
- Have planting areas been designed to enhance/create beneficial microclimates across the development site? Does structural planting create shelter from prevailing winds in winter and shade in summer, improving the usability of public open spaces whilst promoting walking and cycling locally?
- Have street trees of an appropriate species and size been incorporated into the masterplan to create shade and cooling in external areas, reduce rainwater runoff and act as carbon sinks?
- How has existing or proposed woodland been incorporated? Woodland can provide many benefits including carbon sequestration, habitat creation and wood chip production for renewable energy.
- What opportunity is there to combine local food production, composting and waste recycling with the potential for energy from waste?
- Has built form been orientated to maximise solar gain whilst creating sheltered and sunny green spaces?
- Does the scheme incorporate solar water heating and solar electricity on roof space?
- What local provenance species have been chosen and are they the correct species to achieve objectives of cooling in summer, solar gain in winter and increased biodiversity?
- Have water bodies such as ponds and lakes been created to provide microclimatic cooling during the summer months?

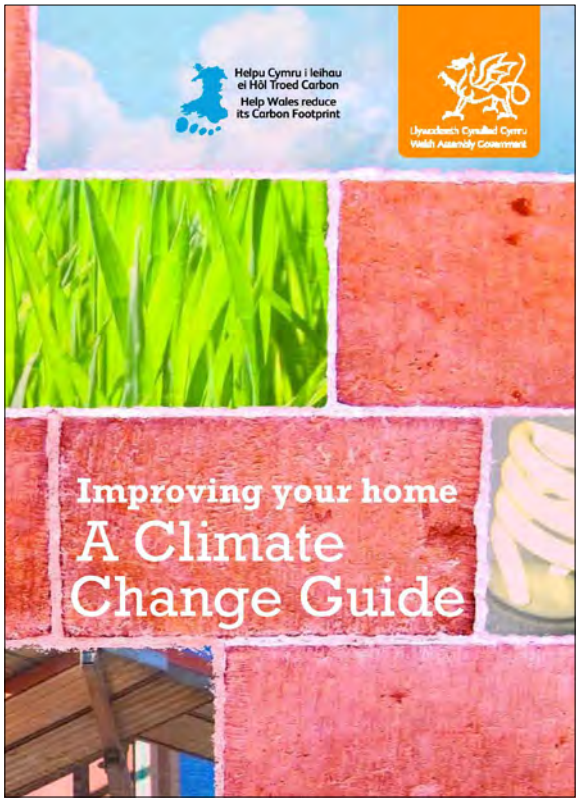
Signposts to case studies

- Ashley Vale homes (Bristol)
- Cley Marshes visitor centre (Norfolk)
- Lakeshore flats (Bristol)
- Sharrow School (South Yorkshire)
- Vauban sustainable urban extension (Germany)

(hyperlinked)

Signposts to planning and design guidance (hyperlinked)

- Climate Change Adaptation by Design (Town and Country Planning Association, 2007)
- Generating your Own Energy: a Planning Guide for householders, communities and businesses (Welsh Government, 2011)
- Good practice Guidance: Sustainable Design and Construction (Cross Sector Group on Sustainable Design and Construction, 2012)
- Improving your Home: a Climate Change Guide (Welsh Government, 2008)
- Sustainable Energy by Design (Town and Country Planning Association, 2006)
- Green Roof Code of Best Practice for the UK (Groundwork, 2011)
- Guidelines for the Planning, Construction & Maintenance of Green Roofs (FLL, 2008).
- Renewable Energy and Energy Efficiency SPG (MCC, in preparation)



Signposts to further information

- www.renewableenergywales.co.uk
- www.bre.co.uk
- www.energysavingtrust.org.uk
- www.sustainablecities.org.uk
- www.ciria.org
- www.cat.org.uk

(hyperlinked)

GI Function | local food production

'An estimated 33% of people already grow or intend to grow their own vegetables.'
UK National Food 2030 Strategy (DEFRA, 2010)

GI Benefits

Economic Can help to strengthen the local economy by supporting local retailers, growers and producers and can contribute to the creation of attractive places to live, work and visit.

Environmental Contributes to sustainable food production and consumption and a reduction in food miles. Also provides valuable habitats for wildlife.

Social Helps community spirit and offers opportunities for socialising, learning and health improvements.

Key design considerations

- Does the scheme meet adopted minimum standards for allotment provision?
- Have adequately sized rear gardens been provided to allow small-scale domestic food production?
- Do the proposals for the site make best use of off-site places nearby where the production of food can take place and is this close to where people will live?
- What opportunity is there to combine food production with other GI functions such as energy production, access and recreation?
- What is the potential for community orchards, city/school farms and other edible landscapes such as hedgerows to be incorporated into the scheme?
- Has the use of livestock been considered to reduce/maintain management costs within the GI network?
- Has a site-wide composting strategy for garden and food waste been developed? Garden and food waste can be utilised as compost for allotments and renewable energy production.
- What opportunities are there to explore the potential for locally grown food to be used by local schools and other community facilities? Have opportunities for community food growing been looked at?

Signposts to case studies

- Ashley Vale homes (Bristol)
- Gateway Monmouth public realm (Monmouthshire)
- Lakeshore flats (Bristol)
- Springhill Cohousing (Gloucestershire)

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Signposts to planning and design guidance

- Growing in the Community (2nd Ed., Local Government Association, 2010)

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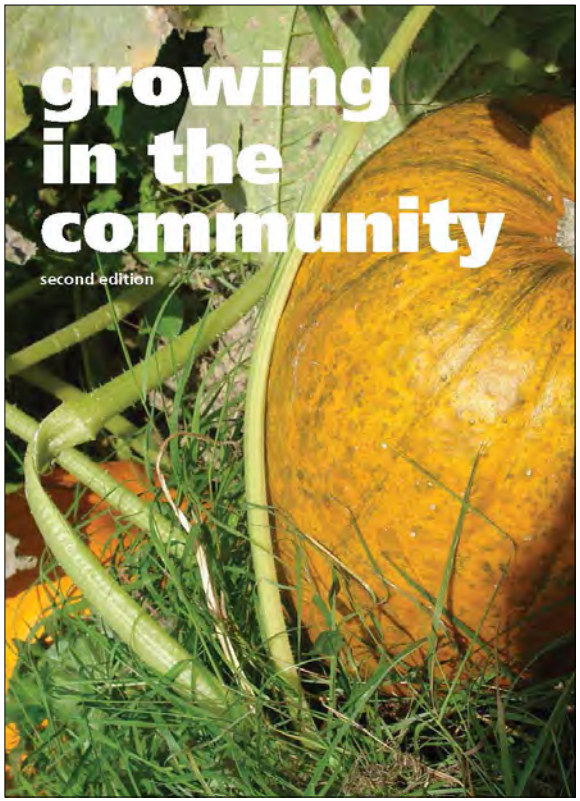

Signposts to further information

- www.nsalg.org.uk
- www.rhs.org.uk
- www.sustainweb.org

(hyperlinked)

GI Function | flood attenuation & water resource management

'Sustainable drainage systems can deliver benefits for the whole community in terms of biodiversity, climate regulation, regeneration, learning, health, recreation and play'.

Sustainable Drainage Systems: a Guide for Local Authorities and Developers (Royal Society for the Protection of Birds and Wildfowl and Wetlands Trust, 2012)

GI Benefits

Economic GI can provide simpler and more cost effective solutions to flood attenuation and water resource management, costing less to construct and maintain. Also helps minimise costs of damage to society.

Environmental makes space for water and in doing so enhances biodiversity, recreation and local character. Also helps enhance water quality.

GI Position Statement (Landscape Institute, 2013)

Social Can reduce the number of properties at risk of flooding as well as provide access to blue and green spaces for recreation.

UK National Ecosystem Assessment (UNEP-WCMC, 2011)

Key design considerations

- Has an assessment of the ground water and water resource of the site taken place and what measures have been identified to improve the quality and quantity of water?
- Have studies of groundwater, contaminated land etc been undertaken to determine the suitability of the site for sustainable drainage systems?
- Have sustainable drainage systems been considered/incorporated into the scheme? Have they been linked together to provide water resource management, increased biodiversity and an accessible recreational resource?
- Have relevant flood strategies been identified and do they inform the design and approach to on-site water management and the wider masterplan?
- What provision has been made for water balancing measures such as storm water ponds or lagoons to replace groundwater levels and have sustainable drainage systems either as permeable paving or swales been considered?
- Have rainwater harvesting systems been incorporated to provide water for irrigation of gardens, public open spaces and use within ponds and other water features?
- Have rainwater harvesting systems been incorporated to provide grey water for non-potable uses such as WCs?
- Have green roofs been provided to slow the rate of runoff?
- Have the Water Framework Directive and relevant River Basin Management Plan(s) been taken into account with appropriate measures incorporated into the development?
- Have a variety of water elements to 'tell the story' of water from collection to discharge been included? These elements could include vegetated swales, wetlands, reed beds, flood meadows, lakes and ponds.

Signposts to case studies

- Lakeshore flats (Bristol)
- National Wetland Centre for Wales (Carmarthenshire)
- Springhill cohousing (Gloucestershire)
- Stebonheath School (Carmarthenshire)
- Water Colour Homes (Surrey)

(hyperlinked)

Signposts to planning and design guidance

- Climate Change Adaptation by Design (Town and Country Planning Association, 2007)
- Good practice Guidance: Sustainable Design and Construction (Cross Sector Group on Sustainable Design and Construction, 2012)
- Sustainable Drainage Guidance, various (CIRIA).
- Sustainable Drainage Systems: a Guide for Local Authorities and Developers (RSPB and WTT, 2012)
- Green Roof Code of Best Practice for the UK (Groundwork, 2011)
- Guidelines for the Planning, Constructions and Maintenance of Green Roofs (FLL, 2008)
- Strategic Flood Consequences Assessment (MCC, 2009)

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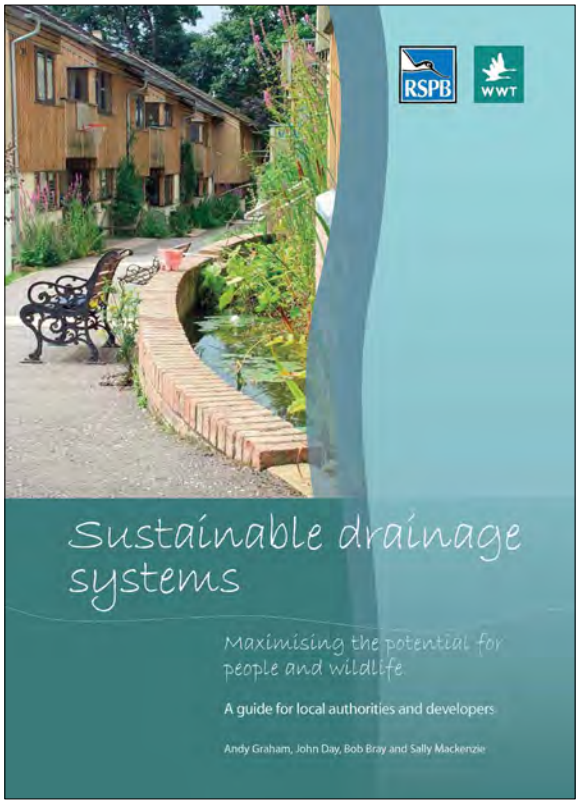

Signposts to further information

- www.naturalresourceswales.gov.uk
- www.nationalfloodforum.org.uk
- www.dwrcymru.com/en.aspx
- www.cat.org.uk

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3.6 GI Planning Checklist

The GI planning checklist (see **Box 3.4**) highlights the key considerations that the will be considered, where relevant, as part of the Council's assessment of individual planning applications. This also provides a useful checklist for applicants in terms of the key considerations that will inform the Council's decision making process in respect of compliance with the LDP's GI policies.

Chepstow Castle

BOX 3.4 GI Planning Checklist

- **Q1.** Has the relevant information agreed as part of the pre-application discussions or set out in the SPG been provided and is any further GI information required?
- **Q2.** Have the policies relevant to the site and the development proposal been accurately determined by the applicant and are there any conflicts with specific GI or environmental policies?
- **Q3.** Has a survey and appraisal of the site and its surroundings been carried out to an appropriate level of detail and are the conclusions broadly agreed as an accurate record and interpretation of the site's GI assets?
- **Q4.** Have GI constraints and opportunities been adequately identified and reflected in the development proposals?
- **Q5.** Does the development proposal include a clear statement on the overall objectives or strategy for GI and is this considered appropriate for the location and nature of development proposed?
- **Q6.** Where the development results in the loss of and/or harm to any existing GI assets, have proposals for on-site mitigation or off-site compensation measures been proposed and are they considered acceptable?
- **Q7.** Have detailed plans for the GI proposals been submitted with the application and if so, are these considered acceptable? Is any additional GI information required as part of a planning condition/reserved matters application?
- **Q8.** Have any GI issues been raised through the consultation process and if so, have these been adequately addressed by the application?

3.7 GI Implementation

Early consideration of how GI design proposals will be implemented, how the subsequent management and maintenance regimes will operate and how they will be adequately funded is vital.

Implementation of the GI aspects of a masterplan for development sites should be considered as an ongoing process in conjunction with the design phase. This involves considering the processes and strategies required for successful implementation and delivery of the masterplan's aspirations for GI.

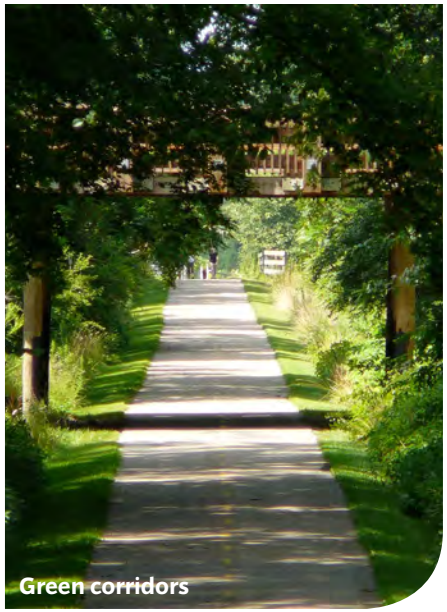
Funding, management and maintenance are interconnected and will vary depending on the funding approach and management structure chosen. The choice will depend on the specific characteristics of the site, the type of GI, whether the GI is on or off-site as well as the aspirations of the developer, stakeholders, residents and the Council. A combination of different organisations or mechanisms may be the best approach.

The funding for managing and maintaining new and/or enhanced GI provision will generally be paid for by the developer via contributions secured by planning obligations (either through S106 Agreements or via the Council's CIL, should this be progressed by the Council).

Some GI assets have the potential to provide income to support management costs i.e. renewable energy resources and sustainable local food production (such as community orchards). Additionally, some GI can lower costs over the long term i.e. reducing outfall costs of surface water by managing it on-site through a SuDS scheme.

Community orchards


Sustainable drainage systems


Green corridors

4

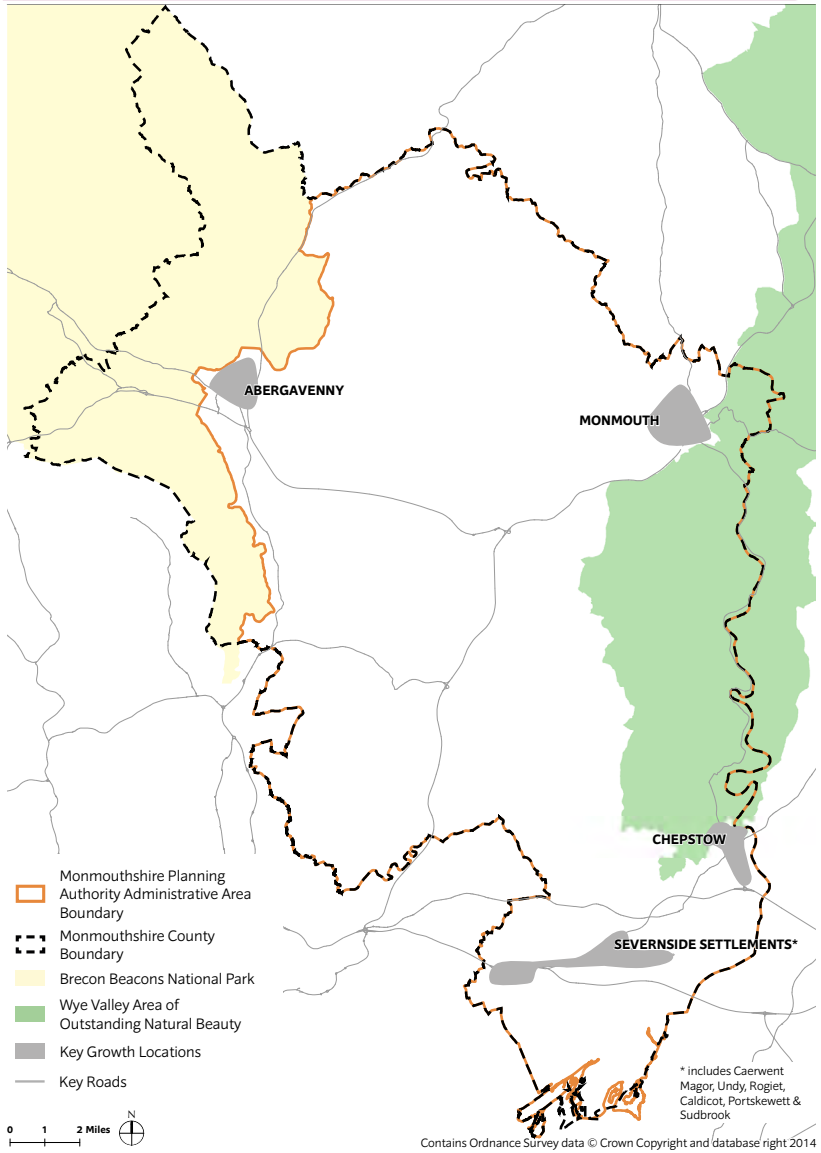
Potential GI Requirements for Key Growth Locations

4.1 Introduction

Development in Monmouthshire, over the adopted LDP period 2011-2021, is being focused in and around a number of key growth locations, namely Abergavenny, Monmouth, Chepstow and the Severnside Settlements (see **Diagram 4.1**). This will inevitably increase pressure on existing GI assets and create a need to enhance and/or create new GI within these areas or in their vicinity. Investment in a connected and multifunctional GI network of high quality green spaces and links is necessary to support sustainable growth development objectives. This section provides information on potential GI requirements for each of the key growth locations. It is intended to help guide investment in GI and inform decision making in respect of future development site allocations and site-specific planning applications. The GI information set out in **Sections 4.2-4.5** comprises:

- An overview of existing GI assets in and around each growth location.
- A diagram illustrating key GI opportunities. These can be grouped as follows:
  - Main promoted routes (investment, as appropriate, in improvements to the quality, signage/interpretation and accessibility of the routes; provision of new/enhanced links, circular paths and facilities; and/or habitat enhancement/creation).
  - (Other) GI corridors (investment, as appropriate, in the creation of new and/or enhancement of existing corridors/links within corridors for non-motorised users and/or wildlife).
  - Habitat connectivity (opportunities as identified in the Ecological Connectivity Assessment).
  - Potential place-making GI requirements (to be read in conjunction with **Boxes 4.1-4.4**, as appropriate).
- Potential GI requirements for the growth locations (including specific requirements for the relevant strategic sites). The list of potential 'place-making' requirements is not final and will be revised as necessary as the Council establishes its priorities in the light of available resources, and as the Whole Place Plan programme is developed and the Infrastructure Plan is progressed.

DIAGRAM 4.1 Key Growth Locations



Other potential strategic GI requirements for Monmouthshire are listed in **Section 4.6**. As Monmouthshire is generally already well provided for with respect to overall green space provision the main priorities relate to improving access, linkages and facilities.

Depending on the size of a development site and its impact on Monmouthshire's GI network/existing GI assets, off-site GI compensation may be sought from developers (see also **Section 3.7**). Some of the potential place-making GI requirements listed in **Sections 4.2-4.6** have the ability to be delivered as part of off-site GI developer contributions.

Where known, indicative costs for capital works are provided in relation to potential GI requirements (see **Boxes 4.1-4.5)**.


Abergavenny


Monmouth


Chepstow


Magor/Undy, Severnside

4.2 Abergavenny/Llanfoist

Overview of existing GI assets in and around the growth location

Abergavenny is a distinctive historic market town nestled within the Usk Valley, immediately outside the Brecon Beacons National Park's eastern boundary. Its town centre is a conservation area containing many listed buildings, including the ruins of the Norman Abergavenny Castle. Together with the nearby village of Llanfoist, it is overlooked and sheltered by the Blorenge and the Sugar Loaf mountains, located to the south-west and north-west respectively. The Blaenavon World Heritage Site stretches to the south-west.

Other key GI assets include:

- The River Usk (also a SAC) and its floodplain (to the south of Abergavenny), which includes accessible natural greenspaces such as Castle Meadows.
- The River Gavenny which flows through Abergavenny and the Monmouthshire and Brecon Canal situated to the south of Llanfoist.
- Historic parks/gardens including Bailey Park within Abergavenny, Abergavenny Priory Deer Park to the north and Coldbrook House to the south-east.
- Public Rights of Way and the Usk Valley Walk long distance path.
- Partly accessible woodlands such as Twyn-yr-allt and Deri-fach (also designated as SSSI and SAC) to the north and Coed-y-person to the south (designated as a SSSI).

Key messages from the Open Space Study, Greenspace Study, Ecological Connectivity Assessment and Landscape Sensitivity and Capacity Studies, (relating to Abergavenny and Llanfoist) are set out in **Appendix C.** A biodiversity and geological designated sites map and access map are also included.

