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Draft Green & Blue Infrastructure Strategy

Winter 2024

Foreword

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Abbreviations

GBI	Green and Blue Infrastructure
NbS	Nature-based Solutions
PPW	Planning Policy Wales
SuDS	Sustainable Drainage Systems

Overview

The present strategy was co-designed by Carmarthenshire County Council in consultation with the public and wider stakeholders. It has been divided into the following standalone parts for ease of implementation and to also facilitate updates when necessary:

- ➔ **Part A: Context** introduces the concept of Green and Blue Infrastructure (GBI) and the associated policy framework within Carmarthenshire.
- ➔ **Part B: GBI Audit & Benefits** investigates the social, economic, and environmental importance of GBI, and the range of interventions suited to the opportunities and challenges presented in our County. This part also provides a snapshot of Carmarthenshire's Strategic GBI Network.

- ➔ **Part C: Vision & Objectives** sets out the long-term ambition for securing the future provision of GBI within Carmarthenshire, acknowledging the role in which GBI has in promoting sustainable communities.
- ➔ **Part D: Action & Implementation** provides information on how the shared vision will be delivered. It also sets out the principles of securing quality GBI within Carmarthenshire and a range of potential interventions targeted at maximising benefits for our communities.





Part A: Context

Background

Systems of infrastructure form the backbone of every modern and prosperous society. GBI is no exception and can be effectively designed to address the collective needs of the built and natural environment, whilst ensuring the permanence of public goods for future generations.

As an instrument for attaining sustainable development, GBI can be seen as a planned and managed network of natural and semi-natural assets which connect our urban towns, villages, and smaller rural communities. The multifunctional benefits provided by GBI are considered crucial factors in obtaining healthy placemaking by creating attractive neighbourhoods which are resilient and adapted to both local and global sustainability challenges.

The present strategy sets out the strategic vision to embed a GBI approach to spatial planning which is centred on ensuring the provision of public goods for future generations,

multifunctionality, and promoting the use of Nature-based Solutions (NbS), wherever appropriate.

On the basis of identifying the network of GBI assets which interconnects our urban and rural landscape, this strategy further outlines high-level priorities which are to be explored in more detail on an individual town, community, or site level, and potentially within place plans. In essence, it is the acknowledgement that our natural and semi-natural resources should be regarded as ‘infrastructure’ just like built features, and that they will only continue to benefit us if we proactively plan, invest in, and manage them to ensure they are used sustainably.



What is Green & Blue Infrastructure?

GBI can be defined as the network of multifunctional, natural and semi-natural features that surround and are interwoven into our urban and rural landscapes. Similar to the way our transport network connects people and businesses through pavements, roads, and railways, GBI connects communities and the built environment with the natural world.

Traditionally, focus has been centred on the environmental benefits of green spaces, however, a core component of 'multifunctional' GBI is that a single piece of land should service a range of land-users whilst providing a variety of distinct benefits. Therefore, a GBI approach incorporates all aspects of sustainability with the consideration of natural resource management to ensure that the planning, management, and delivery of such spaces is centred on attaining both environmental and socio-economic well-being goals.



Planning Policy Wales on Distinctive and Natural Places states that: GBI “... plays a fundamental role in shaping places and our sense of well-being, and is intrinsic to the quality of the spaces we live, work and play in. The planning system must maximise its contribution to the protection and provision of green infrastructure assets and networks as part of meeting society’s wider social and economic objectives and the needs of local communities. Taking a proactive and spatial approach, which links to wider activity being taken by local authorities to protect and provide green infrastructure, will help provide clarity around the contribution which the planning system can make.”

Central concepts in promoting quality GBI in terms of design, implementation, and maintenance include public goods and ecosystem services. Maximising contribution towards these can have both direct and indirect benefits for communities and the local economy, in addition to the built and natural environment. If an asset is not delivering a number of clear, distinct benefits, then it is not consistent with a multifunctional, GBI approach.