DIAGRAM 4.2 Abergavenny/Llanfoist's Key GI Assets

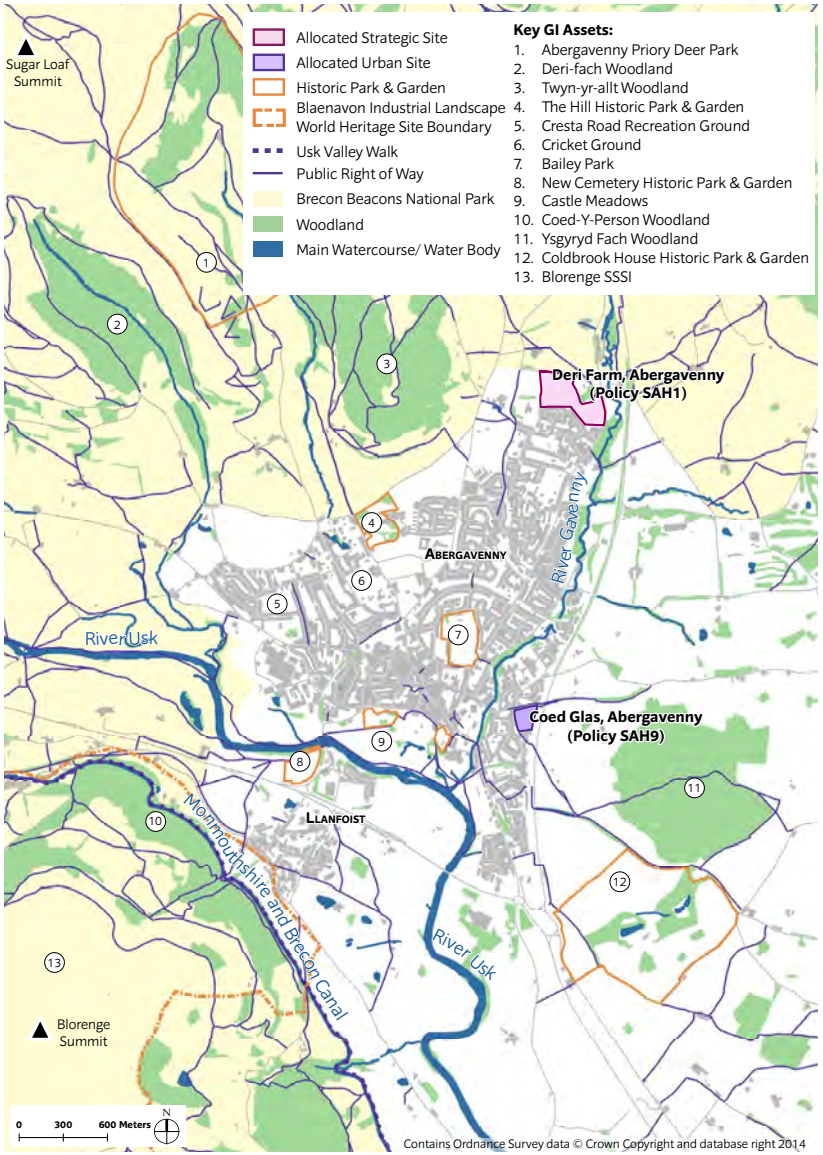


DIAGRAM 4.3 Key GI Opportunities in Abergavenny/Llanfoist

KEY

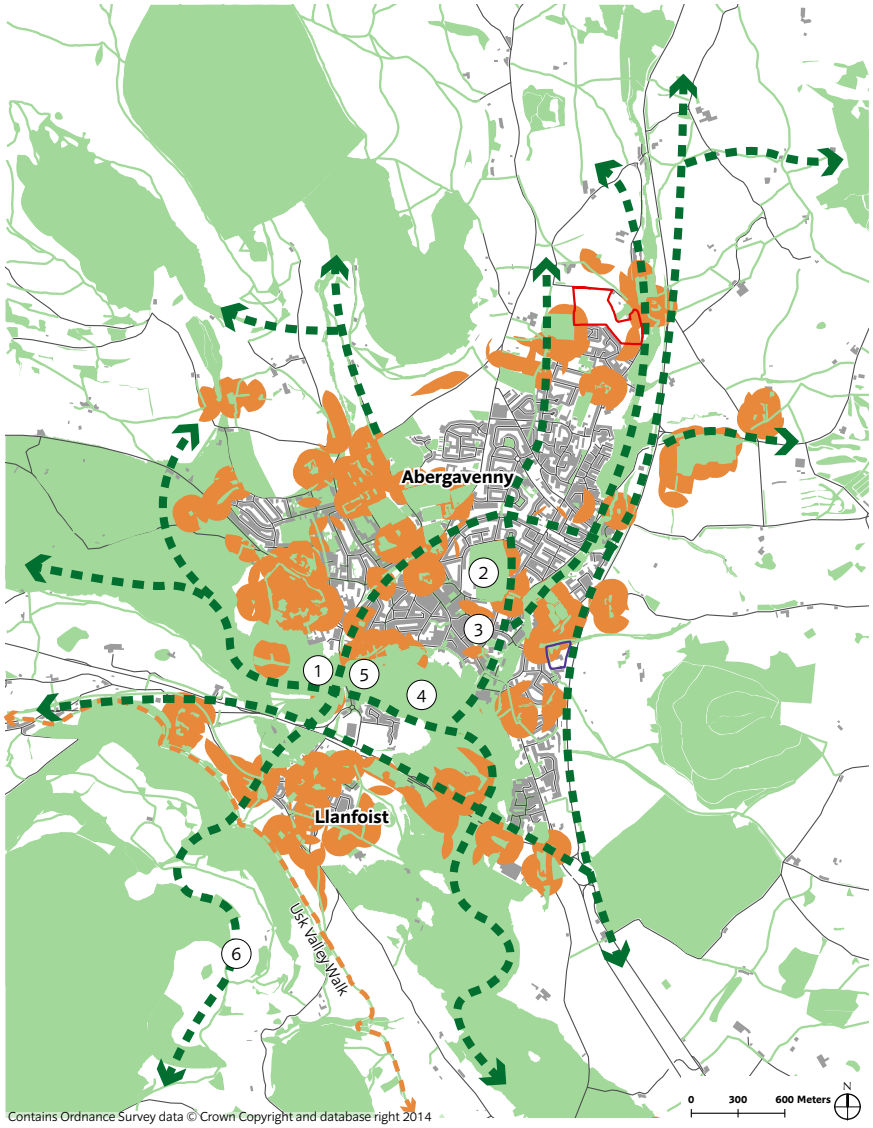
- Allocated Strategic Site
- Allocated Urban Site

GI Network

- Combined green infrastructure assets
- Main Promoted Routes
- Green infrastructure corridors
- Habitat connectivity opportunities

Potential place-making green infrastructure requirements (see Box 4.1)

1. Llanfoist pedestrian/cycling river crossing
2. Bailey Park improvements
3. Lion Street improvements
4. Castle Meadows greenspace management extension
5. Castle Meadows riverbank protection
6. Access improvements to World Heritage Site
7. Opening up access to natural greenspace (not mapped)
8. Addressing open space deficiencies (not mapped)



BOX 4.1 GI Requirements for Abergavenny/Llanfoist

Potential Place-Making GI Requirements

	Location	Item	Timing/phasing	Indicative costs	Delivery
1	Abergavenny/ Llanfoist	Llanfoist pedestrian and cycling river crossing (source: MCC)	Likely to be subject of 2014-15 SEWTA bid. Subject to detailed feasibility study 2013-14	£1m (cost depending on where bridge can go)	SEWTA RTP – funding not confirmed
2	Abergavenny	Improvements to Bailey Park (source: Abergavenny Regeneration Action Plan v3, 2008)	2014-2016	£10k	MCC with S106 funding from redevelopment of cattle market/new supermarket
3	Abergavenny	Public Realm improvements and enhancement of Lion Street and environs associated with commercial development scheme including retail uses (source: Better Bryn-y-Cwm: Whole Place Plan for Abergavenny and District, 2013)	2014-2016	£310k (£10k towards public art/ public realm improvements in vicinity of site, £300k towards improvements to Lion Street and town centre environs)	MCC with S106 funding from redevelopment of cattle market/supermarket
4	Abergavenny/ Llanfoist	Castle Meadows – extend existing managed greenspace to Ysbytty Fields to improve linkage to Llanfoist (source Greenspace Study, 2010)	2012-2021	Subject to detailed feasibility study	MCC and potentially developer funded
5	Abergavenny	Castle Meadows – river bank protection near Llanfoist bridge (source: Greenspace Study, 2010 and Castle Meadows Management Plan [consultation draft])	2012-2021	£0.06m	MCC and potentially developer funded
6	Abergavenny/ Blaenavon	Access improvements between Abergavenny/ Llanfoist and the Blaenavon World Heritage Site (source: stakeholders involved in the development of this SPG)	Subject to detailed feasibility study	Subject to detailed feasibility study	MCC and potentially developer funded
7	Abergavenny/ Llanfoist	Open up access to currently inaccessible natural greenspaces (source: Greenspace Study, 2010)	Subject to detailed feasibility study	Subject to detailed feasibility study	MCC
8	Abergavenny/ Llanfoist	Seek opportunities to address deficiencies in open space (see **Appendix C** for further details) (source: Open Space Study, 2008)	Ongoing	Subject to detailed feasibility study	MCC and potentially developer funded

Deri Farm Allocated Strategic Site GI Requirements

	Abergavenny	Recreation and open space (source: MCC LDP Appendix 1: Schedule of Infrastructure Provision for Strategic Sites)	2016-2021	Number of dwelling* (£3,920 minus on-site provision) – subject to no change in current policy approach	Developer funded
		Biodiversity mitigation and enhancement (subject to detail/future GI proposals) (source: MCC LDP Appendix 1: Schedule of Infrastructure Provision for Strategic Sites)	2016-2021	Not specified	Developer funded
		Sustainable transport contributions (source: MCC LDP Appendix 1: Schedule of Infrastructure Provision for Strategic Sites)	2016-2021	Not specified	Developer funded

4.3 Monmouth

Overview of existing GI assets in and around the growth location

The market town of Monmouth is situated at the confluence of the Rivers Monnow, Trothy and Wye, close to the Welsh border and adjacent to the Wye Valley AONB's western edge. The town's castle, listed buildings, Norman bridge and Roman roads, all reflect its historic value. It is overlooked and sheltered by a number of partly accessible woodlands including Buckholt Wood, Hayes Coppices and Kingswood.

Other key GI assets include:

- Fiddler's Elbow National Nature Reserve (to the east).
- Accessible natural greenspace sites such as the Chippenham Recreational Ground in the centre of Monmouth and St Dials Wood to the south (eastern half is accessible).
- Public Rights of Way and the Offa's Dyke Path National Trail and Wye Valley Walk long distance path.

Key messages from the Open Space Study, Greenspace Study, Ecological Connectivity Assessment and Landscape Sensitivity and Capacity Studies (relating to Monmouth) are set out in **Appendix D**. A biodiversity and geological designated sites map and access map are also included.

DIAGRAM 4.4 Monmouth's Key GI Assets

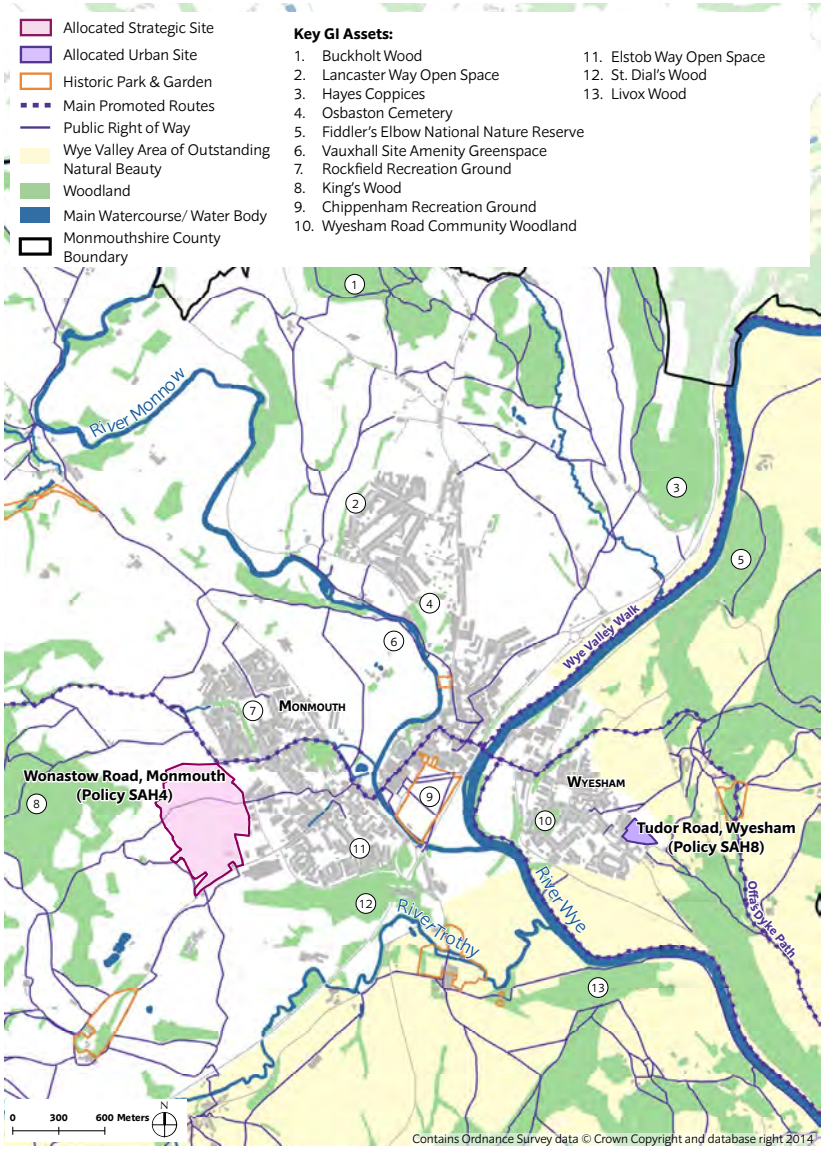


DIAGRAM 4.5 Key GI Opportunities in Monmouth

KEY

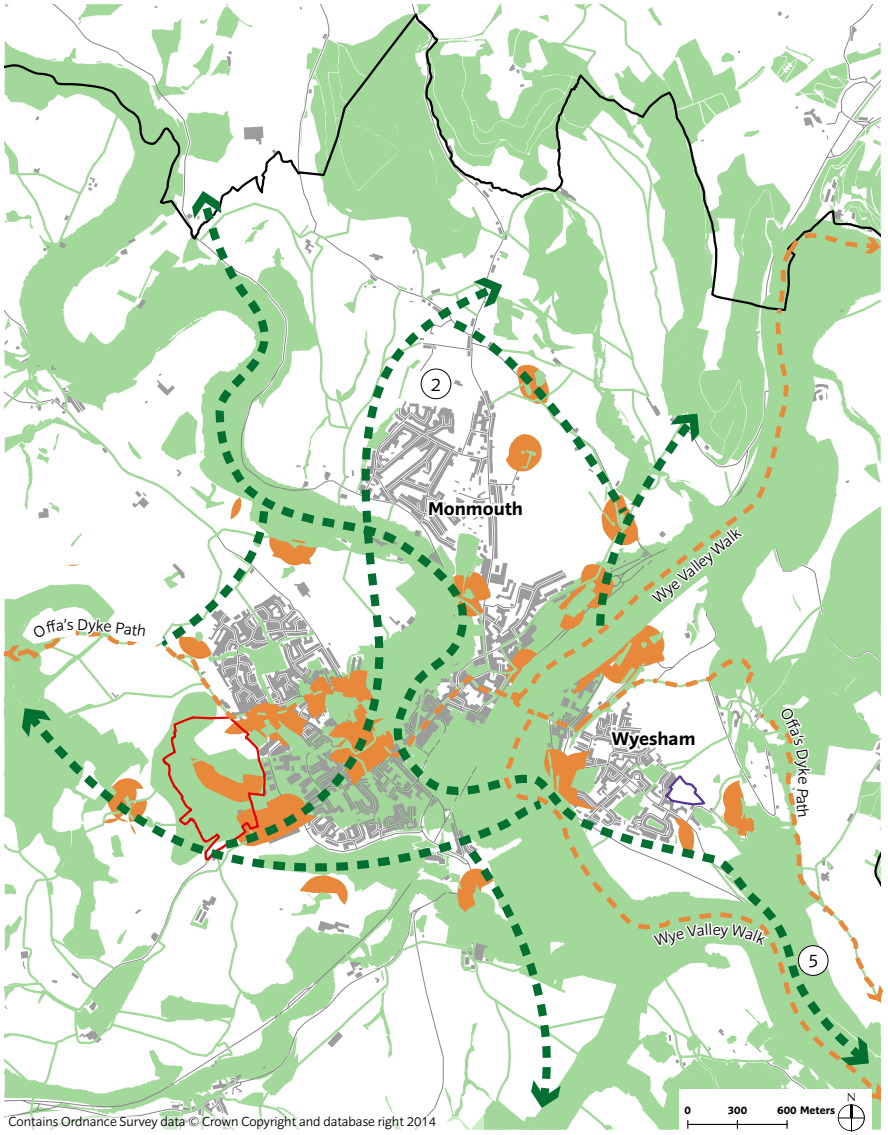
- Allocated Strategic Site
- Allocated Urban Site
- Monmouthshire County Boundary

GI Network

- Combined green infrastructure assets
- Main Promoted Routes
- Green infrastructure corridors
- Habitat connectivity opportunities

Potential place-making green infrastructure requirements (see Box 4.2)

1. Monmouth Link Connect (not mapped)
2. Accessible natural greenspace provision
3. Addressing open space deficiencies (not mapped)
4. Access improvements on PRoW network (not mapped)
5. Wyesham to Redbrook cycleway



BOX 4.2 GI Requirements for Monmouth

Potential Place-Making GI Requirements

	Location	Item	Timing/phasing	Indicative costs	Delivery
1	Monmouth	Walking and cycling route improvements – Monmouth Link Connect (source: Vision Monmouth)	2011 onwards – scheme has started but still requires significant funding to complete	£2.4m	SEWTA RTP, Sustrans, Big Lottery scheme
2	Monmouth	Provision of accessible natural greenspace/ access to currently inaccessible natural greenspaces to the north of the town (source: Greenspace Study, 2010)	Subject to detailed feasibility study	Subject to detailed feasibility study	MCC and potentially developer funded
3	Monmouth	Seek opportunities to address deficiencies in open space (see **Appendix D** for further details) (source: Open Space Study, 2008)	Ongoing	Subject to detailed feasibility study	MCC and potentially developer funded
4	Monmouth and surrounding countryside	Walking and horse-riding access improvements on the PRoW network (source: Public Rights of Way Improvement Plan, 2007)	Subject to Action Plan	Subject to Action Plan	MCC and potentially developer funded
5	Wyesham to Redbrook	Wyesham to Redbrook new cycleway (source: Sustrans, 2008)	Subject to detailed feasibility study	Subject to detailed feasibility study	MCC and potentially Sustrans/developer funded

Wonastow Road Allocated Strategic Site GI Requirements

	Monmouth	Recreation and open space (source: MCC LDP Appendix 1: Schedule of Infrastructure Provision for Strategic Sites)	2015-2020	Number of dwelling* (£3,920 minus on-site provision) – subject to no change in current policy approach	Developer funded
		Biodiversity mitigation and enhancement (subject to detail/future GI proposals) (source: MCC LDP Appendix 1: Schedule of Infrastructure Provision for Strategic Sites)	2016-2020	Not specified	Developer funded
		Sustainable transport contributions (source: MCC LDP Appendix 1: Schedule of Infrastructure Provision for Strategic Sites)	2015-2020	Not specified	Developer funded
		Improved pedestrian access (source: MCC LDP Appendix 1: Schedule of Infrastructure Provision for Strategic Sites)	2015-2020	Not specified	Developer funded

4.4 Chepstow

Overview of existing GI assets in and around the growth location

The historic market town of Chepstow, once a wealthy port, is located on steeply sloping land at the mouth of the Wye Valley, immediately adjacent to the southern edge of the Wye Valley AONB. The historic core of the town is centred around the castle, which overlooks the River Wye. The Wye meanders past Chepstow's eastern edge, eventually merging with the River Severn/Severn Estuary (designated as a SSSI, SPA, SAC and Ramsar) directly to the south of the town. Accessible woodlands including St Pierre's Great Wood and Great Barnets Wood are located to the west/north-west of the town.

Other key GI assets include:

- Accessible natural greenspaces within the town such as Warren Slade and Park Redding Woods and Bulwark Road Open Space.
- Public Rights of Way and the Offa's Dyke Path National Trail, Wye Valley Walk long distance path and Wales Coast Path.
- Piercefield Park, a designated historic park/garden to the north of Chepstow. Although mainly in private ownership, it is partly accessible by rights of way and an access agreement.

Key messages from the Open Space Study, Greenspace Study, Ecological Connectivity Assessment and Landscape Sensitivity and Capacity Studies (relating to Chepstow) are set out in **Appendix E**. A biodiversity and geological designated sites map and access map are also included.

DIAGRAM 4.6 Chepstow's Key GI Assets

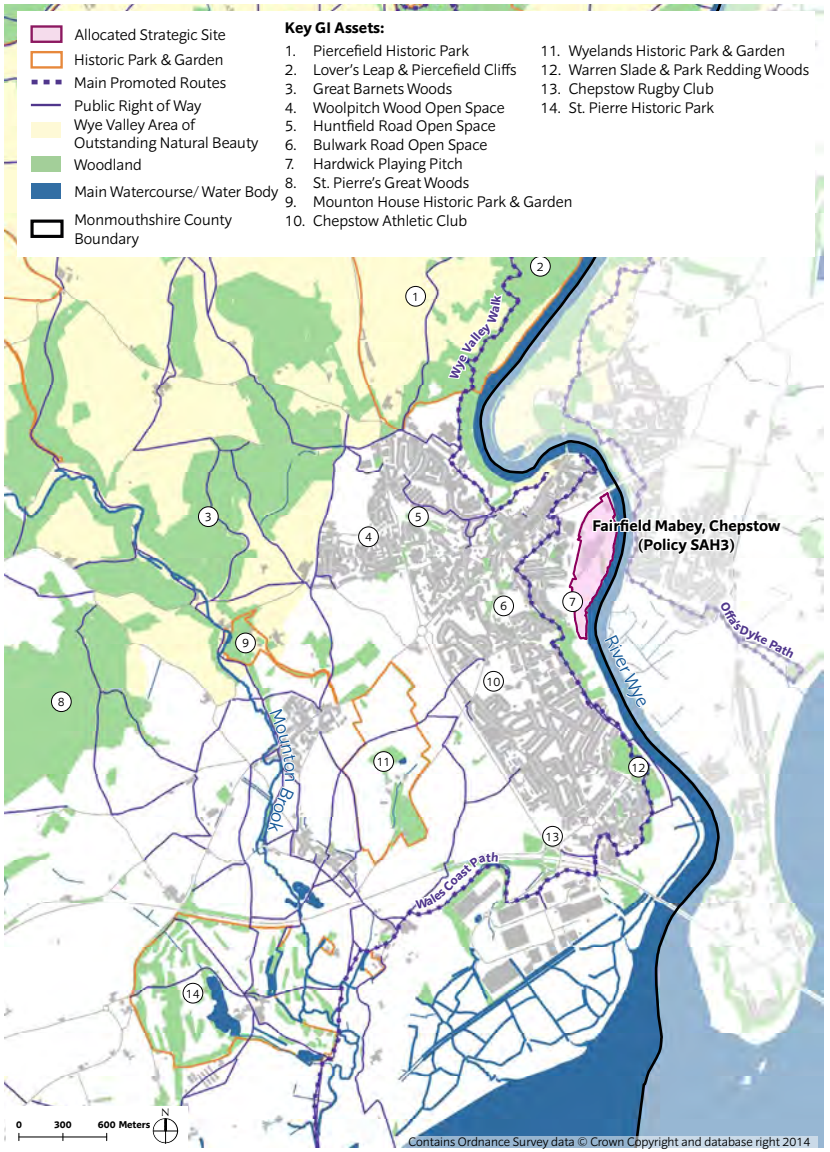


DIAGRAM 4.7 Key GI Opportunities in Chepstow

KEY

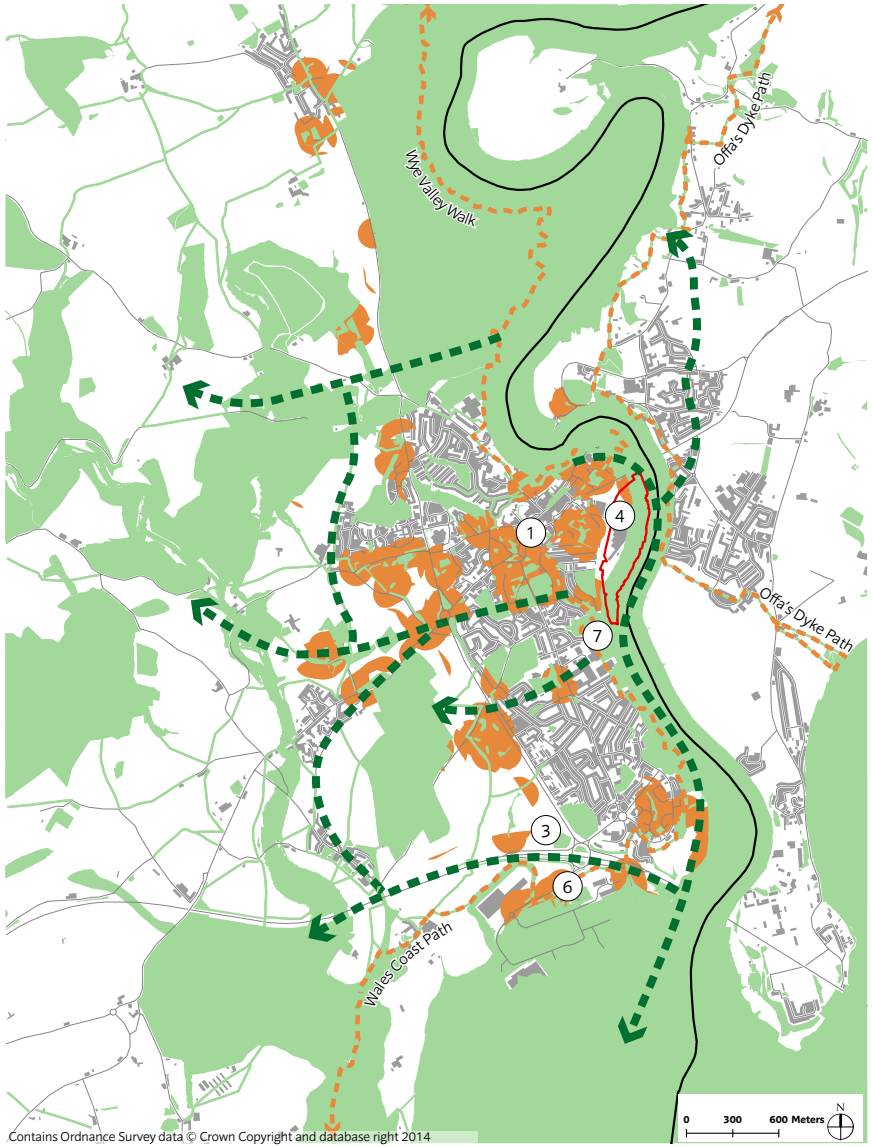
- Allocated Strategic Site
- Monmouthshire County Boundary

GI Network

- Combined green infrastructure assets
- Main Promoted Routes
- Green infrastructure corridors
- Habitat connectivity opportunities

Potential place-making green infrastructure requirements (see Box 4.3)

1. A48 improvements
2. Access Improvements to the River Wye (not mapped)
3. Accessible natural greenspace provision
4. Accessible natural greenspace provision
5. Addressing open space deficiencies (not mapped)
6. National Cycle Network improvements
7. Beaufort Quarry restoration



BOX 4.3 GI Requirements for Chepstow

Place-Making GI Requirements

	Location	Item	Timing/phasing	Costs total	Delivery
1	Chepstow	Improvements to the A48, which passes through the town and creates problems of community severance. Part of the route is also designated as an Air Quality Management Area (source: MCC LDP)	Subject to detailed feasibility study	Subject to detailed feasibility study	MCC
2	Chepstow	Access Improvements to River Wye (source: Greenspace Study, 2010)	Subject to detailed feasibility study	Subject to detailed feasibility study	MCC
3	Thornwell/ Chepstow	Provision of accessible natural greenspace in the new development north of the motorway (source: Greenspace Study, 2010)	Subject to detailed feasibility study	Subject to detailed feasibility study	MCC and potentially developer funded
4	Chepstow	Provision of accessible natural greenspace in the centre of Chepstow adjoining the River Wye (source: Greenspace Study, 2010)	Subject to detailed feasibility study	Subject to detailed feasibility study	MCC and potentially developer funded
5	Chepstow	Seek opportunities to address deficiencies in open space (see **Appendix E** for further details) (source: Open Space Study, 2008)	Ongoing	Subject to detailed feasibility study	MCC and potentially developer funded
6	Chepstow	National Cycle Network improvements (source MCC, Sustrans)	Subject to detailed feasibility study	Subject to detailed feasibility study	MCC and potentially Sustrans/developer funded
7	Chepstow	Beaufort Quarry restoration (source MCC)	Subject to detailed feasibility study	Subject to detailed feasibility study	MCC and potentially developer funded

Fairfield Mabey Allocated Strategic Site GI Requirements

	Chepstow	Recreation and open space (source: MCC LDP Appendix 1: Schedule of Infrastructure Provision for Strategic Sites)	2017-2021	Number of dwelling* (£3,920 minus on-site provision) – subject to no change in current policy approach	Developer funded
		Biodiversity mitigation and enhancement (subject to detail/future GI proposals) (source: MCC LDP Appendix 1: Schedule of Infrastructure Provision for Strategic Sites)	2016-2021	Not specified	Developer funded
		Provision of riverside walkway (to form part of the Wales Coast path) and cycling track (source: MCC LDP Appendix 1: Schedule of Infrastructure Provision for Strategic Sites)	2017-2021	Not specified (likely to be part of open space requirement as above).	Developer funded
		Improve pedestrian access to and from the site particularly in relation to the Chepstow town centre (source: MCC LDP Policy SAH3)	2016-2021	Not specified	Developer funded

4.5 Severnside Settlements

Overview of existing GI assets in and around the growth location

The Severnside Sub-region (which includes Caerwent, Magor, Undy, Rogiet, Caldicot, Portskewett and Sudbrook) is located immediately north of the Severn Estuary. The latter is designated as a Ramsar, SSSI, SPA and SAC, reflecting the estuary's high nature conservation value. The area comprises a number of woodlands, some accessible (e.g. Thicket Wood and Ifton Great Wood to the north of Rogiet).

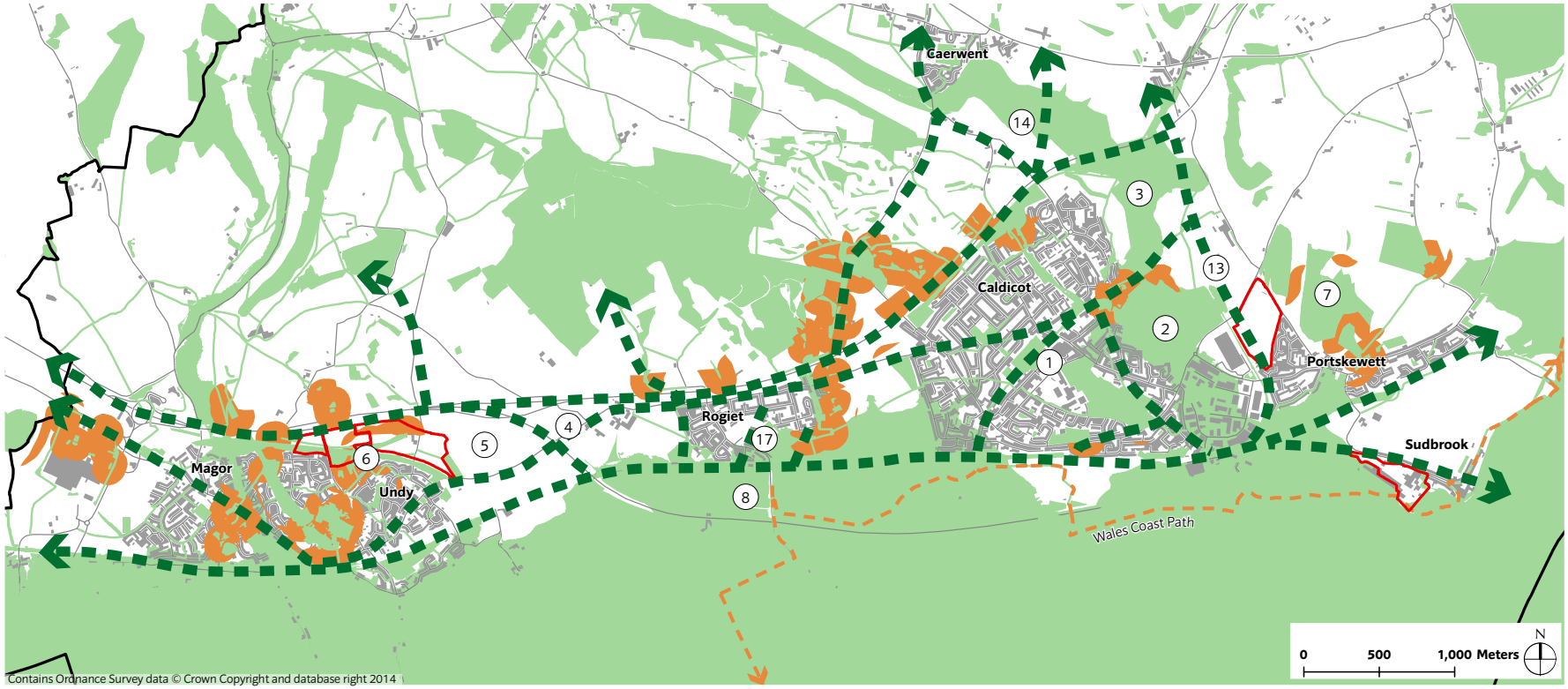
Other key GI assets include:

- Nature Reserves such as Magor Marsh.
- The Wales Coast Path.
- Accessible natural greenspaces such as Harold Park, Caldicot Castle Country Park, the Nedern Brook Wetlands SSSI and Magor/Undy Gwent Levels SSSI.
- Rogiet Countryside Park and Black Rock.

Key messages from the Open Space Study, Greenspace Study, Ecological Connectivity Assessment and Landscape Sensitivity and Capacity Studies (relating to the Severnside Settlements) are set out in **Appendix F**. A biodiversity and geological designated sites map and access map are also included.

DIAGRAM 4.8 Severnside Settlements' Key GI Assets

DIAGRAM 4.9 Key GI Opportunities in the Severnside Settlements



KEY

- Allocated Strategic Site
- Monmouthshire County Boundary

GI Network

- Combined green infrastructure assets
- Main Promoted Routes
- Green infrastructure corridors
- Habitat connectivity opportunities

Potential place-making green infrastructure requirements (see Box 4.4)

1. Caldicot town centre regeneration
2. Caldicot Castle and Country Park improvements
3. Nedern catchment Landscape Partnership Scheme
4. New cycle route along B4245 road
5. Magor accessible natural greenspace provision
6. Breezy Bank to Rockfield Farm SINC biodiversity enhancements
7. Portskewett accessible natural greenspace provision
8. Rogiet County Park improvements
9. Gwent Shrill Carder Bee Habitat Project (not mapped)
10. Gwent Levels Futurescape Project (not mapped)
11. PRoW improvement Feasibility Study (not mapped)
12. Wales Coast Path improvements (not mapped)
13. Sudbrook to Crick new greenway/sustrans route
14. Caldicot to Caerwent new greenway
15. Sudbrook habitat creation and management (not mapped)
16. Addressing open space deficiencies (not mapped)
17. Improvement to PRoW

BOX 4.4 GI Requirements for the Severnside Settlements

Potential Place-Making GI Requirements

	Location	Item	Timing/phasing	Costs total	Delivery
1	Caldicot	Regenerating the town centre including better pedestrian linkages, new public space and environmental measures (e.g. improved street furniture) (source: Seven for Severnside - The Plan for a Better Severnside, 2012)	2014-2016	£705k (£200k towards public realm improvements; £200k towards Newport Road improvements; £225k towards Town centre Partnership; £30k towards library and One Stop Shop; £50k towards walking and cycling facilities)	MCC with S106 funding from new supermarket
2	Caldicot	Caldicot Castle and Country Park – major improvements anticipated. Management and action plan in production (source: Total Place Plan, Destination Management Plan and Greenspace Study, 2010)	Subject to Action Plan	Subject to Action Plan	Subject of a funding application to the Heritage Lottery Fund and Cadw
3	Caldicot	Nedern Catchment Landscape Partnership Scheme (source: stakeholders involved in developing the SPG)	Subject to detailed feasibility study	Subject to detailed feasibility study	MCC, Natural Resources Wales
4	Langstone to Rogiet	New cycle route along the B4245 road (source: Seven for Severnside - The Plan for a Better Severnside, 2012)	Subject to detailed feasibility study	Subject to detailed feasibility study	MCC, Sustrans and potentially developer funded
5	Magor	Provision of accessible natural greenspace to the east of Magor (source: Greenspace Study, 2010)	Subject to detailed feasibility study	Subject to detailed feasibility study	MCC and potentially developer funded
6	Magor/Undy	Breezy Bank to Rockfield Farm SINC biodiversity enhancements (source: MCC)	Subject to detailed feasibility study	Subject to detailed feasibility study	MCC and potentially developer funded
7	Portskewett	Open up access to currently inaccessible natural greenspaces (source: Greenspace Study, 2010)	Subject to detailed feasibility study	Subject to detailed feasibility study	MCC and potentially developer funded
8	Rogiet	Improvements to Rogiet Countryside Park (source MCC)	Subject to detailed feasibility study	Subject to detailed feasibility study	To be confirmed
9	Gwent Levels	Gwent Shrill Carder Bee Habitat Project (source: stakeholders involved in developing the SPG)	Ongoing	To be confirmed	Gwent Wildlife Trust
10	Gwent Levels	Gwent Levels Futurescape Project (source: MCC)	Subject to detailed feasibility study	Subject to detailed feasibility study	Royal Society for the Protection of Birds and Gwent Wildlife Trust
11	Severnside Settlements	Access improvements to PRoW network (source: Greenspace Study, 2010)	Subject to detailed feasibility study	Subject to detailed feasibility study	MCC and potentially developer funded

	Location	Item	Timing/phasing	Costs total	Delivery
12	Severnside Settlements coastal areas	Wales Coast path improvements including links and circular paths and improvements to the Black Rock picnic site (develop new visitor facilities to include catering outlet and toilets) (source: Seven for Severnside - The Plan for a Better Severnside, 2012)	Subject to Action Plan	Subject to Action Plan	Subject to Action Plan
13	Sudbrook to Crick	New greenway/Sustrans route linking Sudbrook, Caldicot/Portskewett and Crick via Caldicot Country Park (source: stakeholders involved in developing the SPG)	Subject to detailed feasibility study	Subject to detailed feasibility study	MCC, Sustrans and potentially developer funded
14	Caldicot to Caerwent	Potential reuse of MoD railway line to provide a new greenway linking Caldicot and Caerwent (source: MCC)	Subject to detailed feasibility study	Subject to detailed feasibility study	MCC and potentially developer funded
15	Sudbrook	Habitat creation and management (source: stakeholders involved in developing the SPG)	Subject to detailed feasibility study	Subject to detailed feasibility study	MCC and potentially developer funded
16	Severnside Settlements	Seek opportunities to address deficiencies in open space (see **Appendix F** for further details) (source: Open Space Study, 2008)	Ongoing	Subject to detailed feasibility study	MCC and potentially developer funded
17	Rogiet	Improvement to public right of way (source: MCC)	To be confirmed	To be confirmed	MCC
	Rockfield Farm Allocated Strategic Site GI Requirements				
	Magor and Undy	Recreation and open space (source: MCC LDP Appendix 1: Schedule of Infrastructure Provision for Strategic Sites)	2016-2021	Number of dwelling* (£3,920 minus on-site provision) – subject to no change in current policy approach.	Developer funded
		Biodiversity mitigation and enhancement (subject to detail/future GI proposals) (source: MCC LDP Appendix 1: Schedule of Infrastructure Provision for Strategic Sites)	2016-2021	Not specified	Developer funded
		Sustainable transport contributions (source: MCC Draft Infrastructure Plan)	2016-2021	Not specified	Developer funded
		Enhanced contribution to community facilities (source: MCC LDP Appendix 1: Schedule of Infrastructure Provision for Strategic Sites)	2015-2017	Not specified	Developer funded

Location	Item	Timing/phasing	Costs total	Delivery
Vinegar Hill Allocated Strategic Site GI Requirements				
Undy	Recreation and open space (source: MCC LDP Appendix 1: Schedule of Infrastructure Provision for Strategic Sites)	2016-2020	Number of dwelling* (£3,920 minus on-site provision) – subject to no change in current policy approach	Developer funded
	Biodiversity mitigation and enhancement (subject to detail/future GI proposals) (source: MCC LDP Appendix 1: Schedule of Infrastructure Provision for Strategic Sites)	2016-2020	Not specified	Developer funded
	Sustainable transport contributions (source: MCC LDP Appendix 1: Schedule of Infrastructure Provision for Strategic Sites)	2016-2020	Not specified	Developer funded
	Enhanced contribution to community facilities (source: MCC LDP Appendix 1: Schedule of Infrastructure Provision for Strategic Sites)	2015-2017	Not specified	Developer funded
Crick Road Allocated Strategic Site GI Requirements				
Caldicot and Portskewett	Recreation and open space (source: MCC LDP Appendix 1: Schedule of Infrastructure Provision for Strategic Sites)	2016-2021	Number of dwelling* (£3,920 minus on-site provision) – subject to no change in current policy approach	Developer funded
	Biodiversity mitigation and enhancement (subject to detail/future GI proposals) (source: MCC LDP Appendix 1: Schedule of Infrastructure Provision for Strategic Sites)	2016-2021	Not specified	Developer funded
	Sustainable transport contributions (source: MCC LDP Appendix 1: Schedule of Infrastructure Provision for Strategic Sites)	2016-2021	Not specified	Developer funded.
	Construction of pedestrian route along Crick Road and B4245 (source: MCC LDP Appendix 1: Schedule of Infrastructure Provision for Strategic Sites)	2015-2017	£0.12m	Developer funded.
Paper Mill Allocated Strategic Site GI Requirement				
Sudbrook	Recreation and open space (source: MCC LDP Appendix 1: Schedule of Infrastructure Provision for Strategic Sites)	2016-2021	Number of dwelling* (£3,920 minus on-site provision) – subject to no change in current policy approach	Developer funded
	Biodiversity mitigation and enhancement (subject to detail/future GI proposals) (source: MCC LDP Appendix 1: Schedule of Infrastructure Provision for Strategic Sites)	2016-2021	Not specified	Developer funded
	Sustainable transport contributions (source: MCC LDP Appendix 1: Schedule of Infrastructure Provision for Strategic Sites)	2016-2021	Not specified	Developer funded

4.6 Other Strategic Requirements in Monmouthshire

BOX 4.5 Potential Strategic GI Requirements

Location	Item	Timing/phasing	Costs total	Delivery
Monmouthshire	Integration of GI elements in the refurbishment/ redevelopment of a number of primary schools (source: MCC Draft Infrastructure Plan)	Subject to detailed feasibility study	Subject to detailed feasibility study (estimated cost for the schemes £55 to include build, ICT and sustainable energy solutions)	To be confirmed
Monmouthshire	Allotments: provision of 0.25ha per 1,000 population but no specific proposals (source: MCC Draft Infrastructure Plan, Open Space Study 2008)	Subject to detailed feasibility study	£0.058m per new allotment (20 pitches)	Developer funded
Monmouthshire	Improvements to the public rights of way network, which also includes GI improvements (source: Rights of Way Improvement Plan, 2007)	2012-2021	£2.5m	MCC and potentially developer funded through S106/ CIL if appropriate
Monmouthshire	Sustainable transport improvements e.g. new/improved footways, provision of cycle lanes (source: MCC Draft Infrastructure Plan)	Subject to detailed feasibility study	Subject to detailed feasibility study	To be confirmed
Monmouthshire	Development of circular routes/links off the Usk Valley Walk in and around key settlements/to key GI assets and community facilities (source: stakeholders involved in developing the SPG)	Subject to detailed feasibility study	Subject to detailed feasibility study	MCC, Sustrans and potentially developer funded
Monmouthshire	Potential Sustrans /greenway projects along disused railways e.g. Wyesham to Redbrook (source: stakeholders involved in developing the SPG)	Subject to detailed feasibility study	Subject to detailed feasibility study	MCC, Sustrans and potentially developer funded
Monmouthshire	River restoration project (including the Wye, Monnow, Trophy and Usk) (source: stakeholders involved in developing the SPG)	Subject to detailed feasibility study	Subject to detailed feasibility study	MCC, AONB Unit, Canal and River Trust and potentially developer funded
Monmouthshire	Provision of new and/or enhancement to existing GI and access along river corridors (e.g. Redbrook bridge, Monmouthshire and Brecon Canal towpath improvements) (source: stakeholders involved in developing the SPG)	Subject to detailed feasibility study	Subject to detailed feasibility study	MCC, Canal and River Trust and potentially developer contributions
Monmouthshire	Enhancements between water catchment areas (source: stakeholders involved in developing the SPG)	Subject to detailed feasibility study	Subject to detailed feasibility study	MCC, NRW and landowners/managers

Location	Item	Timing/phasing	Costs total	Delivery
Monmouthshire	County Natural Assets Project -aims to support the preservation and enhancement of Monmouthshire's Local Wildlife Sites through the provision of small capital grants to landowners and local community groups to maintain and enhance these high value Natural Assets (source: stakeholders involved in developing the SPG)	Ongoing	To be confirmed	Partnership (MCC, Gwent wildlife Trust, Monmouthshire Meadows Group and Council on Local Wildlife Sites)
Monmouthshire	Pollinator Project along A and B Roads (source: stakeholders involved in developing the SPG)	Ongoing	To be confirmed	MCC, Wildlife Trust
Monmouthshire	Where appropriate, seek opportunities to enhance accessible natural greenspace provision, e.g. through provision of access to currently inaccessible natural greenspace and/or improving management of existing sites to increase biodiversity value/'naturalness' (NB: County already generally well provided for in terms of accessible natural greenspace) (source: Greenspace Study, 2010)	Subject to detailed feasibility study	Subject to detailed feasibility study	MCC, existing land owners/managers
Monmouthshire	GI provision/retrofitting in relation to existing or new road corridor (e.g. A40, M4) (source: stakeholders involved in developing the SPG)	Subject to detailed feasibility study	Subject to detailed feasibility study	MCC, Highways
Monmouthshire	Contribution towards the delivery of the Public Rights of Way Improvement Plan (source: MCC)	Subject to Action Plan	Subject to Action Plan	MCC and potentially developer funded through S106/ CIL if appropriate
Tintern	Old Station Tintern, Abbey Tintern Furnace and Wire Works - management Plan currently being developed for all three sites (source: MCC Draft Infrastructure Plan)	Awaiting publication of plan	Awaiting publication of plan	Awaiting publication of plan
Usk	Usk Island – improve access in association with the possible use of the adjacent redundant railway track and ex railway bridge over the River Usk which has been identified by Sustrans as a potential multi-purpose route (source: MCC Draft Infrastructure Plan)	Subject to detailed feasibility study	Subject to detailed feasibility study	To be confirmed
Usk to Pontypool	New cycle route (source: stakeholders involved in developing the SPG)	Subject to detailed feasibility study	Subject to detailed feasibility study	MCC and potentially Sustrans
Wye Valley	Erosion project along Wye Valley Walk (source: stakeholders involved in developing the SPG)	Subject to detailed feasibility study	Subject to detailed feasibility study	MCC and AONB Unit
Wye Valley	Contribution to the delivery of actions within the AONB Management Plan (source: stakeholders involved in developing the SPG)	Subject to Action Plan	Subject to Action Plan	MCC, AONB Unit, landowners/managers

Appendices

Allotments

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Sources of Advice

Sources of Advice

Monmouthshire County Council
Development Management Department
County Hall, Rhadyr,
Usk, NP15 1GA
01633 644831
planning@monmouthshire.gov.uk

Monmouthshire County Council
Countryside Department
County Hall, Rhadyr,
Usk, NP15 1GA
01633 644850
countryside@monmouthshire.gov.uk
rightsofway@monmouthshire.gov.uk

Monmouthshire County Council
Highways Department
County Hall, Rhadyr,
Usk, NP15 1GA
01633 644644
highways@monmouthshire.gov.uk

Brecon Beacons National Park Authority
Plas y Ffynnon, Cambrian Way Brecon,
Powys, LD3 7HP
01874 624437
strategy@beacons-npa.gov.uk
Management Plan (2010-15) available from: http://www.beacons-npa.gov.uk

Wye Valley Area of Outstanding Natural Beauty Unit
Hadnock Road,
Monmouth, NP25 3NG
01600 713977
aonb.officer@wyevalleyaonb.org.uk
Management Plan (2009-14) available from: http://www.wyevalleyaonb.org.uk

Natural Resources Wales
Ty Cambria, 29 Newport Road,
Cardiff, CF24 0TP
0300 065 3000
enquiries@naturalresourceswales.gov.uk

Cadw
Welsh Government, Plas Carew, Unit 5/7 Cefn Coed, Parc Nantgarw,
Cardiff, CF15 7QQ
01443 336000
cadw@wales.gsi.gov.uk

b

GI Case Studies

Key GI Functions Illustrated by each GI Case Study

GI CASE STUDY NAME	GI FUNCTIONS Landscape setting & quality of place	Habitat provision & connectivity	Green space provision, connectivity & enjoyment	Sustainable energy use	Local food production	Flood attenuation & water resource management
Ashley Vale Homes (Bristol)	✓	✓		✓	✓	
Cley Marshes Visitor Centre (Norfolk)		✓		✓		
Crewe Park Business Park (Cheshire)	✓	✓	✓			
Gateway Monmouth Public Realm (Monmouthshire)	✓		✓	✓	✓	
Lakeshore Flats (Bristol)	✓	✓	✓	✓	✓	✓
National Wetland Centre for Wales (Carmarthenshire)		✓	✓			✓
Sharrow School (South Yorkshire)		✓	✓	✓		
Springhill Cohousing (Gloucestershire)			✓		✓	✓
Stebonheath School (Carmarthenshire)						✓
Vauban Sustainable Urban Extension (Germany)		✓	✓	✓	✓	
Water Colour Homes (Surrey)	✓		✓			✓

Ashley Vale Homes

BRISTOL

'Ours is a story of the strength of local people power and the possibility of collective creative thinking (Ashley Vale Action Group).'

Concerned about the redevelopment of a former scaffolding yard in the Ashley Vale area of Bristol, a core group of residents formed a not-for-profit company and action group (known as AVAG) in 2000 to purchase and re-develop the site for the benefit of the community. Following the acquisition of the 0.8 hectare site, with funding from the pre-purchase of plots by self-builders, the group conducted extensive consultation and submitted a successful planning application. 10 years on, over 41 homes have been self-built or self-finished and a community of over 100 residents is thriving, with a busy community space for hire and three work units supporting small local enterprises.

This city site has a rural feel and a distinct character linked to the use of mixed scales, architectural styles and materials as well as attractive public and private green spaces. Key principles which underpinned the whole scheme included individual self-expression and sustainability. Most houses have PV panels, there is a biomass boiler for the block of flats and business units, rainwater harvesting and a number of sedum green roofs (which reduce run off and improve biodiversity and insulation). The houses have their own gardens and are positioned around a prominent central community garden/play area. A home zone approach was adopted to create attractive streets that feel safe for pedestrians.