Public goods are things which are freely available, that we all share and consume, examples include clean air, flood control, footpaths, and publicly accessible open spaces. On the other hand, ecosystem services are the various benefits that we derive from healthy and functional ecosystems. They can be divided into four types as shown here:

Provisioning	Regulating	Cultural	Supporting
Material goods directly obtained from the environment	Services provided by ecosystem processes	Non-material nature-based benefits which enrich society	Underpinning mechanisms of all other ecosystem services
Water Food Timber Energy Air	Flood Mitigation Climate Regulation Control of pests and pathogens	Education Recreation Aesthetics Heritage Tourism	Soil Formation Nutrient Cycling Primary Productivity (i.e., photosynthesis)

Range of Scales

GBI can vary significantly in terms of type, scale and function dependent upon the landscape and need.

GBI should be considered at all scales from the individual building and street level, right the way up through neighbourhoods until you reach the all-encompassing, strategic level.

An interwoven thread which incorporates GBI at each level helps to build connections and make movement easier throughout the built and natural environment, and also allows for the acknowledgment of cross-boundary issues.

Appropriate consideration and planning at all scales is needed. Enhancements to existing GBI networks or the creation of new assets can be delivered as part of a new development via the planning system. Additionally, many parties beyond the planning system are also devoted to the improvement of existing GBI and retrofitting new assets in areas, particularly where provision is poor.



Individual Buildings

Small-scale GBI interventions can help create buildings which are more habitable. Both green roofs and living walls can insulate structures, helping to reduce energy use whilst providing better air quality, aesthetic enhancement, and an opportunity to generate energy when designed with bio solar. The permanent installation of bee bricks, bat and bird boxes during construction can further make homes more accommodating to nature. Plants, trees and shrubs within gardens, alongside permeable driveways and rainwater collection systems, can also mitigate flood risk by absorbing and dispersing rainfall.

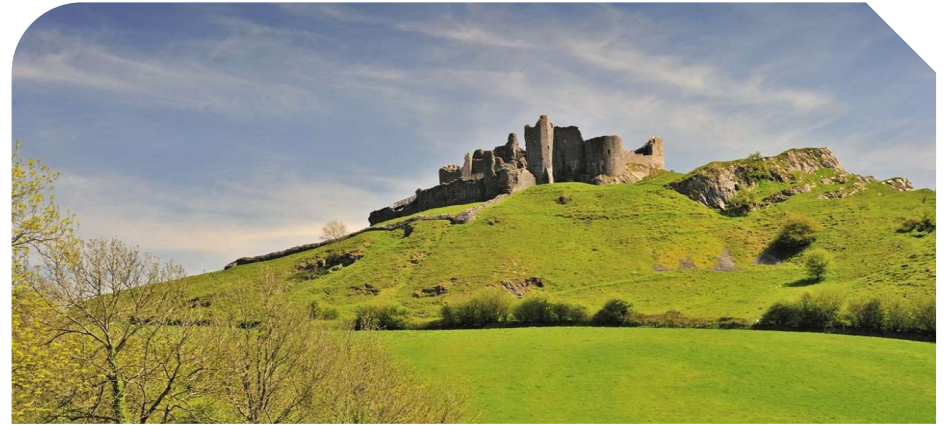


Street Level

A well-designed street scene that integrates GBI can make places which are safe for pedestrians, cyclists, and motorists, alongside providing valuable opportunities for play and habitats for wildlife. Street trees can be used as a traffic calming measure which also softens built features and creates visual interest, whilst improving the microclimate and providing shade. Communal gardens and linear boundary features like hedgerows provide the initial formations of wildlife corridors. Porous paving and SuDS can help to reduce local flood risk.