AVAG firmly believes that is has achieved its initial aims and ambitions to:

- Create an organisation capable of funding the buying and selling of the land.
- Divide the land into plots to re-sell for self-build housing.
- Promote ecological, innovative and affordable housing design.
- Attract a diversity of people to the community.
- Provide a community and work facility and to enhance the local environment.

(Sources: CABE and Ashley Vale Action Group)

This innovative and sustainable mixed-use development, combining affordable housing, work and leisure space was awarded a Regional South West Green Energy award for 'Best Housing Scheme' in 2009 and a Building for Life Silver standard award in 2010.

Key GI components

- ★ Communal garden/play area
- ★ Private gardens
- ★ Biomass boiler for the block of flats and business units
- ★ Green roofs and space for rainwater harvesting
- ★ Existing allotments, a nature reserve and a city farm are located close by

Cley Marshes Visitor Centre

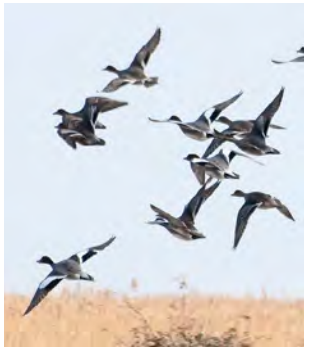
CLEY NEXT THE SEA, NORFOLK

The c. 160 hectare designated Cley Marshes Nature Reserve is the Wildlife Trust's oldest and one of its best known nature reserves. It features an eco-friendly visitor centre, opened in 2007, which has won a number of awards, including the Emirates Glass LEAF architectural award for the sustainability category. The innovative building demonstrates sustainable construction methods and a very low carbon footprint. Built according to green specifications devised by LSI Architects LLP, the building includes features such as a barrel green roof with wind turbine, a ground-source heat pump, solar water heating and rainwater harvesting. As a result, the building produces more than 70% of its energy requirements on-site. The extensive (c. 300m^2) green roof, installed over an Icopal Sure-Weld Thermoplastic polyolefin membrane, comprises a shallow and lightweight mat of sedum.

The visitor centre has a café, gift shop, remote-controlled wildlife camera and audio-visual presentations about the changing coastline. It provides an opportunity to learn about the area's local wildlife as well as a place to relax, overlooking one of the best coastal views in Norfolk.

'The roof is now growing well, despite concerns that the planting may have suffered in such a harsh environment. The Visitor Centre is an excellent example of a green building which has successfully introduced new technology into a protected environment, one which is both inspiring and which blends seamlessly into its unique and outstanding setting, thanks to the sensitivity of the design (Intelligent Membrane Trade Association).'

(Sources: Norfolk Wildlife Trust, Icopal Ltd and the Intelligent Membrane Trade Association)



Key GI components

- ★ Green roof
- ★ Space for renewable energy resources and water harvesting
- ★ Surrounded by a publicly accessible nature reserve

Crewe Business Park

CREWE, CHESHIRE

Crewe Business Park is a 27 hectare site developed by the former Crewe and Nantwich Borough Council and former Cheshire County Council, who together were the lead landscape architect. It offers quality office accommodation on 125 year leases and accommodates a range of uses from quality offices and research and development based activities, to high technology manufacturing. The sale of plots has generated more than £4.5m in capital receipts and over 2,800 jobs have been generated. A service charge for occupiers funds ongoing maintenance of the park.

The park is one of the North West's premier business parks and one of the first ecologically based developments of its kind. It is also one of the first business parks in the UK to receive the prestigious Millennium Marque Award for environmental excellence.

'The GI for all phases of the park's development was part of a masterplan and landscape management was considered from the outset, with the local authority landscape professional involved at all stages (Landscape Institute)'.

Sustaining wildlife in the park and creating an attractive setting was central to the site's landscape masterplan. 'Crewe's ecological policy has been successful in attracting companies to the business park, with the quality of the environment sited by one business as a primary reason for locating its European headquarters at Crewe.'

The site includes a network of multi-user paths, which provides access around the business park and to nearby facilities and the wider countryside. Accessibility is key. Wildlife corridors in the form of hedgerows as well as species-rich grassland were purposefully retained within the landscape masterplan and enhanced through the planting of thousands of native trees and shrubs.

(Source: Landscape Institute and Cheshire East Council)

Maintaining links with the community forms part of the business park's overall management aims. This is reflected in the provision of public access and pond dipping events, school visits, the creation of a wildflower garden by a local school and the involvement of local agricultural students in the design of the park's roundabouts.

Key GI components

- ★ Interconnected path in and around the site
- ★ Species-rich grassland integrated wherever possible
- ★ Retained hedgerows and new native tree and shrub planting
- ★ Pond and open spaces, including a wildflower garden
- ★ Road side verges and roundabouts

Gateway Monmouth Public Realm

MONMOUTH, MONMOUTHSHIRE

Bringing the character of the wider wooded landscape into the town centre with new large-scale street trees, vibrant structure planting and groups of riparian tree species was central to the design. Enhancing biodiversity and creating a landscape that would be dynamic and lively throughout the seasons and from daytime to night-time was also vital (Macgregor Smith).

Macgregor Smith have been appointed by MCC to develop landscape proposals for a key piece of public realm within Monmouth's town centre. The Gateway Monmouth project proposes improvements to the public space bounded by Blestium Street, the River Monnow, the Gated Bridge and the existing car park (the site of the former Cattle Market). A planning application was submitted on the behalf of the Council in February 2014, which is currently being assessed.

The extensive consultation process led to a design being developed that meets a wide range of local and strategic needs. It enhances the setting of Monnow Bridge; provides a better announcement of the town centre and enhanced toilet and visitor amenities to a key gateway into the town centre; and delivers important functional open space. Accessibility was central to the overall masterplan which resulted in proposals that afford strong physical links with main shopping streets and town attractions whilst reconnecting the town with the River Monnow. The site promotes community activities through the provision of orchards, 'activity space and informal areas for recreation and general enjoyment of the riverside seen as being important to people's well-being and civic pride'. It is intended that species rich wild flower areas and a marginal planting zone would replace existing close mown grass strips.

(Source: Macgregor Smith Design and Access Statement, 2014 submitted as part of the Gateway Monmouth Planning Application)

Key GI components

- Flexible open space, which enhances the public realm. Includes sitting terraces that increase seating capacity and provide an important greenspace for the town
- Large-scale street trees, vibrant structure planting and groups of riparian tree species
- Native riverside and marginal planting/habitat (including wild flower areas)
- Ornamental riverside planting
- Edible landscape including orchard trees and fruiting shrubs
- Green corridors/connections, including access along/to the River Monnow, canoe platforms and a Sustrans cycle route
- Flood defence bund

Lakeshore Flats

BRISTOL

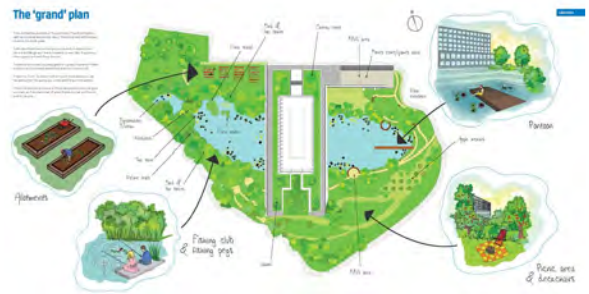
Urban Splash acquired the Grade II Listed former Wills Imperial Tobacco Factory in 2005, gaining planning permission the following year to convert it into eco-homes. The site now comprises 422 homes with 270 apartments within the existing building and 127 in a new separate building. Overlooking its own private lake and surrounded by 4 hectares of landscaped grounds, Lakeshore boasts city living in a country park.

'Working with architects Ferguson Mann, Urban Splash developed a design that was sympathetic yet modern and most importantly would encourage sustainable living among a new community; Lakeshore's ETFE roof, biomass boiler with a geothermic bore hole, allotments and landscape which continues into the building all contribute to a sustainable way of life (Urban Splash).'

The architects aimed to enhance the original architectural vision, revitalise the existing buildings and employ the latest sustainable technologies. GI was central to the site masterplan, with many GI components being present inside the buildings as well as around them. Balconies provide individual private spaces for growing plants; allotments and a boules court encourage community and healthy outdoors activities; whilst the maintained gardens, fishing lake with pontoon and orchard are key to the sense of 'being in the countryside' experienced by residents. Nature conservation is an important aspect of the design and maintenance of the grounds, with woodland and meadows surrounding the lake. There is a nature trail and carefully sited BBQ and picnic areas as well as a route for running. The new building also boasts a sedum roof.

This development has won a number of awards including the National Housing 'Best Design Award 2013', the Royal Institution of Chartered Surveyors South West Award for Regeneration Housing and Green Apple Award. It recently achieved a BREEAM EcoHomes rating of excellent and has been a catalyst for other improvements in the area.

(Source: Urban Splash)



Key GI components

- Lake with pontoon and duck island
- Landscaped grounds including areas for wildlife
- Allotments and orchard
- Bird and bat boxes
- Space for growing plants on balconies
- Planting inside the buildings
- Nature trail and running route
- Green roof and biomass boiler

National Wetland Centre For Wales

LLANELLI, CARMARTHENSHIRE

The National Wetland Centre for Wales near Llanelli forms a pivotal part of the visionary Millennium Coastal Park that has transformed 20km of coastline, and over 600 hectares of industrial wasteland into green parkland, giving the coast back to the people. The 76 hectare site was formerly poor quality farmland and lies behind the sea wall that allowed the original draining of the salt marshes. A complex series of objectives for landscape, ecological, hydrological, engineering and public access and education required a multi-disciplinary but landscape-led approach to design. Chris Blandford Associates was appointed Lead Consultant and were involved from masterplanning to implementation. The total cost of the project came to £2.1m.

The park was a visionary restoration project. It incorporates newly created wetland systems, lakes, scrapes, wet woodland, reed beds and people at close quarters, whilst ensuring protection and seclusion for the wild migratory birds for which it was designed. The Park includes statements of landscape art and extensive earthworks have been sculpted to contain lakes, protect wildlife and direct visitor views and circulation, as well as being art in their own right. Boardwalks and hides are also designed as art in the landscape.

Ecologically the wetland is one of the most important wildlife habitats ever created in Wales and since its completion the range and quantity of wild birds has exceeded expectation.

The project received a Landscape Institute Award for Design Excellence in 2002. The citation considered the scheme to be a model of biodiversity, sustainability, habitat conservation and green tourism.

(Source: Chris Blandford Associates)

Key GI components

- ★ Extensive habitats (including newly created wetland systems, lakes and wet woodlands)
- ★ Publicly accessible routes through the site
- ★ Sustainable re-use of treated waste water

Sharrow School

SHEFFIELD, SOUTH YORKSHIRE

Following the need to combine two existing schools on the site of one of the former schools, whilst meeting standards for outdoor play and environmental enhancement, an innovative partnership was commissioned to develop a ground-breaking green building (Sheffield City Council).

The new Sharrow School, created in 2007, is a noteworthy low carbon building designed by Sheffield City Council. It features green roofs on three levels, stretching over 2,000m^2. The green roofs are accessible to pupils and members of the public (the latter through organised guided tours). The substrate consists of over 200 tons of crushed brick, organic green waste and limestone, which was deposited onto the roof by cranes and spread around to create different habitat zones by volunteers from the local community. The roof incorporates an A+ rated Bauder waterproofing system.

Sharrow School's green roof is the first Nature Reserve in the country to be located on top of a building and was designated for its nature conservation value and importance to the local community. By keeping the building cool in summer, soaking up heavy rainfall and absorbing carbon dioxide from the atmosphere, this green roof also contributes towards climate change mitigation and adaptation.

The roof has been designed to represent the variety of habitats found in Sheffield, such as Peak District limestone grassland, wildflower meadows and urban brownfield sites. Some parts of the roof have been planted with colourful shrubs and flowers, while other areas are left to develop naturally. Rolling hills and valleys have been emulated through the use of locally sourced recycled materials and there is a wetland area in the form of a small pond. Bird tables, insect feeders and deadwood also contribute towards attracting wildlife. This invaluable outdoor classroom includes a weather station and webcam to provide research opportunities.

(Source: Sheffield City Council, Bauder, Green Estate and Natural England)

A management plan has been written for the roof by Dr. Nigel Dunnett, Senior Lecturer at the University of Sheffield and sponsor to the Sheffield Green Roof Centre. It aims to maintain the distinctive nature of the different habitat areas, prevent dominance by aggressive species and establish regular botanical and faunal surveys. Sheffield City Council in partnership with Green estate (a local not-for-profit social enterprise), with participation from school members and local volunteers are implementing the management plan.

Key GI components

- ★ Green roof as local Nature Reserve
- ★ Range of habitats
- ★ Paths providing access

Springhill Cohousing

STROUD, GLOUCESTERSHIRE

'The Cohousing Company developed the site to provide environmentally friendly housing within a supporting community centred on a community house and shared social space (Springhill Cohousing)'.

The UK's first new-build cohousing scheme was initiated by David Michael, who bought the site in 2000 and shortly after formed the Cohousing Company Ltd. Planning permission for 35 houses/flats was granted in 2001, with the first residents moving in in 2003. The 0.8 hectare cohousing project, based on original Danish principles, was completed in 2005 with a final build cost of c. £4.5m. It includes private and communal open spaces, allotments and SuDS. The pedestrianised 'main street' meanders around the site parallel with the contours, creating a character village feel, with residents actively making this community thrive. The scheme is centrally located, enabling residents to live more sustainably and have easy access to Stroud's nearby facilities.

The site include a range of surface SuDS features, such as permeable pavements, a short under-drained swale, surface cascade, planted grass swale, open channels and rills, a raised ornamental pool and detention basin. 'Surface water flows overland through SuDS from the upper terrace down to the lower level and along the pedestrian street to an outfall where a natural spring emerges at the south-east corner of the site. There is also an underground tank fed by permeable paving which collects run-off from the car park. Water leaving the tank is joined by un-attenuated roof run-off that flows to the lower level down a tile-hung cascade on a retaining wall. A swale allows most of the cleaned run-off to soak into the ground with excess flows conveyed to a pool in front of the community house. Additional overflows from the rill and pond are directed to a detention 'play basin' that is used for recreation and play most of the time but stores up to 300mm surface water during and immediately after heavy rainfall (RSPB)'.

(Source: RSPB: Sustainable Drainage Systems, 2012; Springhill Cohousing; and Homes and Communities Agency)

All surface water features are maintained by the community. When major flooding occurred nearby, no impacts were felt at this site with approximately 150mm of water stored safely in the final detention basin.

The scheme has received a number of awards including the Eurosolar UK Award 2006 for inspiring renewable energy projects and the Deputy Prime Minister's Award 2005 for making an 'outstanding contribution to sustainable communities'.

Key GI components

- ★ Range of surface SuDS
- ★ Allotments
- ★ Private gardens and public open spaces

Stebonheath School

LLANELLI, CARMARTHENSHIRE

A surface water removal scheme, costing c. £500,000, was implemented by Welsh Water in 2013 at Stebonheath School. This investment has transformed the primary school's playground, which now incorporates a pond, swales, planters, permeable paving, water butts and an outdoor education area. The playground is the first scheme of its kind in the UK and has been designed to reduce the amount of rainwater entering the local public drainage systems, helping to reduce the risk of sewer flooding and pollution.

This scheme will help to remove 3,000m^3 a year from the sewer network, which equates to 6 million bottles of drinking water. It is part of the Welsh Water's £15 million RainScape scheme of 13 projects to be delivered between now and 2015 in Llanelli and Gowerton, removing around 20% of the surface water runoff entering the sewerage network.

The school children were heavily involved in the design of the scheme and participated in a workshop with the engineers, inputting into how their playground should look.

'School Council Chair Paige Daniels (Year 6) said: "It has changed from a dreary looking area to a fabulous, neat and eye-catching area. We will be able to study mini beasts, trees, birds, the water cycle, art, measuring water, studying pond life and much, much more" (Carmarthenshire County Council).'

Key GI components

- ★ SuDS
- ★ New trees and planting

(Source: Welsh Water and Carmarthenshire County Council)

Vauban Sustainable Urban Extension

FREIBURG, GERMANY

Developed on the site of a former French barrack, the Vauban sustainable urban extension/district stretches over 38 hectares, providing 600 jobs and homes for 5,000 inhabitants (inc. 1,200 residential units). Whilst planning for the district started in 1993, the project was implemented in phases between 1997 and 2006. All together Vauban is estimated to be one of the largest solar districts in Europe. It is the first housing community worldwide in which all the homes produce a positive energy balance. The solar energy surplus is then sold back into the city's grid for a profit on every home.

The main aim of the project was to create a city district in a co-operative and participatory way, meeting ecological, social, economic and cultural requirements. The planning and development of the site was led by the landowner, the City of Freiburg. This allowed for a flexible, ambitious and unique design response with all aspects of sustainability considered; with a strong focus on low energy principles and sustainable transport solutions. Key elements of the scheme contributing energy saving/countering the heat island effect include: the widespread use of green and brown roofs, Passvhaus/low energy housing, large scale solar panel installation, district CHP, a largely car free development, a network of green street and public spaces and tramway systems. The development is connected to the Freiburg city centre by a tramway and is laid out linearly along the tracks such that all homes are within easy walking distance of a tram stop.

The new residential area was built around conserved old trees. Retaining these introduced the aspect of mature life into the young district. Public green spaces have been planned and developed together with local inhabitants.

(Source: Green Infrastructure by Design [Chris Blandford Associates], Vauban De and Energie-Cites)

Within Vauban, transportation is primarily by foot or bicycle. The preference for walking and cycling can be partly attributed to the layout of the district. Building on previous experience, the plan departs from the simple inherited grid and creates a network which incorporates the principle of 'filtered permeability' where the network geometry favours the active modes of transport and, selectively 'filters out' the car. This is accomplished by reducing the number of streets that run through the neighbourhood.

Key GI components

- ★ Green roofs and integrated SuDS systems
- ★ Tree-lined streets
- ★ Communal gardens and allotments
- ★ Woodland blocks
- ★ Parks and recreational areas

Water Colour Homes

REDHILL, SURREY

'Exceptionally strong landscaping sets this scheme apart. It creates a series of attractive public spaces and gives the development of 523 homes a distinctive character (CABE).'

The Water Colour Homes scheme, completed in 2012, was constructed on a former Surrey sand quarry, adjoining the residential suburb of Merstham near Redhill town's centre. Studio Engleback, JTP and Cameron Taylor Bedford worked collaboratively for Linden Homes to develop the 523 new homes. Central to the overall masterplan was the identification of a series of character areas, which sit within an overall architectural and landscape framework, providing distinct but interconnected neighbourhood areas. The lagoons and new watercourses/open spaces that run through the site have been carefully sited and integrated into the overall design.

Early involvement by the local community and comprehensive landscape analysis underpinned the development of concept, layout and arrangement of Water Colour. In 2004/2005 some 200 residents took part in workshops looking at highway and transport, landscape and amenity and sustainability. Initial proposals were revised in light of public consultation to improve road access and re-route bus routes.

As well as housing the scheme includes office space, a small supermarket, a residential nursing home, a medical centre, play facilities and new bus services. It exploits the low-lying, level site and its existing lagoons, creating a unique sense of place for residents. The scheme has created an additional 6.8 hectares of public open space which is connected to the housing and transport links by a network of landscaped pedestrian and cycle routes.

(Source: CABE)

Key GI components

- ★ Private and communal gardens/open spaces, including play facilities
- ★ Canals and reed beds
- ★ Lagoons
- ★ Network of landscaped pedestrian and cycle routes

C

Information from Evidence Base Studies Abergavenny/Llanfoist

Key findings from the Open Space Study (2008)

Types of open space

Typology	Number of spaces	
	Abergavenny	Llanfoist
Parks & Gardens	2	0
Natural & Semi Natural Greenspace	2	0
Equipped Playgrounds	12	2
Youth Provision	0	0
Amenity Greenspace	36	3
Allotments	0	1
Cemeteries and Churchyards	3	2
Green Corridors	5	1
Civic Spaces	2	0
Playing Pitches	22	1
Multi Use Games Areas	2	0
Tennis Courts	6	0
Bowling Greens	1	0

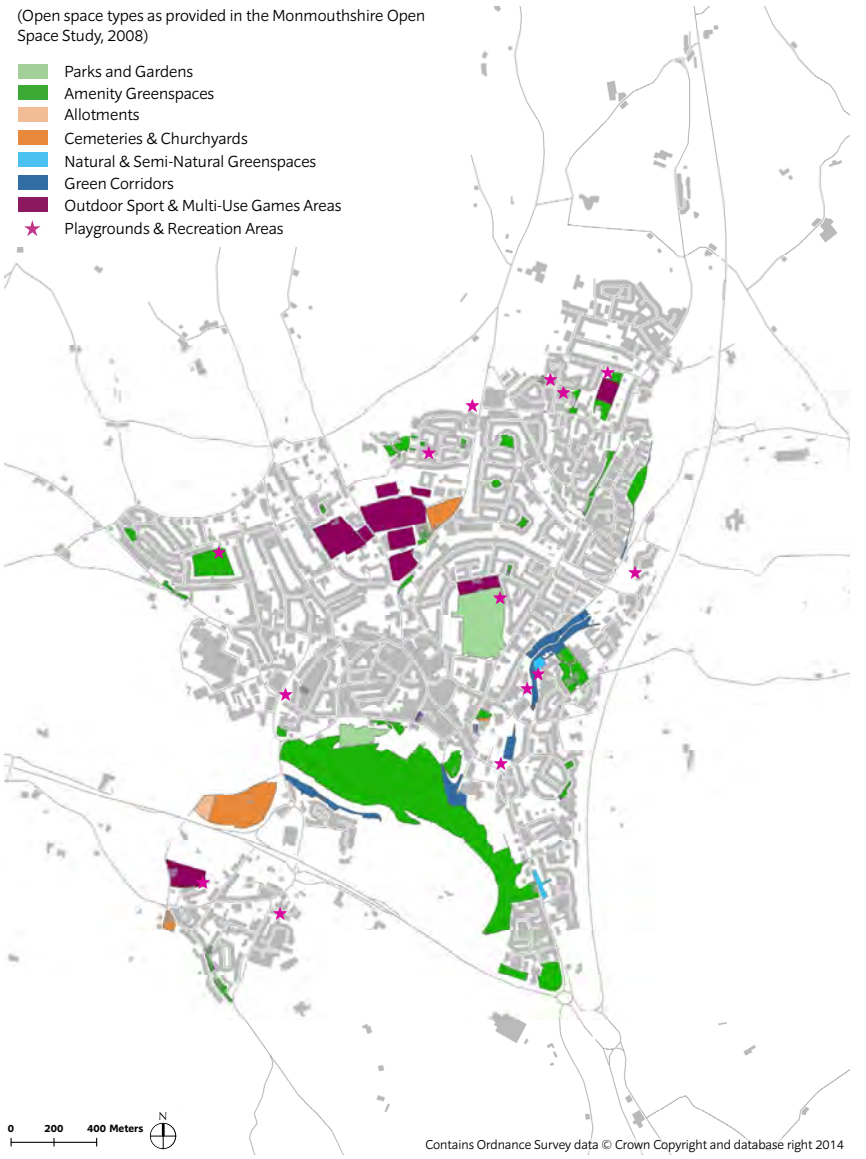
Standards of provision

Deficiency/surplus in the provision of open space types against minimum standards set out in the Open Space Study

	Abergavenny	Llanfoist
Public open space	Surplus of 21.12ha	Deficiency of 0.11ha
Outdoor sport	Deficiency of 1.076ha	Surplus of 0.08ha
Natural/semi-natural Greenspace[1]	Deficiency of 26.14ha	Deficiency of 2.08ha
Equipped play spaces	Deficiency of 3.03ha	Deficiency of 0.18ha
Informal play spaces	Surplus of 12.12ha	Deficiency of 0.22ha
Allotments	Deficiency of 3.34ha	Surplus of 0.42ha

1 It should be noted that the definition given to natural/semi-natural greenspace in the Open Space Study differs to that in the Greenspace Study. This is likely to have a bearing on the levels of provision (surplus/deficiency) identified in the Open Space Study.

DIAGRAM C1 Open Space Types in Abergavenny/Llanfoist



Conclusions relating to the quality of open spaces types

Abergavenny

- 'Overall the quality of amenity greenspace is low.
- Most of the sports pitches were assessed as 'good' and the bowling greens and tennis courts achieved high scores.
- The quality and value of the two natural and semi-natural greenspace sites in Abergavenny was variable. Two of the green corridors achieved a high ranking for both quality and value and only one scored low for both quality and value.
- Overall, only one of the equipped play areas scored high for location, play value and care and maintenance whilst a third of the play areas were ranked as low in all three categories.
- The two Churchyards & Cemeteries scored low for quality and value. Cemetery provision for Abergavenny is located in Llanfoist.'

Llanfoist

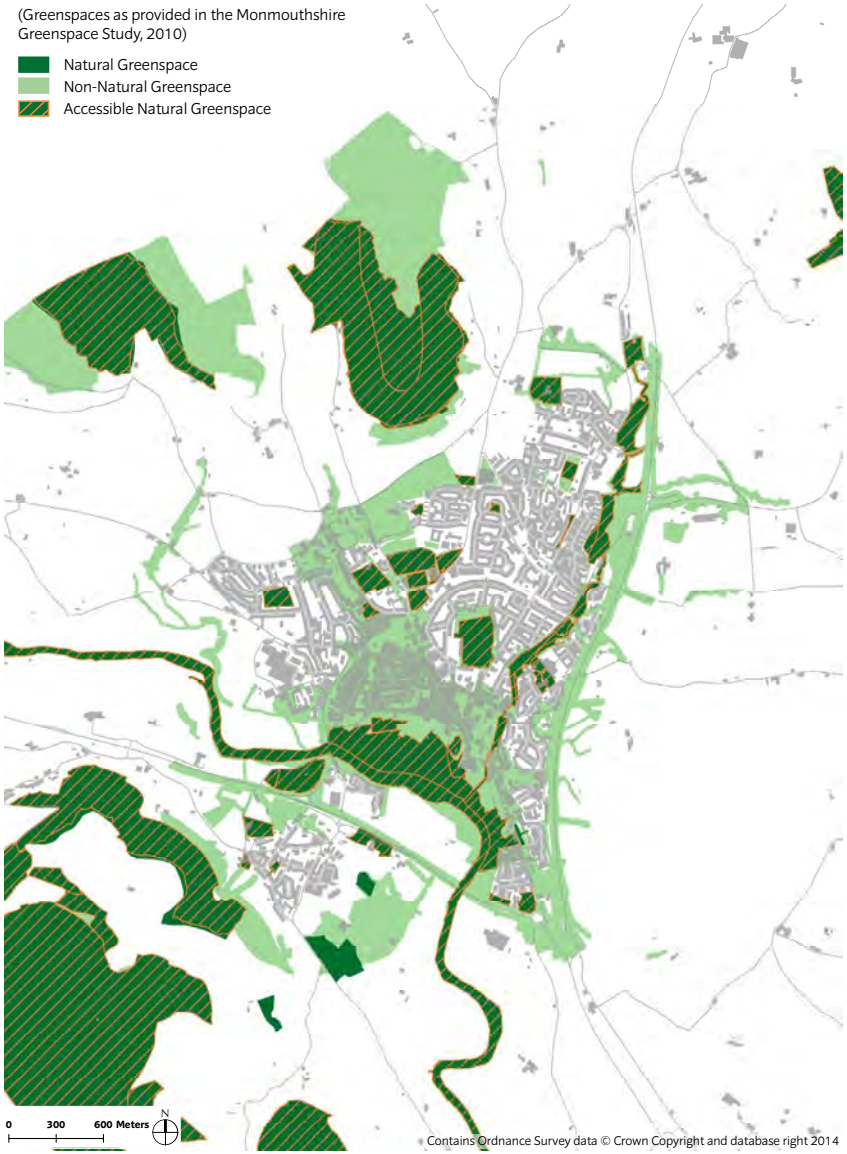
- 'All the amenity greenspace sites scored highly for both quality and value. The playing pitch was assessed as being an average pitch.
- None of the equipped play areas sites scored highly for the three key elements of quality.
- Both the churchyard and cemeteries scored high for value and one scored high for quality.
- The allotment site achieved a high quality score. The Green Corridor adjacent to the River Usk scored poorly for both quality and value.'

Key findings from the Greenspace Study (2010)

- 'Abergavenny is the largest settlement in Monmouthshire. It has good provision in tiers 1 and 2, including important greenspaces such as Bailey Park, Castle Meadows and the River Usk, with nearby access to surrounding open spaces such as the Blorenge, Twyn Yr Allt and Sugar Loaf.
- Llanfoist has good provision at tiers 1 and 2.
- There are greenspaces between Abergavenny and Llanfoist that are currently not accessible, that may present opportunities for increasing provision.'

It should be noted that the Greenspace Study does not differentiate between different types of access to natural greenspace (e.g. land in private ownership with permissive access and land in public ownership). Further assessments, where appropriate, should be carried out to determine the range of issues associated with accessible natural greenspaces, including issues relating to connectivity and management.

DIAGRAM C2 Greenspaces in and around Abergavenny/Llanfoist



2 As stated in the Greenspace Study, tier 1 of the CCW Toolkit recommends that everybody should have access to some (accessible natural) greenspace within 300m of where they live. For tier 1, a 400m travel catchment was assumed in the Greenspace Study (where a 400m walk along actual roads and footpaths is assumed equivalent to a theoretical 'as-the-crow-flies' 300m radius buffer).

As stated in the Greenspace Study, tier 2 of the CCW Toolkit recommends that everybody should have access to greenspace>20ha within 2km. For tier 2 a 2km travel catchment was assumed, although access by road was assumed.

Key findings from the Ecological Connectivity Assessment (2010)

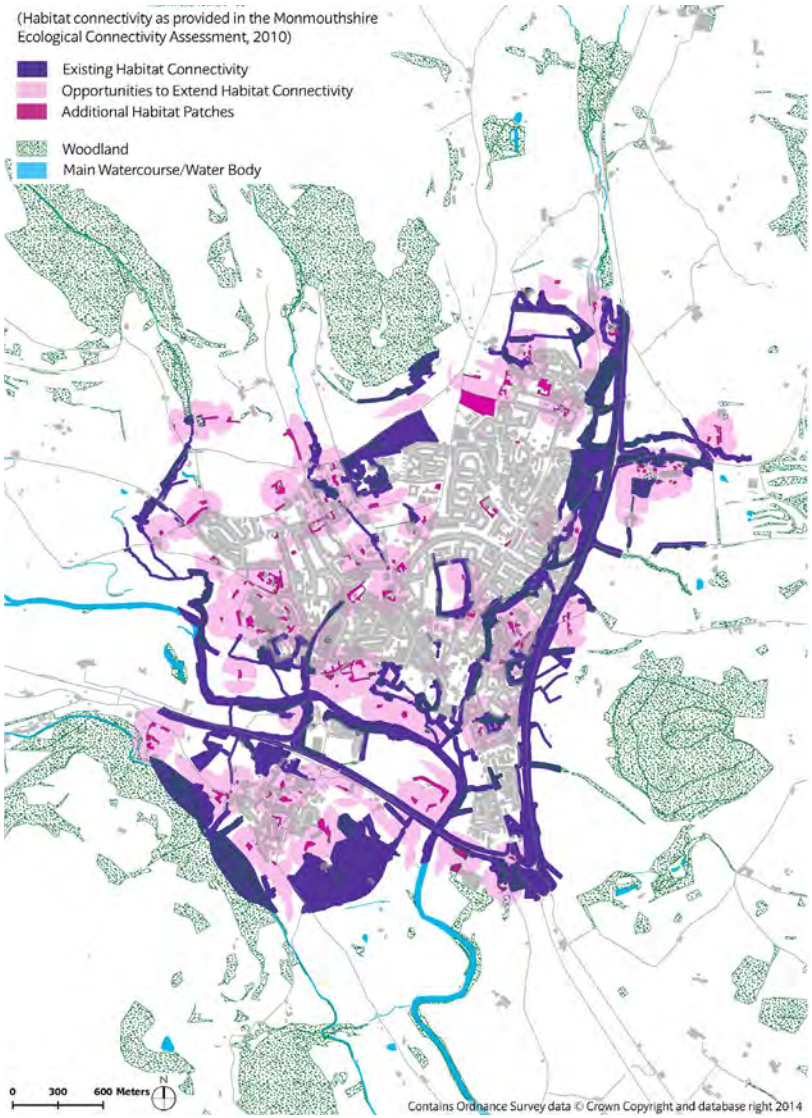
Opportunities to strengthen existing connectivity

- 'Strengthen the A465 and railway corridor: ensure tree line and hedgerows are well connected and sensitively managed. Ensure sensitive management of grassland verges.
- Strengthen the major river corridors through Abergavenny. Ensure a buffer of semi-natural habitat with adjacent fields and the built landscape and connect with near-by areas of semi-natural habitat where possible.
- Identify the significance of the culverts on the River Gavenny and the smaller watercourses e.g. the Afon Cibi, as barriers to wildlife dispersal and explore potential options for reducing their fragmentary effects.
- Ensure hedgerows are sensitively managed and well-connected.
- Ensure current blocks of semi-natural habitat and protected sites are sensitively managed and their extent increased where appropriate.'

Opportunities to enhance connectivity

- 'By forming links between the River Usk, River Gavenny, A465, A4143 and railway corridors with the semi-natural habitats around Llanfoist, including Grove Farm grassland SINC and the Monmouthshire Brecon Canal and the SSSI ASNW woodlands of the Blorenge.
- By enhancing connectivity between The Hill site and the Sugar Loaf woodlands ASNW SSSI, and between the River Gavenny railway-A465 corridor and the woodland and watercourse near St Teilo's vicarage.
- By enhancing connectivity between sections of the Afon Cibi in central Abergavenny with the trees and watercourse of Bailey Park, which itself could be better connected to the River Gavenny to its east.
- By enhancing the connectivity between the small patches of habitats in Abergavenny and distributed across the settlement. For example, linking the woodland and semi-improved grassland of Maindiff Court Hospital with the railway-A465 corridor to its north and west. Additionally, by enhancing connectivity between patches of trees in and around The Knoll and Nevill Hall Hospital and also to the Nant Iago to the west, the A4143 corridor to the east and a block of woodland, semi-improved grassland and a small tributary of the River Usk to the south.'

DIAGRAM C3 Habitat Connectivity in and around Abergavenny/Llanfoist



Key findings from the Landscape Sensitivity and Capacity Study (Main Settlement Summaries, 2010)

Landscape sensitivity

'There are four areas around the settlement that are considered to have high sensitivity. The hillsides associated with the Sugar Loaf in the National Park are prominent and open. The steep pastoral slopes to the south of Llanfoist form the lower part of the Blorenge by the Monmouthshire and Brecon Canal and are also prominent. The slopes of the Ysgyryd Fach provide a strong backcloth to the settlement to the east with intrinsic qualities of woodland and pasture. The River Usk valley floor/floodplain south of the town centre forms an important green corridor setting to the castle and listed buildings and is within the Conservation Area.

The rest of the surroundings to the settlement are considered to be high/medium sensitivity. The open countryside to the north and east is separated from the settlement by the railway and A465 Hereford road. It forms part of the setting to Ysgyrd Fawr in the National Park and to Ysgyryd Fach, and Coldbrook Park is a remnant historic park and garden to the south. The Gavenny Valley is steep sided with an attractive mosaic of woodland and pasture and an attractive watercourse. North of Abergavenny, the lower lying rural pastoral landscape provides part of the setting to the Ysgyryd Fawr and Black Mountains. The rural slopes directly north west and west of the settlement are open and prominent and lie adjacent to the Conservation Area.

To the south, the Usk valley floor forms part of the continuum of the unspoilt rural river corridor, partly floodplain, and lies in the Brecon Beacons National Park to the west. The southern slopes of the Usk valley provide a gap between Abergavenny and Llanfoist and contribute to the setting of the Blaenavon World Heritage Site, National Park and canal. The mosaic of woodland and small pastures have positive intrinsic qualities providing a transition from the valley floor to the upland of the Blorenge.'

DIAGRAM C4 Landscape Sensitivity around Abergavenny/ Llanfoist

Landscape capacity for housing

'There are two areas that are considered to have medium capacity. The area to the north of Mardy, though in the main acting as setting to the Black Mountains, includes an area adjacent to the settlement which is well contained by tree cover, south of Ty Gwyn Hall, which may be an opportunity. West of Llanfoist, the majority of the area is prominent as the lower slopes of the Blorenge but there may be an opportunity east of the plant nursery at a lower level.

Areas of medium/low capacity lie to the north east, west and south of the settlement. The Gavenny valley's small scale mosaic landscape with steep slopes would be unable to absorb large scale development but small-scale opportunities may exist. East of the A465, the open countryside is distinctly separated from the settlement providing the setting for the Ysgyryd Fawr. However, Maindiff Hospital may provide limited opportunities although constrained by the well treed parkland character which should be retained. The Usk valley floor and lower sides away from the town centre are generally constrained by rural character, the role as floodplain, and as green corridor although there may be limited opportunities in places close to the settlement edges. Areas of low capacity are in many locations around the settlement indicating its constrained nature. The slopes to the north west and west towards the Sugar Loaf are an exposed and prominent location in, or directly adjacent to, the National Park. The narrow and steep Gavenny Valley running to the north to Llantilio Pertholey is intrinsically sensitive and acts as setting to the church. The open countryside east of the railway is mostly low capacity due to its clear separation from the settlement and its setting to Ysgyryd Fawr and the role of Ysgyryd Fach as backcloth to the town. The Usk valley floor is an open green corridor and mainly floodplain which act as a setting to the town and any development would significantly affect its character and reduce the gap between Abergavenny and Llanfoist. The steep slopes south of Llanfoist are distinctly rural and unsuitable for housing adjacent to the National Park and canal.'

DIAGRAM C5 Landscape Capacity for Housing around Abergavenny/Llanfoist

DIAGRAM C6 Biodiversity and Geological Designated Sites in and around Abergavenny/Llanfoist

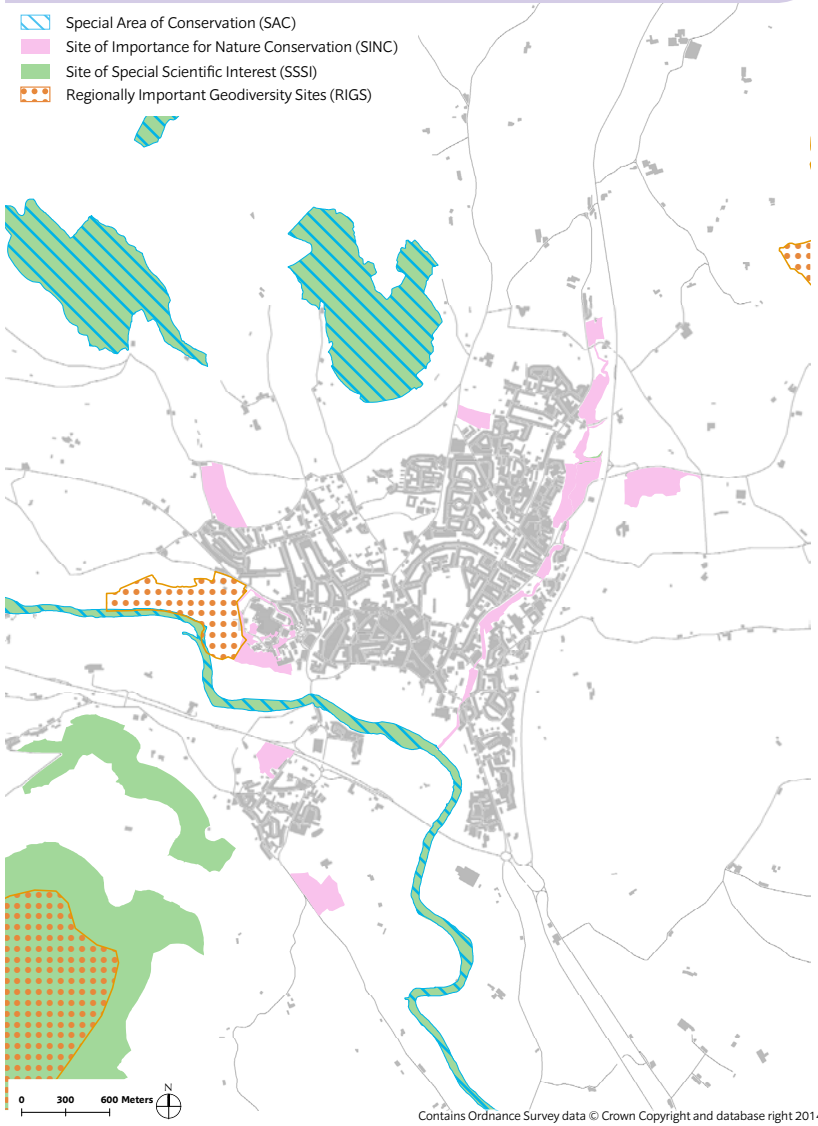
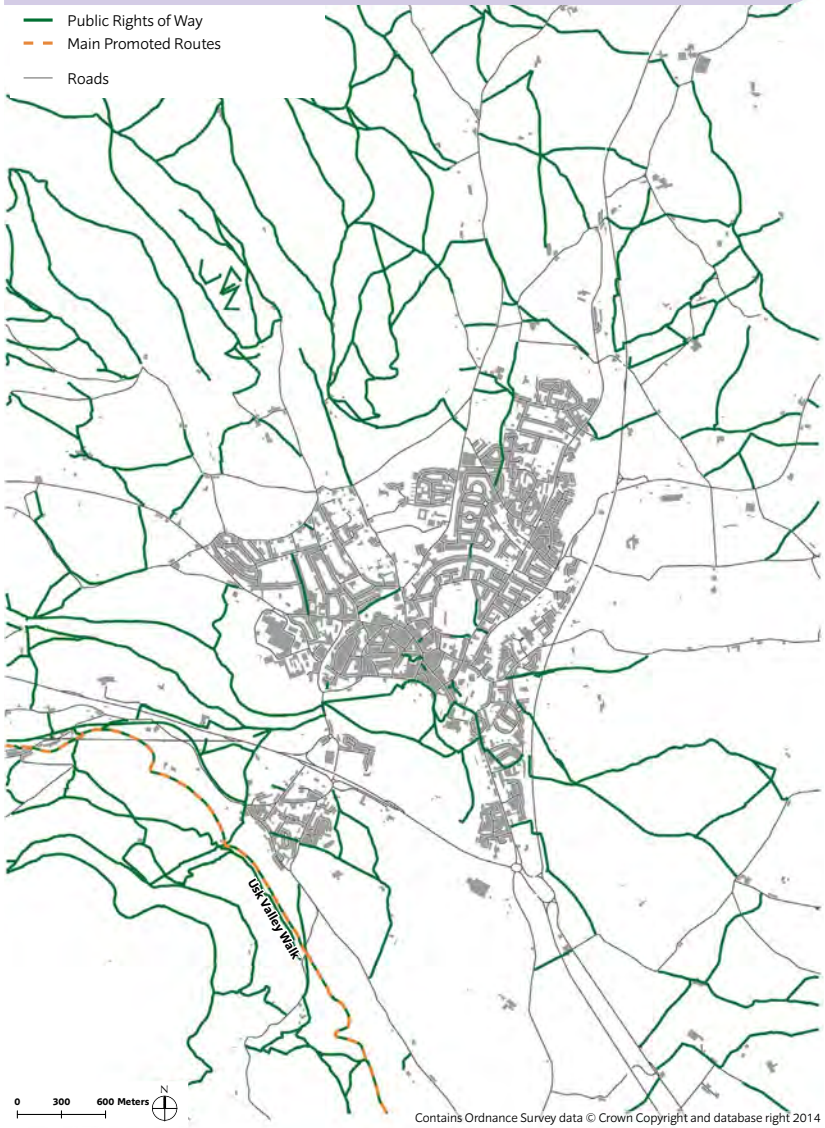


DIAGRAM C7 Public Rights of Way in and around Abergavenny/Llanfoist



d

Information from Evidence Base Studies Monmouth

Key findings from the Open Space Study (2008)

Types of open space

Open space typology	Number of Spaces
Parks & Gardens	0
Natural & Semi Natural Greenspace	5
Equipped Playgrounds	21
Youth Provision	1
Amenity Greenspace	29
Allotments	1
Cemeteries and Churchyards	4
Green Corridors	1
Civic Spaces	2
Playing Pitches	20
Multi Use Games Areas	3
Synthetic Turf Pitch	1
Tennis Courts	5
Bowling Greens	1

Standards of provision

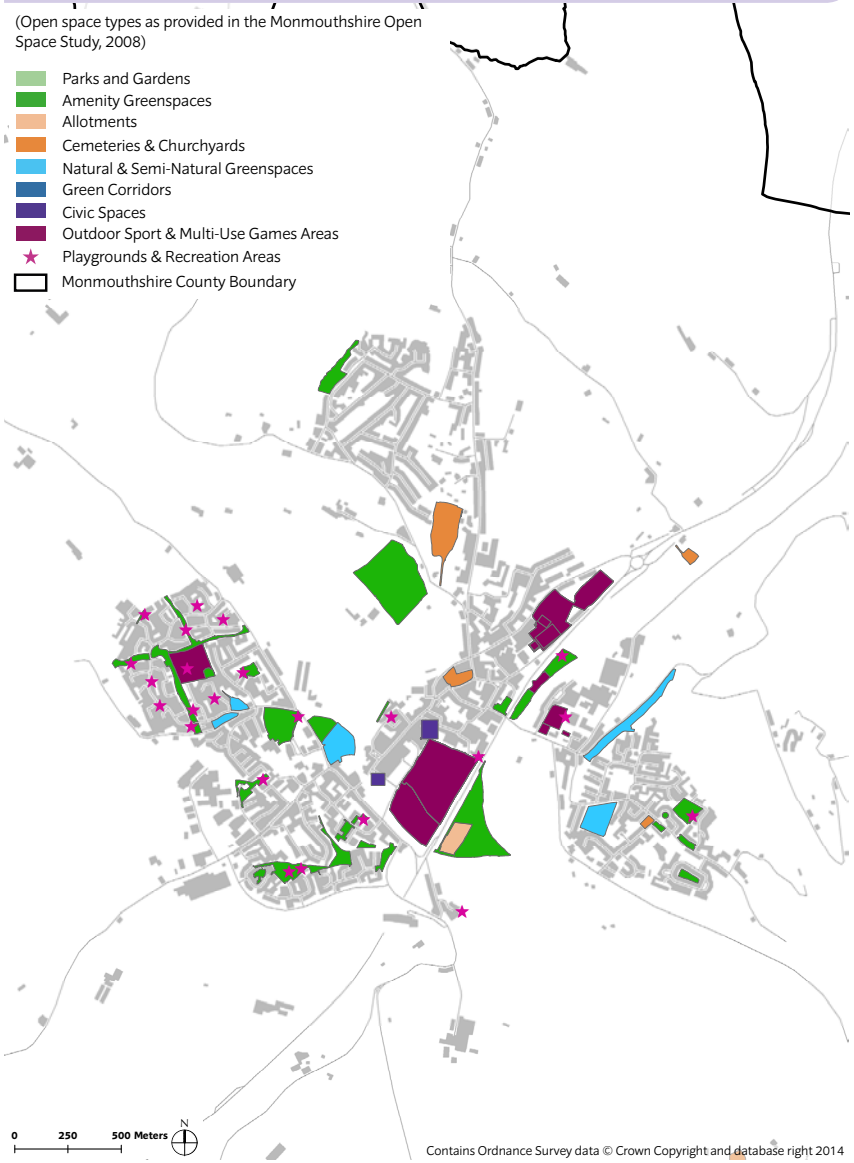
Deficiency/surplus in the provision of open space types against minimum standards set out in the Open Space Study

Public open space	Surplus of 10.83ha
Outdoor sport	Surplus of 5.32ha
Natural/semi-natural[3]	Deficiency of 11.35ha
Equipped play spaces	Deficiency of 1.51ha
Informal play spaces	Surplus of 9.94ha
Allotments	Deficiency of 0.96ha

3 It should be noted that the definition given to natural/semi-natural greenspace in the Open Space Study differs to that in the Greenspace Study. This is likely to have a bearing on the levels of provision (surplus/deficiency) identified in the Open Space Study.