Neighbourhood Level

At the neighbourhood level, green travel links can encourage the use of pedestrian pathways and active travel routes, helping to reduce emissions whilst also supporting ecological connectivity. Public open spaces such as playing fields, play spaces, and allotments, can further promote active lifestyles and provide a space for communities to interact. Other civic spaces, perhaps combined with urban woodlands, water features, or ponds further contribute to the urban fabric and foster human connection amongst nature. Bioswales and other large-scale SuDS features can help improve water quality and protect homes from flooding.



Strategic Level

Networks of both green and blue spaces, comprising of individual habitats such as grasslands, forests, and wetlands, not only provide the ecosystem services that society relies upon but also form the basic foundation of our mosaic landscape. Country parks, historic sites, and designated areas such as nature reserves offer respite for both people and wildlife. Many of these assets play a key role in mitigating flood risk throughout entire river catchments and help tackle the effects of a changing climate. The incorporation of GBI within development plans, place plans, and masterplans ensure developments are interwoven with the wider GBI network. Many of these assets are afforded protection either at national or international level.

Why is GBI Important?

GBI sustainably enhances the use of land and balances pressures of housing, industry, transportation, agriculture, nature conservation and recreation. It is capable of delivering a range of cross-cutting functions to support people and the planet when appropriately designed, constructed and managed. There is a strong evidence base which establishes GBI as an effective intervention, alleviating social, economic, and environmental pressures, particularly when implemented in a thoughtful and holistic manner.

While comprehensively described in Appendix A, the remainder of this Part summarises the rationale for upholding a GBI approach within Carmarthenshire and how this responds to both local and national policy requirements.



Local Context

Carmarthenshire benefits from a rich and varied landscape. It is characterised by its vibrant towns and villages, prominent rural economy, bustling employment parks and retail centres, and distinctive upland, estuarine and coastal environments. The Welsh language is another important aspect of local identity and character within the County, which is recognised as a heartland for many Welsh speakers.

The population of Carmarthenshire is anticipated to grow to 197,218 by 2043 – remaining the fourth largest of any Local Authority in Wales. Focussed on innovation, regeneration, and employment creation, the County is an economic driver that is home to strategic investments such as Pentre Awel and Yr Egin, and further enjoys links to wider economies through the Swansea Bay City Deal. Tourism and outdoor leisure are also key sectors, with visitors generating over £596 million for the local economy in 2022. Carmarthenshire's agricultural sector and woodlands are also important contributors to the local economy.

Local Challenges

Living in Carmarthenshire is not without its challenges. As identified within the [Local Well-being Assessment](#), the County has around a third of children and households living in some form of poverty, a high rate of both child and adult obesity, and one of the highest suicide rates in Wales. With an ageing population, the prevalence of age-related disease such as dementia are projected to significantly increase over the next 15 years which will place additional pressure on public services. Additionally, recorded decreases in being active, spending time outdoors, and participating in cultural activities, along with other factors, is seen to increase the chances of developing mental health and well-being problems throughout all stages of life.

Environmental challenges within the County include a high incidence of fly tipping, low water quality due to pollution, poor ecosystem resilience, and the loss of biodiversity where a number of Priority Species and habitats once abundant are now in decline. Additionally, over 15,000 properties in

Carmarthenshire are currently at risk of flooding, whether from river or surface water flooding or coastal inundation. Climate change is anticipated to increase the number of properties, infrastructure and key services at risk of flooding, and pose significant impacts upon people's wellbeing and biodiversity.

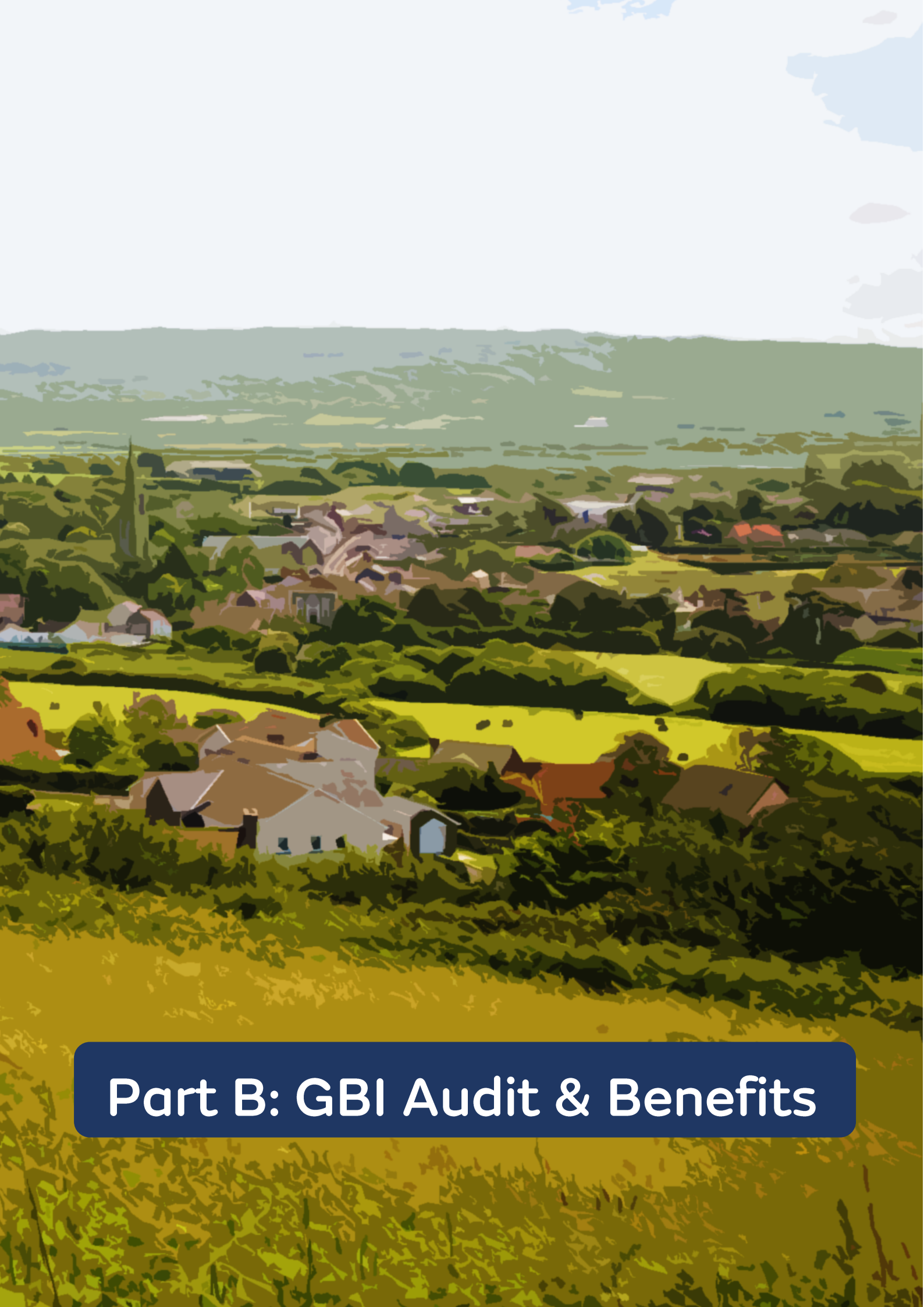
Sustainable development that is centred on embedding a GBI approach and undertaken in a manner consistent with attaining both local and national well-being objectives, has the ability to contribute towards holistically addressing these challenges.



Policy Context

In Wales, the concept of implementing a GBI approach to land-use planning, design, and management is well established through the spatial planning system. Plans and policies at the local, regional, and national level which provide the framework for the protection, enhancement, and delivery of GBI are outlined here although fully explored within Appendix B.





Part B: GBI Audit & Benefits

Carmarthenshire's GBI Network

This section provides an overview of the existing GBI network present within the County, and summarise the detailed evaluation contained within the GBI Assessment (Technical Report).