DIAGRAM D1 Open Space Types in Monmouth

(Open space types as provided in the Monmouthshire Open Space Study, 2008)



Conclusions relating to the quality of open space types

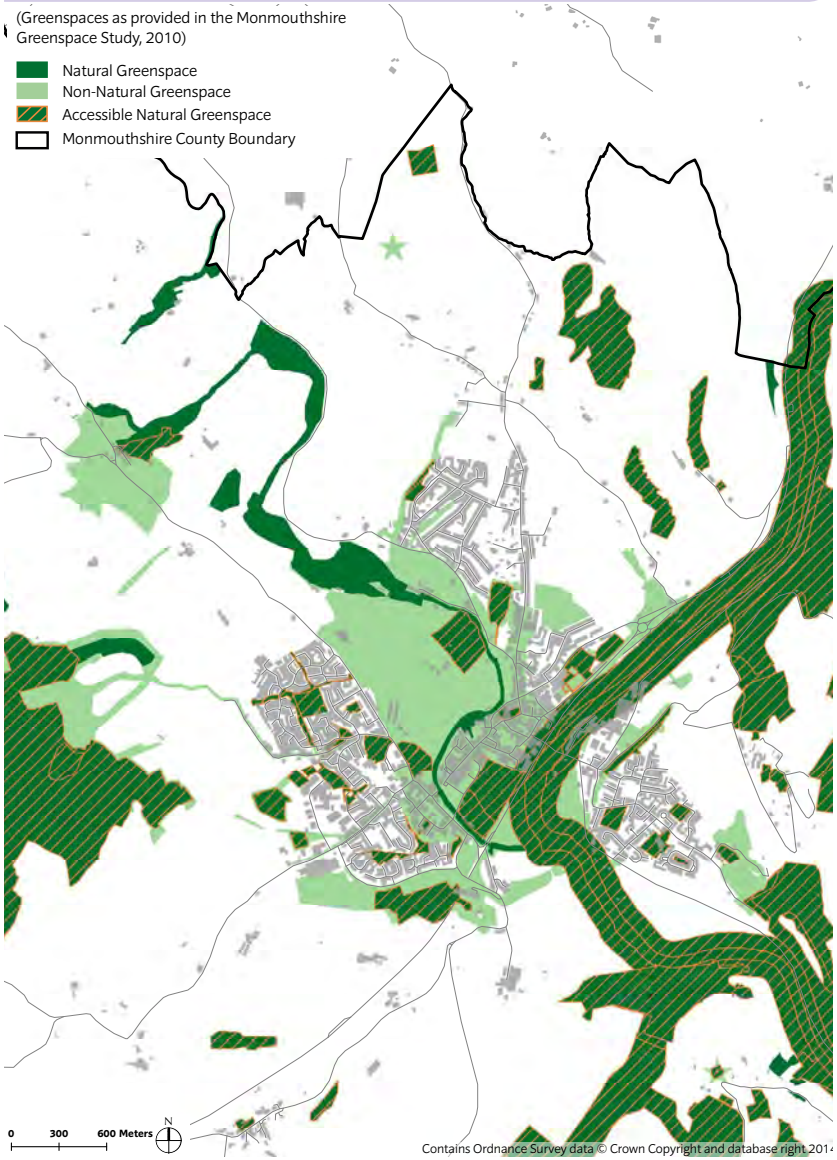
- 'About half the spaces scored high for both quality and value.
- Three quarters of the playing pitches were scored as 'a good pitch' and a quarter were rated as 'average'. The tennis courts scored below the median score for tennis courts and the bowling green achieved a moderate quality score. The Multi Use Games Areas scored below the median but the Synthetic Turf Pitch achieved a good score for quality.
- Only the Nature Reserve at Drybridge scored highly for both quality and value. The other natural and semi-natural greenspace sites scored low for quality.
- Of the twenty two equipped playgrounds assessed three scored highly for all three attributes of location, play value and care and maintenance. None of the sites achieved a low ranking in all three categories.
- The allotment site scored above the median for quality.
- All four churchyards and cemeteries assessed scored high for value and half of them scored highly for quality.
- Both the civic spaces scored below the median for quality but had very high value scores.'

Key findings from the Greenspace Study (2010)

'Monmouth is well provided with greenspace to the south and west of the town, less so to the north. There is provision for tiers 1 or 2 throughout most of the town[4]. There is nearby access to large wooded areas such as Kings Wood. Access is good to the River Wye.'

It should be noted that the Greenspace Study does not differentiate between different types of access to natural greenspace (e.g. land in private ownership with permissive access and land in public ownership). Further assessments, where appropriate, should be carried out to determine the range of issues associated with accessible natural greenspaces, including issues relating to connectivity and management.

DIAGRAM D2 Greenspaces in Monmouth



4 As stated in the Greenspace Study, tier 1 of the CCW Toolkit recommends that everybody should have access to some (accessible natural) greenspace within 300m of where they live. For tier 1, a 400m travel catchment was assumed in the Greenspace Study (where a 400m walk along actual roads and footpaths is assumed equivalent to a theoretical 'as-the-crow-flies' 300m radius buffer).

As stated in the Greenspace Study, tier 2 of the CCW Toolkit recommends that everybody should have access to greenspace>20ha within 2km. For tier 2 a 2km travel catchment was assumed, although access by road was assumed.

Key findings from the Ecological Connectivity Assessment (2010)

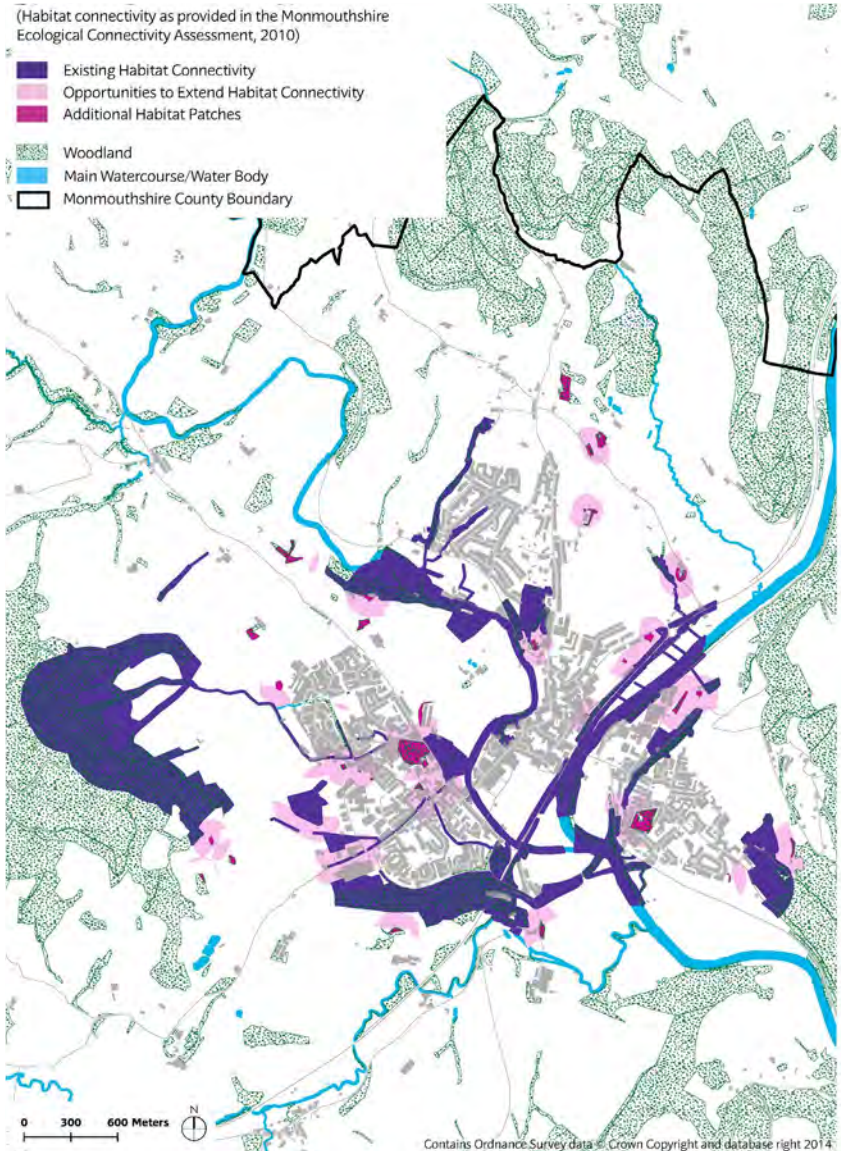
Opportunities to strengthen existing connectivity

- 'Ensure the tree line and hedgerows are well connected and sensitively managed, and ensure sensitive management of grassland verges along the A40 corridor.
- Ensure a buffer of semi-natural habitat with adjacent fields and the built urban landscape and connect with near-by areas of semi-natural habitat where possible along the major river corridors. Extend this to include smaller watercourses, many of which are culverted through the residential zones of Monmouth.
- Ensure hedgerows are sensitively managed and well-connected.
- Ensure current blocks of semi-natural habitat and protected sites are sensitively managed and their extent increased where feasible or appropriate.
- Improve linkage of the disused viaduct with other nearby semi-natural habitats to further bolster corridors through the settlement, e.g. linkage to St. Dial's Wood ASNW.'

Opportunities to enhance connectivity

- 'By forming a link between the central extensive corridor dominated by the Rivers Wye and Monnow and other smaller habitat corridors.
- By connecting the Watery Lane watercourse, semi-improved grassland and ASNW unit (at the west of the settlement) and the central extensive corridor dominated by the Rivers Wye and Monnow.
- By linking a strip of woodland and grassland situated between Wyesham and the May Hill Industrial estate with the main River Wye corridor.
- Between the ditch, semi-improved grassland and woodland habitat in and around Wonastow Industrial estate.
- Between the northern tip of the Clawdd du ditch and the Wonastow road ditch, as well as improving connectivity between these sections of ditch and Drybridge pond and the 'fire station woodland' to the north.
- Between the western end of the Wonastow Road ditch and semi-improved grassland and St Dial's wood to the south.
- Between Wonastow Field SINC and the ditch and semi-improved grassland to the south and Watery Lane to the north.
- Between the variety of small additional habitat patches scattered across the settlement. For example, the small patches of trees situated between the watery lane ditch and Wonastow road ditch.'

DIAGRAM D3 Habitat Connectivity in and Around Monmouth



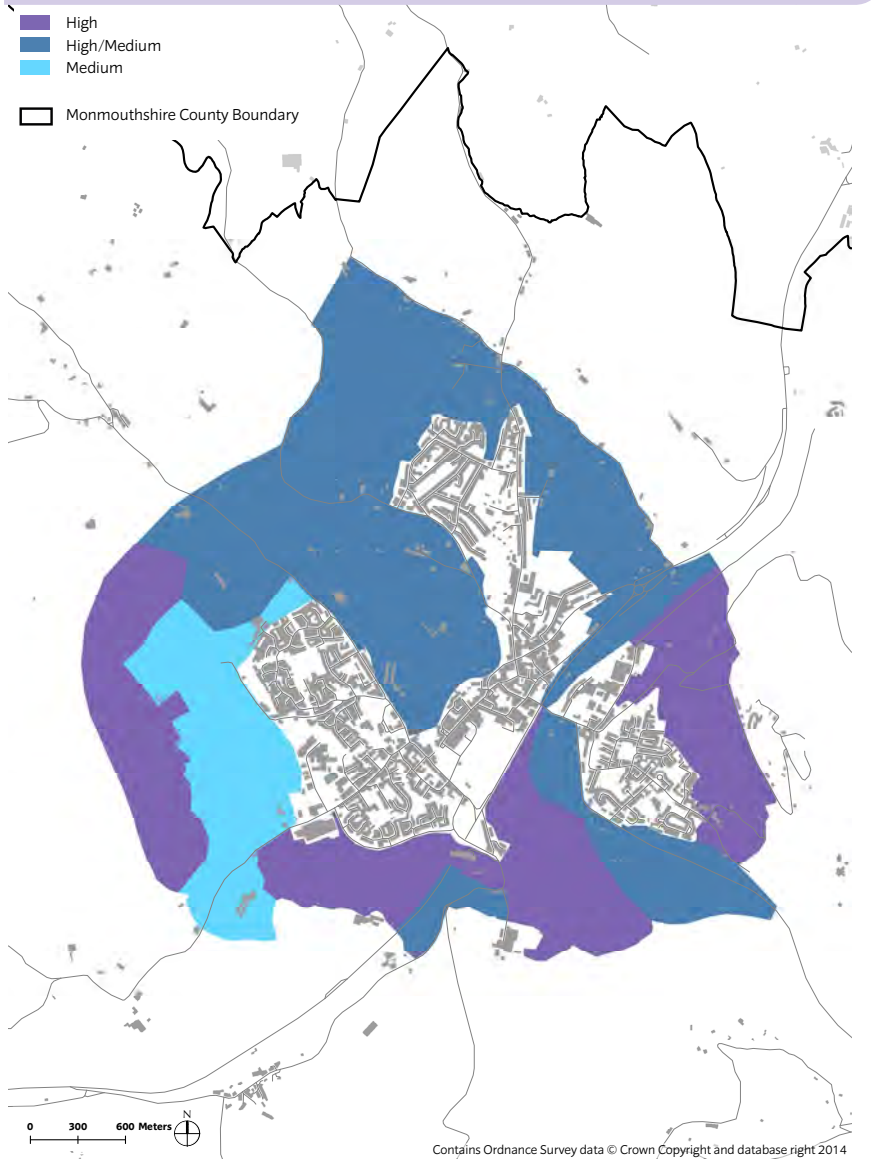
Key findings from the Landscape Sensitivity and Capacity Study (Main Settlement Summaries, 2010)

Landscape sensitivity

'Two areas are considered to have medium sensitivity. They lie adjacent to the expansion of the town to the north and west of Wonastow. Though the Offa's Dyke National Trail passes through the area it is generally contained by landform to the north and west and most of the fields are rationalised arable fields adjacent to a raw settlement edge to the north or commercial estate to the south. There are smaller irregular fields with strong hedgerows with some intrinsic character. The land rises to the west towards Kings Wood and is considered less sensitive in the flatter areas to the east. There are four separate areas considered to be of high sensitivity. The wooded mosaic slopes of Kings Wood to the west, St Dial's Wood to the south and land rising towards the Kymin to the east form positive, unspoilt prominent backcloths to the settlement. The valley floor of the River Wye to the south forms a strong green corridor, partly floodplain, separating Monmouth and Wyesham and acting as a distinct setting to the river and view corridor with distinct features such as a viaduct.

All other areas are high/medium sensitivity. The river corridor along the River Monnow to the north forms an important setting to the town core and acts as a view corridor penetrating the settlement and is used for recreation. The rising land acts as an unspoilt skyline when viewed from the east and west and further north separates the settlement from the rural area around Rockfield. The River Trothy corridor to the south has a distinctly rural, intimate character and is separated from the settlement by a wooded ridge, although has reduced tranquillity next to the A40[T]. The road also reduces the tranquillity of land west of the River Wye but the area acts as part of an important green corridor along the river, acting as setting for the Wye Valley Walk and separating the two settlements. The areas on the low valley sides to the south also perform these functions and lie partly within the AONB. The rural ridge slopes east of the settlement are locally prominent and open with sensitive features such as Dixton Conservation Area and the Priory farm house. The hill and valley sides to the north east are well managed open countryside.'

DIAGRAM D4 Landscape Sensitivity around Monmouth



Landscape capacity for housing

'Two areas are considered to have medium capacity. The area west of Wonastow has some capacity providing development avoids the rising land to the west and avoids significant effects on Offa's Dyke footpath and the SINC. The already allocated site north of housing at Wonastow is considered acceptable but further housing should be avoided closer to the National Trail or near to Rockfield Road.

There is a sweep of land considered to be of medium/low capacity running along the Monnow valley penetrating into the town from the north. It is a strong green, rural corridor which has maintained its integrity between the river and Rockfield Road and allows views out from the town core. It also forms an unspoilt local skyline and has sensitive elements such as listed structures, woodland on steep valley sides and floodplain. Overall, housing expansion in the area would adversely affect the area's integrity and qualities and it therefore only has very limited opportunities for carefully sited single dwellings of rural character.

All other land is considered to be of low capacity. The hillsides surrounding the town including Kings Wood, St Dial's Wood, the Kymin, and east of the Hereford Road are considered to be prominent and open to view. The Wye valley corridors are also open and provide an essential setting to the river, town and a separation between settlements, as well as serving partly as floodplain, which housing would adversely affect. The gently rising land around Croft-y-Bwla is highly rural, separating the town from the rural hinterland to the north while the rural Trothy valley to the south is separated from the town by a wooded ridge and housing would be out of place.'

DIAGRAM D5 Landscape Capacity for Housing around Monmouth

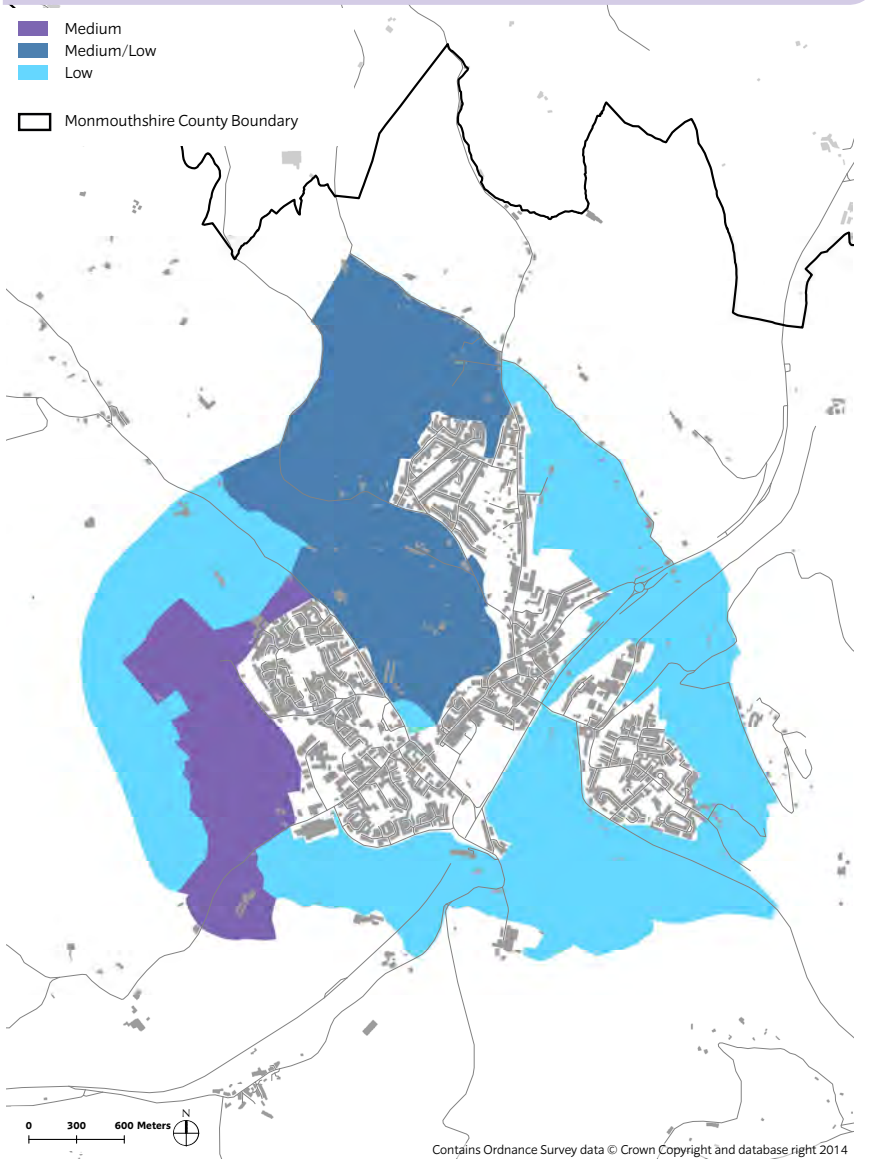


DIAGRAM D6 Biodiversity Designated Sites in and around Monmouth

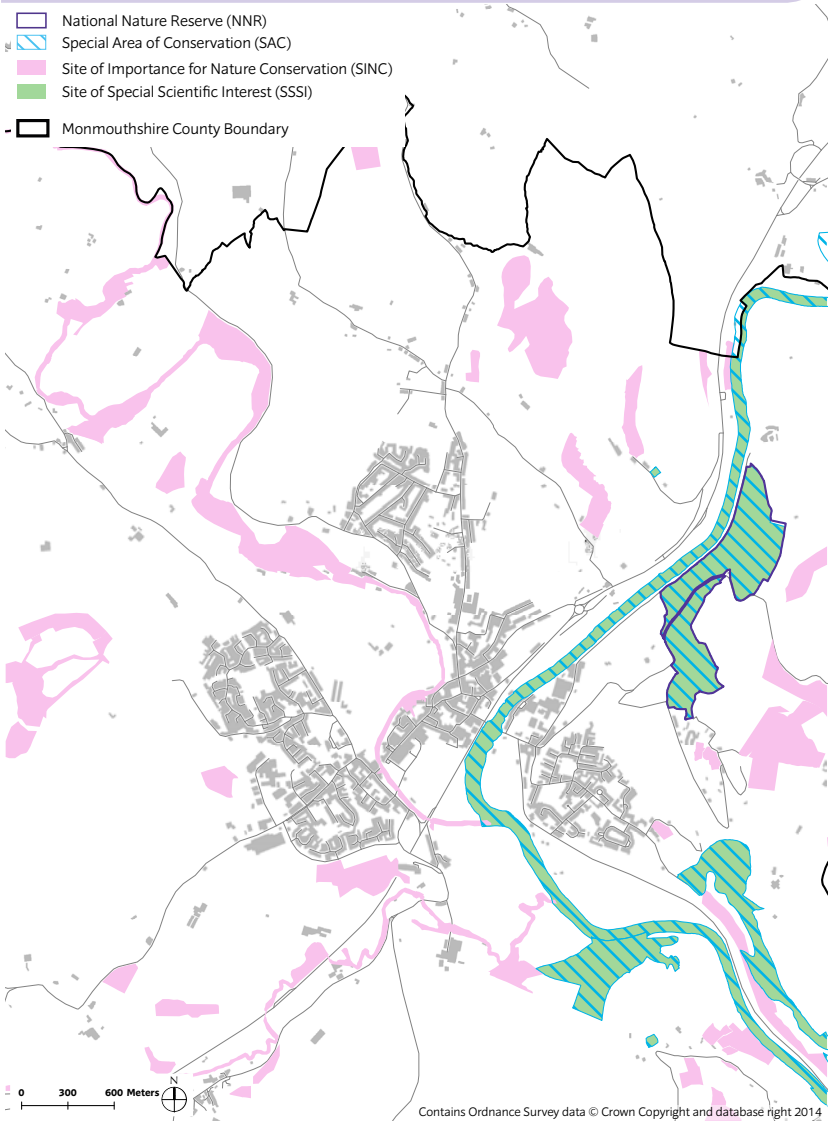
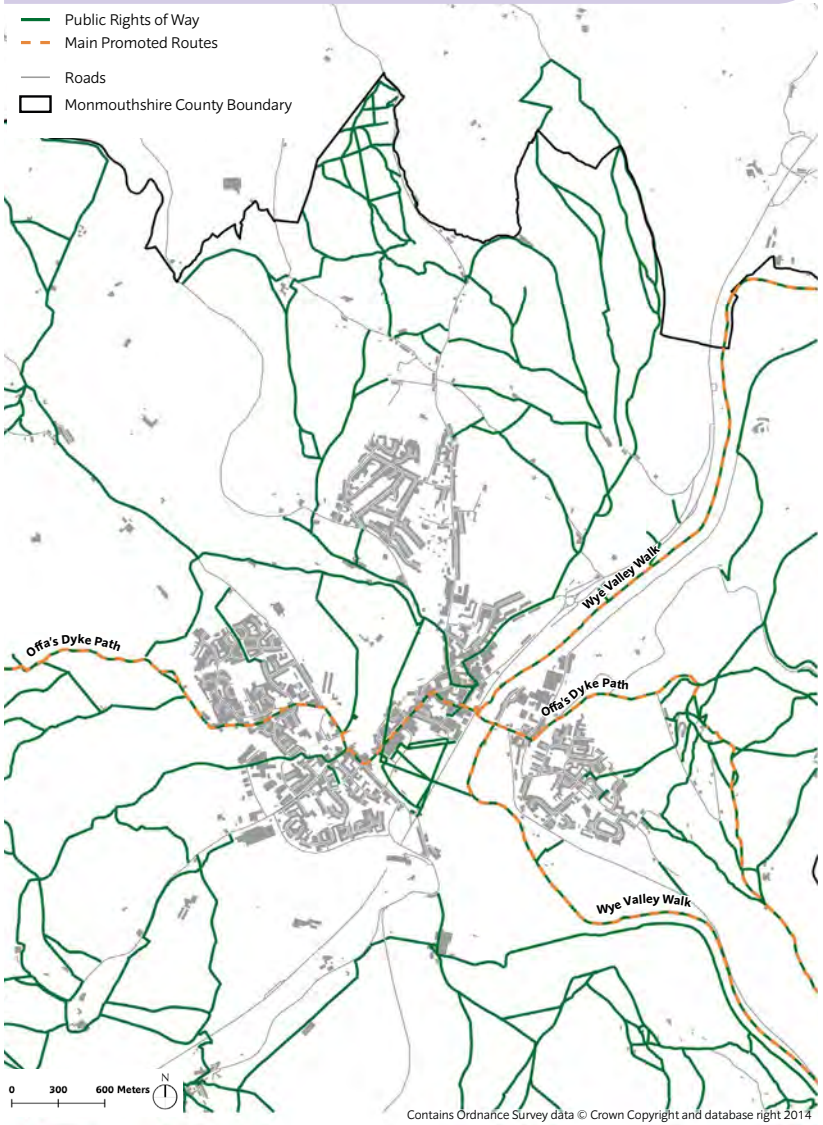


DIAGRAM D7 Public Rights of Way in and around Monmouth



e

Information from Evidence Base Studies Chepstow

Key findings from the Open Space Study (2008)

Types of open space

Open space typology	Number of Spaces
Parks & Gardens	0
Natural & Semi Natural Greenspace	3
Equipped Playgrounds	19
Youth Provision	1
Amenity Greenspace	27
Allotments	1
Cemeteries and Churchyards	3
Green Corridors	0
Civic Spaces	1
Playing Pitches	11
Multi Use Games Areas	2
Tennis Courts	3
Bowling Greens	1

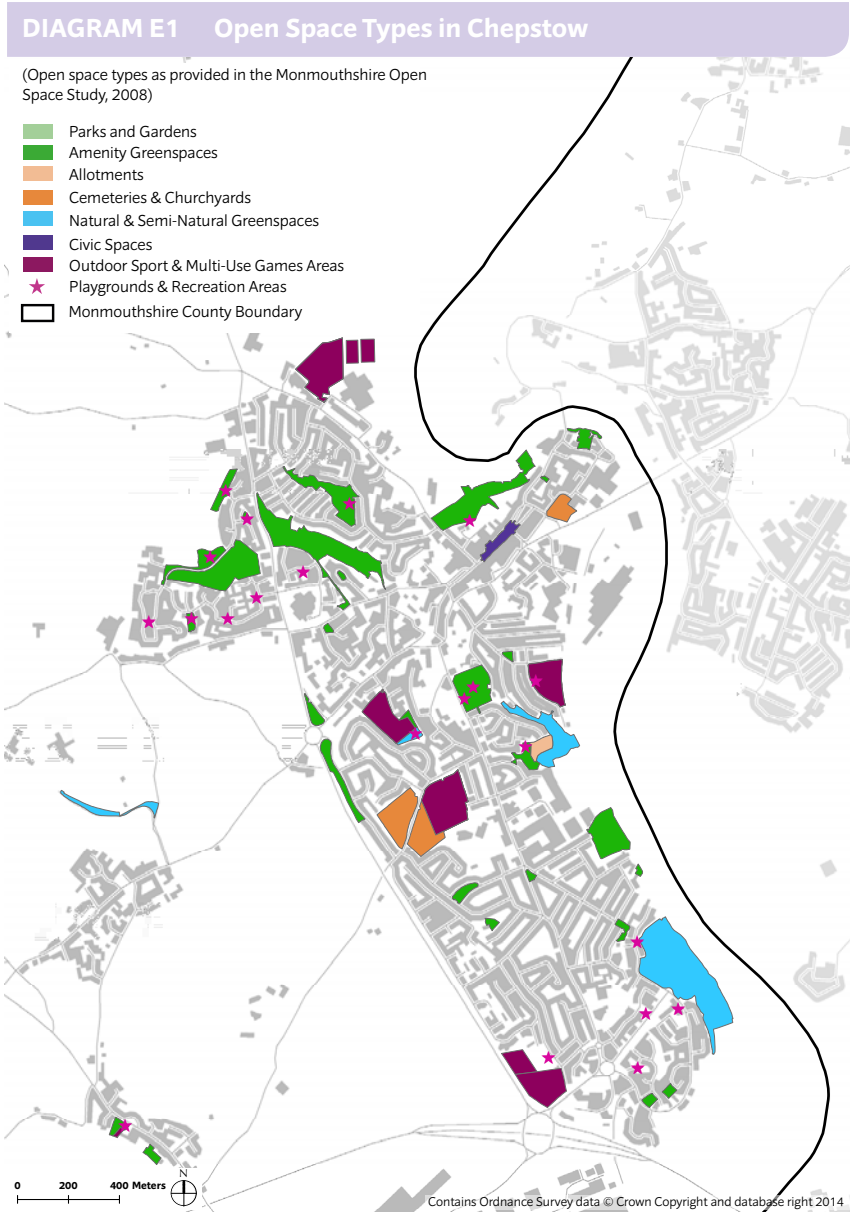
Standards of provision

Deficiency/surplus in the provision of open space types against minimum standards set out in the Open Space Study

Public open space	Surplus of 6.48ha
Outdoor sport	Deficiency of 4.50ha
Natural/semi-natural[5]	Deficiency of 12.11ha
Equipped play spaces	Deficiency of 2.24ha
Informal play spaces	Surplus of 5.39ha
Allotments	Deficiency of 2.19ha

5 It should be noted that the definition given to natural/semi-natural greenspace in the Open Space Study differs to that in the Greenspace Study. This is likely to have a bearing on the levels of provision (surplus/deficiency) identified in the Open Space Study.

DIAGRAM E1 Open Space Types in Chepstow



Conclusions relating to the quality of open space types

- 'Overall the quality of amenity greenspace in Chepstow is variable although 11 sites were ranked as being high for both quality and value and only 5 scoring low for both quality and value.
- Most playing pitches in Chepstow were rated as being 'good' pitches. The bowling green achieved the highest score (96%) of the five greens assessed in Monmouthshire. The three tennis courts were all assessed as having the same score as the median for all sites in Monmouthshire.
- The three natural and semi-natural greenspace sites were all assessed as being high in value and only one site scored below the median for quality.
- Two equipped play spaces scored high for location, play value and care and maintenance and none of the sites achieved a low ranking in the three categories.
- The allotments scored above the median score for quality.
- Of the three cemeteries and churchyards, only the cemetery in Mathern Road achieved a high score for quality. The Parish and Priory Church of St Mary scored low for both quality and value.'

Key findings from the Greenspace Study (2010)

'Access provision in Chepstow is good. There are a significant number of accessible greenspaces in the town. Two areas are however lacking: the new development north of the motorway at Thornwell and the centre of Chepstow adjoining the River Wye. Chepstow is on the River Wye, but access to the river is limited.'

It should be noted that the Greenspace Study does not differentiate between different types of access to natural greenspace (e.g. land in private ownership with permissive access and land in public ownership). Further assessments, where appropriate, should be carried out to determine the range of issues associated with accessible natural greenspaces, including issues relating to connectivity and management.

DIAGRAM E2 Greenspaces in and around Chepstow

Key findings from the Ecological Connectivity Assessment (2010)

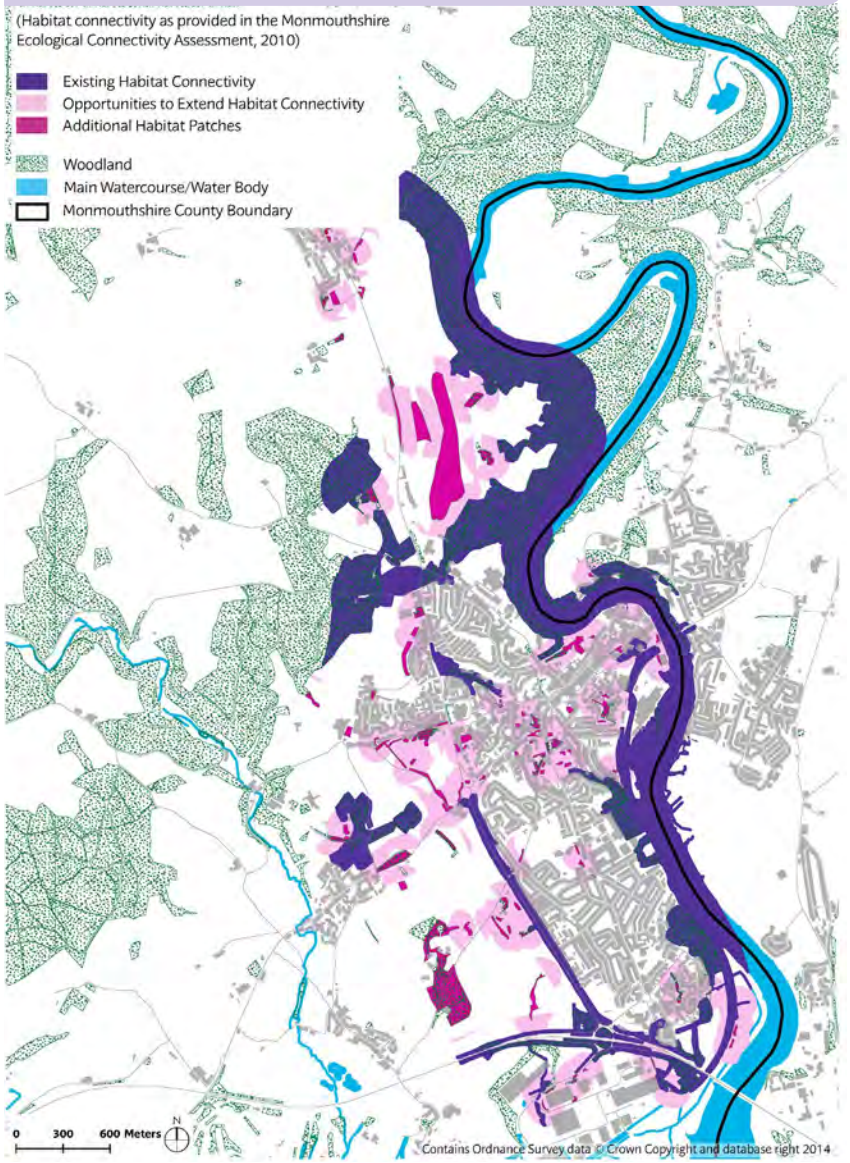
Opportunities to strengthen existing connectivity

- 'Ensure a buffer of semi-natural habitat with adjacent fields and the built urban landscape and connect with near-by areas of semi-natural habitat where possible along the River Wye corridor.
- Strengthen the railway and motorway corridors: ensure tree lines and hedgerows are well connected and sensitively managed. Ensure sensitive management of grassland verges.
- Ensure hedgerows are sensitively managed and well-connected with the wider hedgerow network and other semi-natural habitat features (particularly woodlands.
- Ensure current blocks of semi-natural habitat and protected sites are sensitively managed and their extent increased where appropriate.
- Ensure ditches are sensitively managed.'

Opportunities to enhance connectivity

- 'Between the small discrete groups of trees/woodland scattered in and around Hardwick with one another, as well as to Parc Penterry grassland SINC to the north-west and Beaufort Quarry wood to the south east.
- Between Parc Penterry SINC and Cockshoot Wood ASNW/semi-improved grassland to its north west via enhanced connectivity with a strip of additional habitat patches (semi-improved grassland and trees) located mid-way between the two main habitat blocks.
- Between Cockshoot wood ASNW and Fryth wood ASNW to its north;
- Between Chepstow Racecourse grassland SINC to additional patches of semi-improved grassland to the east and west, and beyond to the River Wye woodland corridor at the east and Fryth wood ASNW at the west.
- Between groups of trees/woodland patches near the outskirts of Chepstow town, and the railway and River corridor.'

DIAGRAM E3 Habitat Connectivity in and around Chepstow



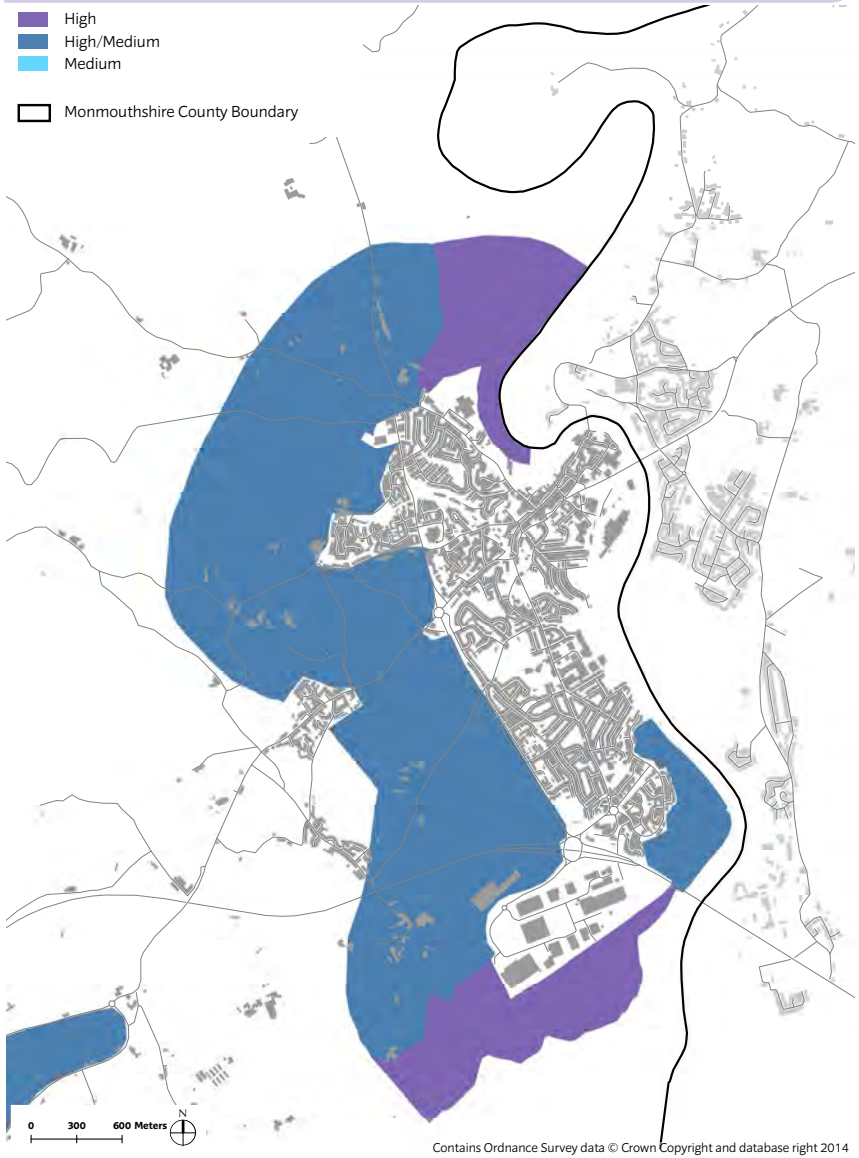
Key findings from the Landscape Sensitivity and Capacity study (Main Settlement Summaries, 2010)

Landscape sensitivity

'Two areas are considered to be of high sensitivity. The open parkland of Piercefield Park with the adjacent wooded steep slopes to the north of the settlement form an important part of the Wye valley and are in the AONB. The levels to the south are of historic interest and are floodplain, with sensitive features such as reens, and form the eastern extremity of the open levels landscape, acting as a distinctive setting to the estuary.

The rest of the environs of Chepstow are considered to be high/medium sensitivity. The race course is an open green sweep and forms part of Piercefield Park visually. The north western areas form part of the Wye Valley AONB and are undulating and hilly rural pastoral areas enclosed by strong woodland with some long views to the west across Mounton Brook valley and further south across to the Severn Estuary. The Conservation Areas of Mounton, around Wyelands, with its parkland and listed buildings, have sensitive settings. The latter is open and sweeps down to the levels with long views south. Mathern is also a Conservation Area with historic character set with open countryside on a slight rise above the levels. The green corridor along the Wye to the south east forms an important green corridor along the river and is well used for informal recreation.'

DIAGRAM E4 Landscape Sensitivity around Chepstow



Landscape capacity for housing

'An area of medium/low capacity is located on the north western edge of the settlement and is apparently under pressure from recent housing development. The rural pastoral area is undulating and hilly, enclosed by strong woodland to the north, but with some long views to the west across Mounton Brook valley and further south across to the Severn Estuary. It acts as a gap between the town and Mounton Conservation Area and part is within the AONB.

Areas with low capacity are around Piercefield Park and the racecourse due their openness and the effects on the setting of the parkland, Wye Valley and the AONB. The mosaic area to the west is sensitive due to its wooded character and the setting of the Mounton Conservation Area as well as being in the AONB. The Wyelands Conservation Area is open with parkland and along with the rural Mathern Conservation Area with its listed buildings would be sensitive to housing development in their settings. The Levels would be unable to accommodate housing in floodplain along the Severn and Wye due to openness, historic value and sensitive features such as reens.'

DIAGRAM E5 Landscape Capacity for Housing around Chepstow

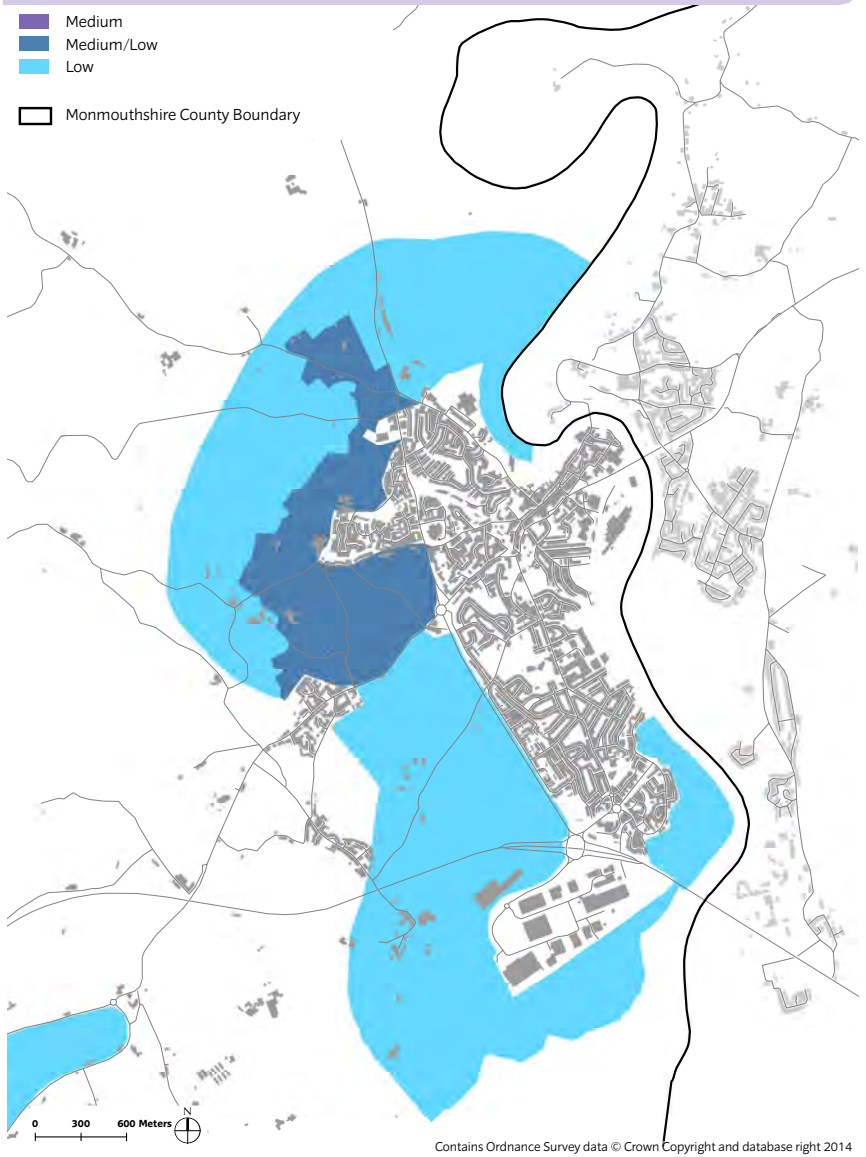


DIAGRAM E6 Biodiversity and Geological Designated Sites in and around Chepstow

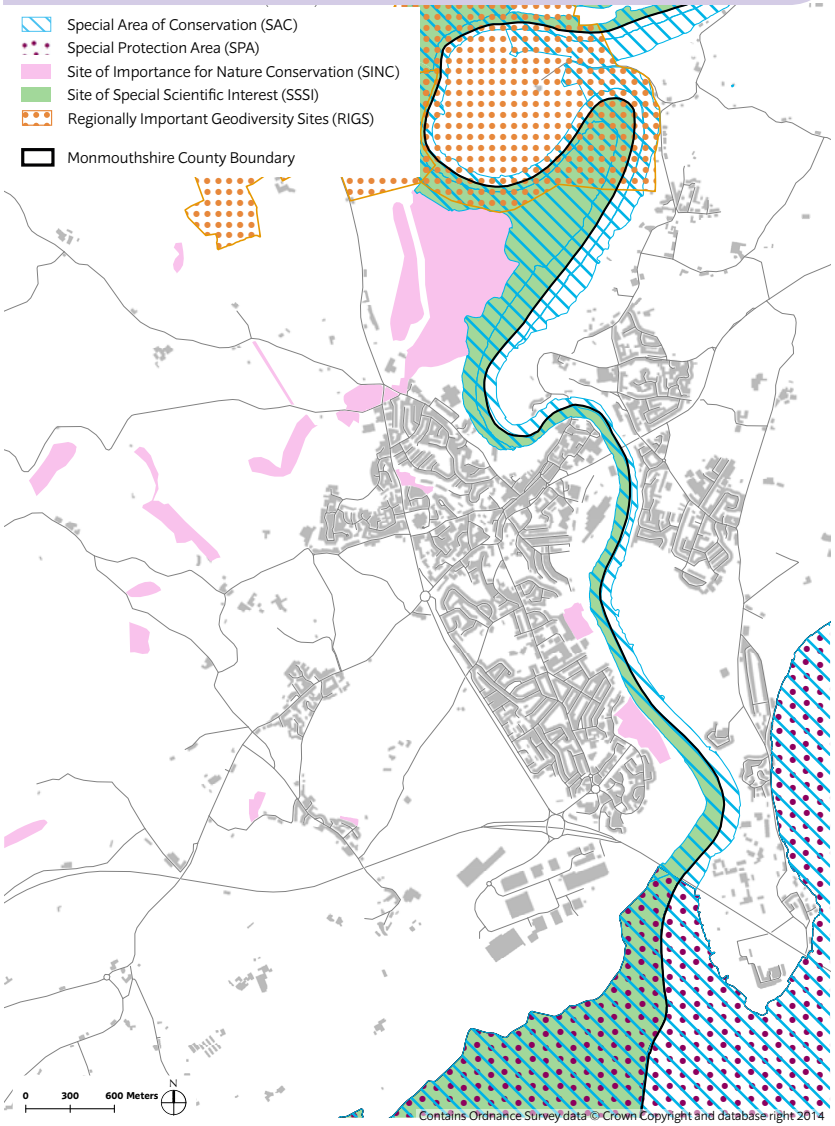
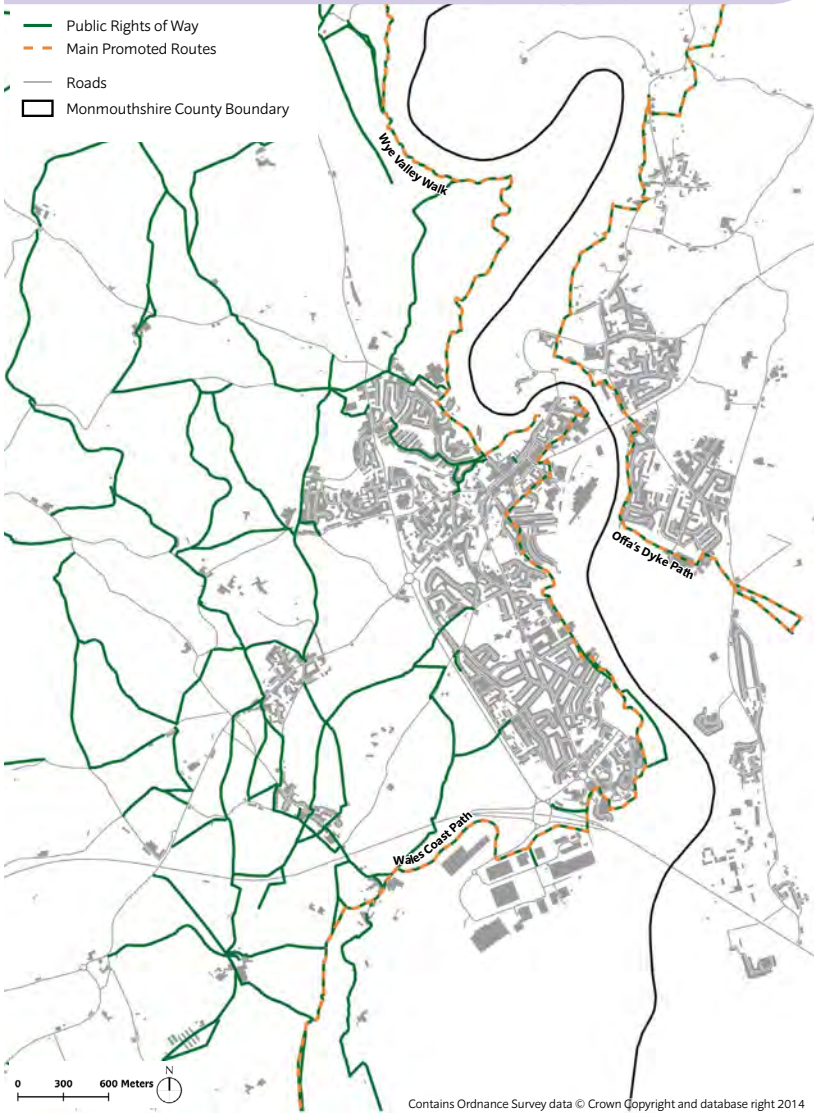


DIAGRAM E7 Public Rights of Way in and around Chepstow



Information from Evidence Base Studies
Severnside Settlements

Key findings from the Open Space Study (2008)

Types of open space

Open space typology	Number of Spaces			
	Magor/Undy	Rogiet	Caldicot	Portskewett/ Sudbrook
Parks & Gardens	0	0	1	0
Natural & Semi Natural Greenspace	5	0	1	4
Equipped Playgrounds	10	4	11	3
Youth Provision	0	0	1	0
Amenity Greenspace	12	2	21	3
Allotments	2	2	3	1
Cemeteries and Churchyards	2	1	2	1
Green Corridors	1	1	0	0
Civic Spaces	1	0	1	0
Playing Pitches	6	1	16	2
Multi Use Games Areas	0	1	1	0
Tennis Courts	3	0	0	0
Bowling Greens	0	0	1	0

Standards of provision

Deficiency/surplus in the provision of open space types against minimum standards set out in the Open Space Study

	Magor/Undy	Rogiet	Caldicot	Portskewett/ Sudbrook
Public open space	Deficiency of 0.19ha	Suplus of 0.33ha	Surplus of 24.45ha	Deficiency of 0.01ha
Outdoor sport	Deficiency of 5.83ha	Deficiency of 1.24ha	Surplus of 4.19ha	Deficiency of 0.47ha
Natural/semi-natural[6]	Surplus of 4.4ha	Deficiency of 3.27ha	Deficiency of 18.8ha	Surplus of 6.02ha
Equipped play spaces	Deficiency of 1.25ha	Deficiency of 0.39ha	Deficiency of 1.93ha	Deficiency of 0.42ha
Informal play spaces	Deficiency of 0.8ha	Surplus of 0.17ha	Surplus of 1ha	Deficiency of 0.19ha
Allotments	Deficiency of 1.12ha	Surplus of 0.82ha	Deficiency of 1.2ha	Deficiency of 0.2ha

(NB: Caerwent was assessed as part of the Mor Hafren sub-area and results are not specified for Caerwent itself.)

6 It should be noted that the definition given to natural/semi-natural greenspace in the Open Space Study differs to that in the Greenspace Study. This is likely to have a bearing on the levels of provision (surplus/ deficiency) identified in the Open Space Study.

DIAGRAM F1 Open Space Types in the Severnside Settlements

Conclusions relating to the quality of open space types

Magor/Undy

- 'Overall the quality of amenity greenspace in Magor with Undy is reasonably good. Of the twelve spaces assessed, two were ranked as being high for both quality and value with three scoring low for both quality and value.
- Playing pitches were rated as being 'good' or 'average'. The tennis courts were rated as being below the median for quality.
- Two of the natural and semi-natural greenspace sites in Magor with Undy score high for quality and high for value and three sites score low for both quality and value. The green corridor at Cowleaze is high ranking for both quality and value.
- Of the ten equipped play areas in Magor with Undy, only one achieved a high ranking for the three categories of location, play value, care and maintenance.
- The two churchyards and cemeteries were ranked above the median for both quality and value. There is a growing problem with lack of burial space in the parish, which is of concern to the Community Council.'

Rogiet

- 'The large amenity greenspace site at Starling Close scored high for both quality and value. The remaining site had very low scores for both quality and value.
- The playing pitch rated as an average pitch and the MUGA scored just below the median for quality.
- All four children's play sites had a high score for location. Three of the sites scored highly for play value but only one site scored highly for care and maintenance.
- St Mary's Churchyard scored highly for quality but low for value and both allotment sites had high quality scores. The Green Corridor in Ifton Lane scored poorly for both quality and value.'

Caldicot

- 'The quality of amenity greenspace in Caldicot is varied with 1 in 4 being ranked as high for both quality and value although more spaces scored low for both quality and value.
- Most playing pitches in Caldicot achieved a 'good' rating and the one bowling green at Caldicot Bowling Club achieved a high score.
- The natural and semi-natural greenspace site was assessed as being low in both quality and value.
- Overall, three of the playgrounds scored high for location, play value and care and maintenance.
- Four playgrounds were assessed as low in all three categories.
- The three allotments sites achieved a high quality score and the two churchyards and cemeteries scored high for quality but low for value.'

Portskewett/Sudbrook

- 'Two of the amenity greenspaces in Portskewett had a low score for both quality and value. The remaining site scored high for quality and low for value.
- Of the two playing pitches in Portskewett one scored at the level of an average pitch but the other had a very low score and rated as a poor pitch.
- All three children's play sites had a low score for both location and care and maintenance but the play value of two sites achieved a high score.
- The churchyard scored highly for both quality and value and the allotment site achieved a high score for quality.
- One natural and semi-natural greenspace had a high score for both quality and value. The remaining three sites scored low for quality.'

(NB: **Caerwent** was assessed as part of the Mor Hafren sub-area. Conclusions are not specified for Caerwent itself.)

Key findings from the Greenspace Study (2010)

Caldicot, Portskewett, Sudbrook, Caerwent and Rogiet

- 'This is a collection of small urban areas in south Monmouthshire, bounded to the north and south by motorway and railway, meaning access to footpaths into the wider countryside is more difficult.
- Caldicot, the largest settlement has good provision for tiers 1 and 2 (including Caldicot Castle Country Park)[7].
- There are a number of inaccessible greenspaces north of Portskewett, which may present opportunities for improved access.'

Magor and Undy

- 'Another settlement bounded by major roads and the mainline railway south of the M4. The eastern side of Magor has tier 1 provision only. Access to the

7 As stated in the Greenspace Study, tier 1 of the CCW Toolkit recommends that everybody should have access to some (accessible natural) greenspace within 300m of where they live. For tier 1, a 400m travel catchment was assumed in the Greenspace Study (where a 400m walk along actual roads and footpaths is assumed equivalent to a theoretical 'as-the-crow-flies' 300m radius buffer).

As stated in the Greenspace Study, tier 2 of the CCW Toolkit recommends that everybody should have access to greenspace>20ha within 2km. For tier 2 a 2 km travel catchment was assumed, although access by road was assumed.

DIAGRAM F2 Greenspaces in and around the Severnside Settlements

It should be noted that the Greenspace Study does not differentiate between different types of access to natural greenspace (e.g. land in private ownership with permissive access and land in public ownership). Further assessments, where appropriate, should be carried out to determine the range of issues associated with accessible natural greenspaces, including issues relating to connectivity and management.

Key findings from the Ecological Connectivity Assessment (2010)

Opportunities to strengthen existing connectivity

Caldicot, Portskewett, Rogiet and Sudbrook

- 'Strengthen the railway and motorway corridors: ensure tree lines and hedgerows are well connected and sensitively managed. Ensure sensitive management of grassland verges.
- Strengthen the Nedern Brook corridor, the main semi-natural corridor through the urban zone of the settlement. Ensure a buffer of semi-natural habitat with adjacent fields and the built urban landscape, and connect with nearby areas of semi-natural habitat where possible. Identify the significance of the culverts as barriers to wildlife dispersal and explore potential options for reducing their fragmentary effect.
- Ensure hedgerows are sensitively managed and well-connected with the wider hedgerow network and other semi-natural habitat features (particularly woodlands).
- Ensure current blocks of semi-natural habitat and protected sites are sensitively managed and their extent increased where appropriate.
- Ensure ditches are sensitively managed.'

Magor/Undy

- 'Strengthen the railway and motorway corridors: ensure tree lines and hedgerows are well connected and sensitively managed. Ensure sensitive management of grassland verges.
- Strengthen the St Bride's Brook / Mill Reen corridor through the creation / management of semi-natural habitat buffers with adjacent fields and the built urban landscape, and to connect with other near-by areas of semi-natural habitat where possible.
- Identify the significance of the culverts as barriers to wildlife dispersal and explore potential options for reducing their fragmentary effects;
- Ensure hedgerows are sensitively managed and well-connected with the wider hedgerow network and other semi-natural habitat features (particularly woodlands).
- Ensure current blocks of semi-natural habitat and protected sites are sensitively managed and their extent increased where appropriate.
- Ensure ditches are sensitively managed.'

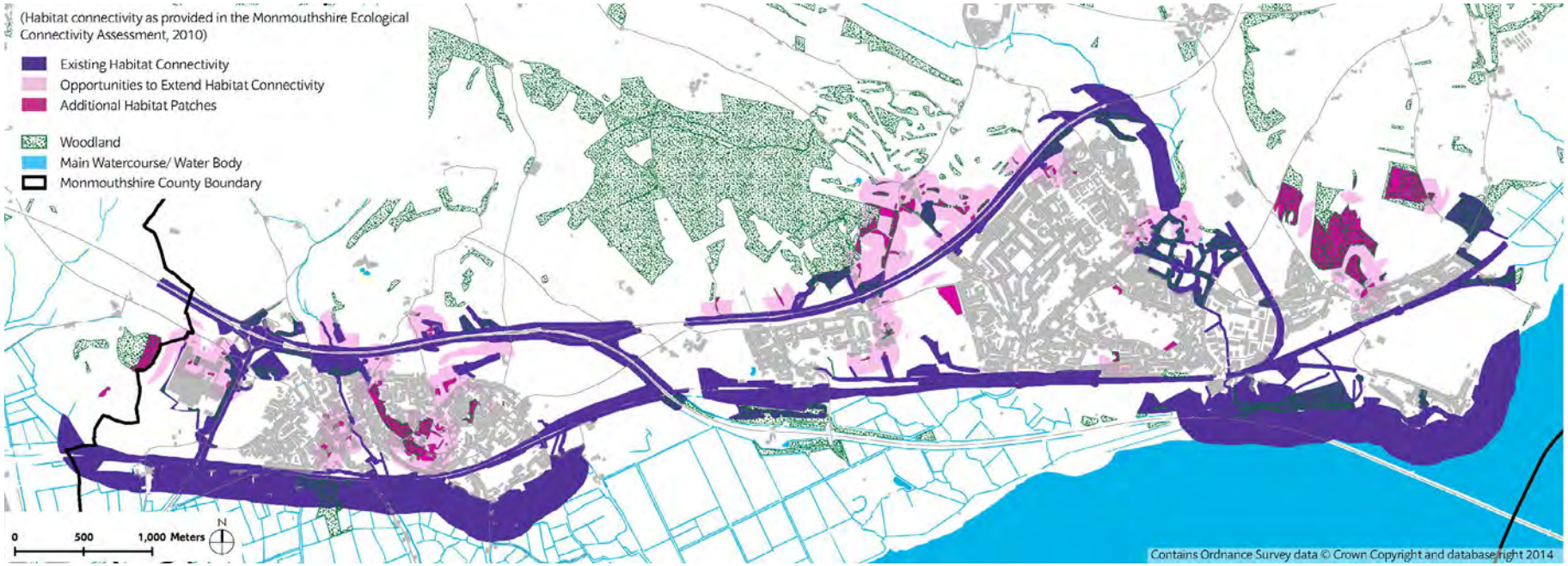
(NB **Caerwent** did not form part of the settlements assessed.)

Opportunities to enhance connectivity

Caldicot, Portskewett, Rogiet and Sudbrook

- 'Between the block of woodland and ponds, off Dewstow Road (north-west part of the settlement) and the M48 road verge corridor to its south;
- Across the northern half of the settlement, most significantly in relation to the clusters of ASNW SINCs centred on Portskewett Hill. These patches could be linked to each other and to the railway corridor (to the south), Bushy Close SSSI and Withy Bed woodland (to the east).
- Between a series of small groups of trees stretching north-south between the M48 and railway corridors to the east of Rogiet.
- Between patches of trees adjacent to the Nedern Brook corridor, north of Caldicot Castle.'

DIAGRAM F3 Habitat Connectivity in and around the Severnside Settlements



Magor/Undy

- 'Between Upper Grange grassland SINC (near Beeches Caravan Park) with the St Brides Brook to its west, and linking the woodland/semi-improved grassland by Rockfield Farm to the M48 verge corridor to its north, as well as to additional habitat patches (trees/scrub) by Vinegar Hill Farm to its south west.
- Between the woodland blocks near Vinegar Hill (the largest blocks of semi-natural habitat within the residential part of the settlement) to each other and to the primary route of connectivity via a connection to woodland to the north, St Bride's.
- Brook / Mill Reen to the west, and railway to the south.
- Between small groups of trees/scrub on-site, as well as linking them to the main route of connectivity, i.e. the B4245 corridor to the east and woodland strip to the west, in the vicinity of Magor Brewery.'

(NB **Caerwent** did not form part of the settlements assessed.)

Key findings from the Landscape Sensitivity and Capacity Studies (2009/2010)

Landscape sensitivity

Caldicot

'Three areas are considered to be of medium sensitivity. The gently undulating area between Caldicot and Rogiet forms an important pastoral green gap between the settlements, maintaining their identity, but is affected by adjacent housing estates and the M48. The area east of the Nedern Brook valley floor is sensitive to the north due to valley side woodland and well maintained pastures but this reduces to the south west where there is greater influence of development in a contained valley with slightly degraded boundaries. Caerwent Quarry is a degraded landscape although regrowth of vegetation softens the stone faces to an extent.

Most of the rest of the settlement environs are considered to be high/medium sensitivity. The Nedern valley acts as setting to the castle and other SAMs as well as having a distinct valley floor and floodplain [a SSSI], prominent wooded valley sides and is used partly for recreation. The open space to the north of the settlement forms an important treed buffer between the M48 and housing which also is locally used. The open countryside to the north of the M48 is separated from the settlement by the road, is often prominent hillside/ backcloth and includes skyline. The levels, north and south of the railway line are floodplain, used for recreation, and, to the south form part of the visual continuum of the levels landscape along the Severn estuary.

The castle and surrounds are considered to be high sensitivity due to the historic significance and setting of SAM and listed buildings. The levels south of the railway are also considered high sensitivity due to their distinct flat, open character, separated from the settlement.'

Portskewett

'Three areas are considered to be of high/medium sensitivity. 'The area to the north is on rising slopes above and intervisible with the Gwent Levels and local roads and footpaths with a significant local focus of Heston Brake Long Barrow which is accessible. The area to the east (in and around Cropthorne Farm) is in a rural location on the eastern edge of Portskewett, forming part of the open countryside transition onto the Gwent Levels with reens and a farm complex which traditionally signals the edge of the settlement. All of the area is in the Gwent Levels Landscape of Outstanding Historic Interest.

The area to the south (between Portskewett and the railway line) is covered by a SAM, part acts as setting for the church of St Mary allowing views to the estuary, part is a recreation ground used locally, forms part of the Mathern Levels and contributes to the green corridor linking the Levels to the east with the west and act as a buffer between Portskewett and Sudbrook. The least sensitive part is east of Sudbrook Road but this is considered to be outstanding in terms of LANDMAP landscape habitats value.'

Rogiet

'Four areas are considered to be of medium sensitivity. The railway land to the south west of the settlement is overgrown and unsightly but forms part of the open setting of listed buildings and Conservation Area. The narrow strip of land separating the settlement from the M48 to the north lacks tranquillity but forms an important gap offering visual amenity along the B4245 between the settlement and the M48. Land including Ifton Quarries to the north of the M48 is degraded by extraction but still forms an important local skyline with woodland which has intrinsic value. The gently undulating area between Caldicot and Rogiet forms an important pastoral green gap between the settlements, maintaining their identity, but is affected by adjacent housing estates and the M48.

The sensitivity of the rest of the landscape around Rogiet is considered to be high/medium sensitivity. This includes all the levels related landscapes [also

north of the railway line] due to its role as floodplain and forming part of a continuum of open low lying landscape along the coast with sensitive elements such as reens. The area south east of the settlement is pasture as well as amenity space separating the settlement from the railway line. The area around Llanfihangel forms part of the setting for the settlement and Conservation Area, maintaining some rural character. The hills north of the M48 are an unspoilt rural rising backcloth with well-maintained hedges and deciduous woodland.'

Sudbrook

'The fort is of high sensitivity due to its historic and landscape character and value and its prominent location at Sudbrook Point. The rest of the area around the settlement is high/medium sensitivity. The area to the west is on the Levels floodplain with reens and acting as part of the continuum of the Levels along the estuary forming part of the view corridor from Portskewett to the coast. The area to the north forms part of the green corridor linking the levels to the east and west and acting as a green gap between Portskewett and Sudbrook. '

Caerwent

One area is considered to be of medium sensitivity, two of high/medium sensitivity and one of high sensitivity. The area to the north 'is of medium sensitivity as it is full of MoD infrastructure which is detractive in itself although the area is within countryside, which potentially could act as a positive setting'. The area to the east (north and south of the A48) 'is of high/medium sensitivity as the field to the south of the A48 provides an important green space approach to the Roman town from the east alongside the Roman road while the field to the north provides a rural setting to the settlement overall. The field to the south is also within the Conservation Area and overlooked by listed buildings.'

'The area to west (closest to the centre of Caerwent) 'is of high sensitivity as a scheduled ancient monument with numerous Roman remains as well as being a Conservation Area with listed buildings. The area around the town acts as an open setting to the town and walls which still form a coherent boundary in parts.' The area to the far west 'is of high/medium sensitivity because it acts as the open setting for the Roman town walls which are designated as a SAM and Conservation Area. The area adjacent to the Nedern Brook is also flood plain.'

Magor/Undy

'Three areas are considered to be medium sensitivity - the strip of land between the M4 and the settlement edge, a small enclave of levels to the south of the settlement and former railway land to the east. The land by the M4 has a slightly degraded urban fringe character with limited tranquillity. More sensitive parts of this area are the valley sides and floor of St Bride's Brook and the skyline to the east. The disused railway sidings to the east are overgrown with vegetation and are of degraded character used for trail biking.

The rest of the surroundings of the settlement to the north, east and west are considered to be high/medium sensitivity. The rolling countryside to the north is considered to be of positive character open to view from the south and separated from the settlement. The western areas act as setting to Wilcrick Hill and provide a positive gap between industry and the settlement. The eastern areas provide a green gap of open countryside between Undy and the M4/Rogiet, overlooked by the M4. The Gwent Levels are considered to be high sensitivity due to their distinct character of fields drained by reens on the floodplain.'

Landscape capacity for housing

Caldicot

'The green gap between Rogiet and Caldicot is also medium/low capacity and should be retained for its visual and amenity function, as well as acting as floodplain to the south. However, the estate settlement edge to Caldicot is stark and abrupt. The only development that may be acceptable may be one which improves the settlement edge, retaining the vast bulk of the area as multifunctional open space [e.g. for food, recreation, visual amenity, floodplain and nature conservation etc].

Most areas are considered to be low capacity for housing. The castle and environs including the Nedern Brook valley are highly sensitive due to the historic designations and their setting, the SSSI and floodplain, as well as the local recreational use, which development would adversely affect. The green gap between the settlement and M48 has no capacity for housing as an important locally used green buffer on a skyline. The open countryside to the north of the M48 is prominent and provides the setting for historic features. The Gwent levels to the south are distinctly separated from the settlement by the railway and M4 and any development would compromise this pattern. It would also detract from the openness and distinctive coastal landscape character as well as encroach on floodplain in most parts.'

Portskewett

The area to the north 'has low capacity for housing because it is on rising slopes above and intervisible with the levels with a significant local focus of Heston Brake Long Barrow which is locally accessible. The least sensitive part is just adjacent to the northern edge of the settlement but this is only accessible from the east which is one of the most sensitive areas close to the Long Barrow.' The area to the east (in and around Cropthorne Farm) 'has medium/low capacity for housing as it is part of the transition historic landscape onto the levels with sensitive features such as reens. Development on this area would extend the linear settlement to the east.'

The area to the south (between Portskewett and the railway line) 'has medium/low capacity for housing as it is part SAM, part recreation ground and acts as setting for the church of St Mary as well as contributing to the green buffer between settlements. There may be some potential east of Sudbrook Road but this is dependent on landscape habitats sensitivity and also potential historical value. An alternative for this area may be allotments/production of local food.'

Rogiet

'There are three areas of low capacity. These are the levels landscapes south of the railway containing amenity open space, floodplain and of generally open character as part of the levels. The linear strip of railway land has low capacity as part of its role as open setting to the Conservation Area and listed buildings and to avoid significant extension of the settlement westwards. The strip along the M48 to the north could not accommodate development without loss of openness and its function as a green buffer.

Other areas are medium/low capacity. The area around Llanfihangel is sensitive due to the Conservation Area but there may be opportunities to improve the Rogiet's western settlement edge in perpetuity to provide a well treed and indented edge as well as improvements to the church which should be put into beneficial use, perhaps with very sensitive enabling development. The hillside north of the M48 is open, prominent countryside separated from the settlement by the M48 and has no expansion opportunities.

The green gap between Rogiet and Caldicot is also medium/low capacity and should be retained for its visual and amenity function, as well as acting as floodplain to the south. However, the estate settlement edge to Caldicot is stark and abrupt. The only development that may be acceptable may be one which improves the settlement edge, retaining the vast bulk of the area as multifunctional open space [e.g. for food, recreation, visual amenity, floodplain and nature conservation etc]. The area to the south east of the settlement should be retained as a well-used open local landscape and floodplain.'

Sudbrook

'All areas around Sudbrook have low capacity. The fort has no capacity for housing as a SAM. The levels are floodplain of open character while any housing on the area to the north would reduce openness and close the gap between the settlements, impinging on the green corridor.'

Caerwent

The area to the north 'has medium capacity for housing as it is generally well screened from wider view and has low inherent visual qualities although woodlands on the skyline and pastures to the south east do have positive landscape qualities and should be avoided.' The area to the east (north and south of the A48) 'has low capacity for housing as this would adversely affect the open character of the fields and their role as rural setting to the eastern approach to the settlement, as well as impacting on the Conservation Area.'

The area to the west (closest to the centre of Caerwent) 'has low capacity for housing as this would have a direct impact on the SAM and adversely affect its and the Conservation Area's setting and character.' The area to the far west 'has low capacity for housing as any housing would reduce the openness of the landscape, adversely affecting the setting and character of the adjacent Roman town and its walls. The area to the north of the A48 is separated from the settlement and is effectively open countryside.'

Magor/Undy

'One area has medium capacity - the strip of land between the M4 and the settlement edge. This may be able to accommodate some development provided that buffers are maintained with the M4 and the skyline to the east and river valley to the west are avoided. Areas to the north, east and the green gap to the west are considered to be medium/low capacity. This is because of their roles as green buffers to the east and west, the separation of open countryside from the settlement by the M4 to the north, and the potential prominence of development in these areas.

The area from Wilcrick Hill to the west wrapping around the southern edge of the settlement to just north of the railway line to the east is considered to be low capacity. This is due to the intrinsically sensitive landscape of the levels, the breaking up of the line of settlement north of the railway, the setting of Wilcrick Hill, and desirability of not encouraging linear development along the railway line to the east.

The main opportunity in landscape terms therefore lies to the north of the settlement in the shorter term. The area to the east may have potential in the longer term but is a prominent gateway area to Wales highly visible from the M4 and would have to reflect this while retaining a meaningful gap with Rogiet.'

DIAGRAM F4 Landscape Sensitivity around the Severnside Settlements

DIAGRAM F5 Landscape Capacity for Housing around the Severnside Settlements

DIAGRAM F6 Biodiversity and Geological Designated Sites in and around the Severnside Settlements

DIAGRAM F7 Public Rights of Way in and Around the Severnside Settlements

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