Summary of Existing GBI Network

Carmarthenshire boasts a strong GBI network that includes a mix of natural and semi-natural features. Country parks such as Llyn Llech Owain, ancient woodlands like Castle Woods, Llandeilo, and six Local Nature Reserves, all serve to provide valuable ecosystem services, habitat for biodiversity, and recreational opportunities for residents and visitors. The county benefits from many blue infrastructure assets including coastal areas such as Pembrey County Park and Cefn Sidan Beach – which was the first beach in Wales to achieve the coveted blue flag award. This is in addition to riverine Special Areas of Conservations including the Afon Teifi and Afon Tywi which support a variety of aquatic and semiaquatic species, provides

water resources for agriculture and drinking, and offers many leisure activities.

The County of Carmarthenshire is positioned at the heart of South-West Wales and covers an area of approximately 237,000 hectares. It is characterised by unique and diverse landscape resources and areas of notable visual value. It is home to (or borders) a range of nationally recognisable designations including Bannau Brycheiniog National Park, Burry Inlet Ramsar Site, Pembrokeshire Coast National Park, and the Gower Area of Outstanding Natural Beauty.



It is also home to many historical and notable sites including Laugharne Castle which overlooks the Taf Estuary, and Carreg Cennen Castle that is situated upon on a limestone cliff, offering panoramic views of the surrounding countryside. The parkland around Dinefwr Castle is noted to have some of the oldest veteran trees in Britain, where over 300 oak trees are thought to be over 400 years old. Additionally, long dubbed the 'Garden of Wales', the county is aptly home to the National Botanic Garden of Wales which, despite not being a historical site in the traditional sense, offers a fascinating insight into the natural history of Wales.



Today, the county is known for its dairy farming, and beef and sheep rearing, however, it was once notable for its fruit orchards. Traditional farming practices including extensive production systems and common grazing are still prevalent in many areas. Carmarthenshire's agricultural sector plays a vital role in the local economy, providing employment opportunities and contributing to the region's rich agricultural heritage. The lush green pastures, dotted with grazing livestock, and the patchwork fields under cultivation, creates a picturesque rural landscape that is emblematic of Wales.

Defining Sir Gar's Strategic GBI Network

As set out in [Range of Scales](#), strategic level GBI provides the wider framework and context to support decision making at the more local levels. The following key asset types are considered to form the backbone of Carmarthenshire's Strategic GBI Network:

Strategic GBI Corridors

Centred on our rivers, waterways, and riverine landscapes, the following strategic GBI corridors connect many of our towns, villages, and communities together:

- Tywi Corridor
- Gwendraeth Corridor
- Loughor Corridor
- Llanelli Corridor
- Taf Corridor
- Teifi Corridor

Regional GBI Sites

Within Carmarthenshire's borders, it encompasses the following national and international protected areas:

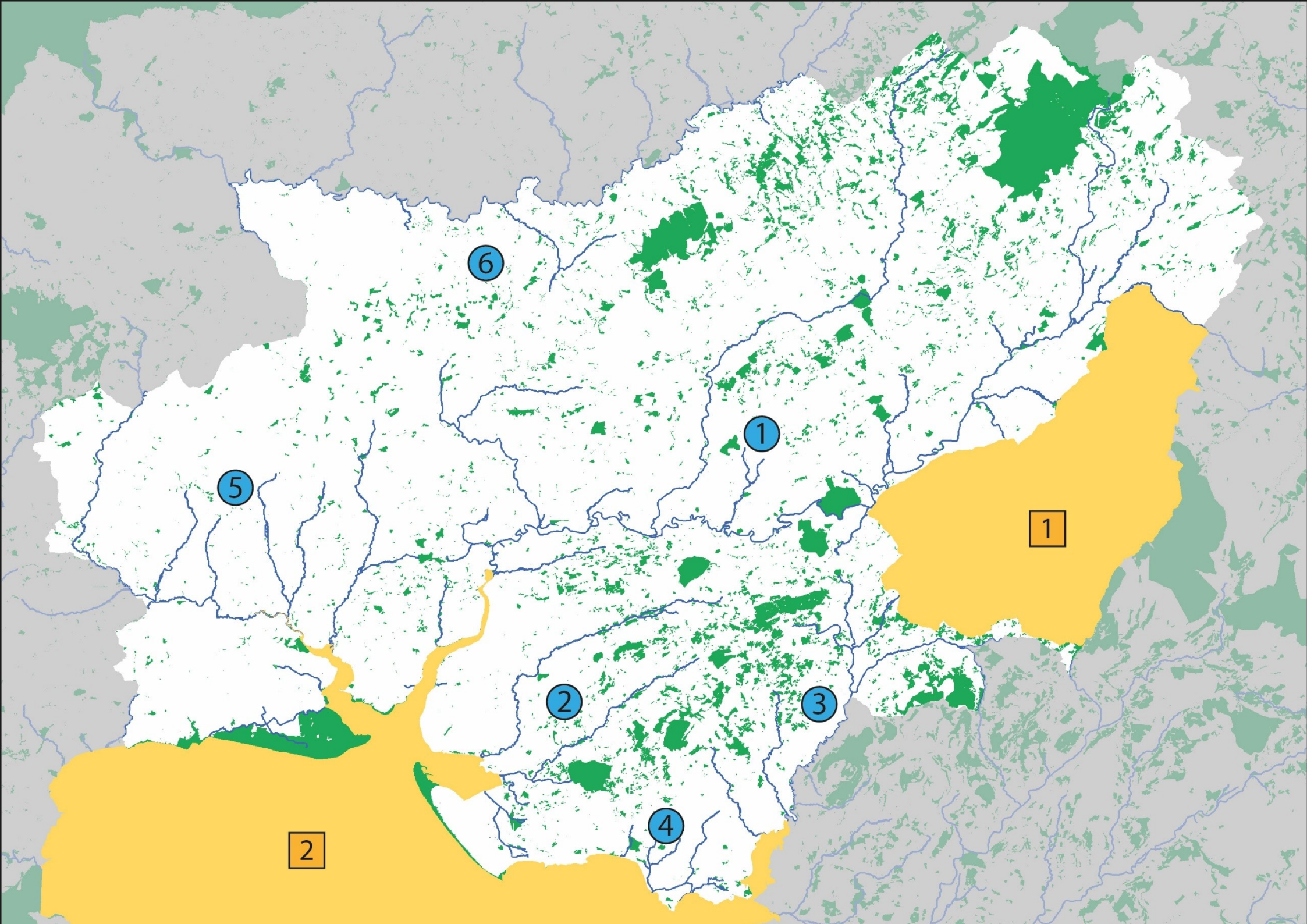
- Bannau Brycheiniog National Park
- Carmarthen Bay and Estuaries European Marine Site

Strategic GBI Sites

The following sites present the primary mosaics which provide a range of habitats, semi-natural features, and land uses at a landscape scale. Please see Appendix C for the individual sites.

- ➔ Designated Nature/Geological Conservation Sites
- ➔ Country Parks (including Recreation Parks)
- ➔ Historical Sites
- ➔ Priority Habitats
- ➔ Woodlands

A map of the Strategic GBI Network is presented on the next page. Note that not all GBI assets are mapped at this scale.



Mapping Wider GBI Assets

The Strategic GBI Network provides the wider framework and context to support GBI at a neighbourhood, street, and individual building level. The following subsection outlines the process undertaken to strategically map all other GBI located within the local planning authority area of Carmarthenshire County Council. Full methodology is contained within the GBI Assessment including data sources and the rationale behind the mapping techniques used.

Those areas within development settlement limits proposed under Carmarthenshire's revised Local Development Plan 2018-2023 have been mapped in more detail. This is to help enable the identification of enhancement opportunities which may prove useful in shaping future development and upholding sustainable development.

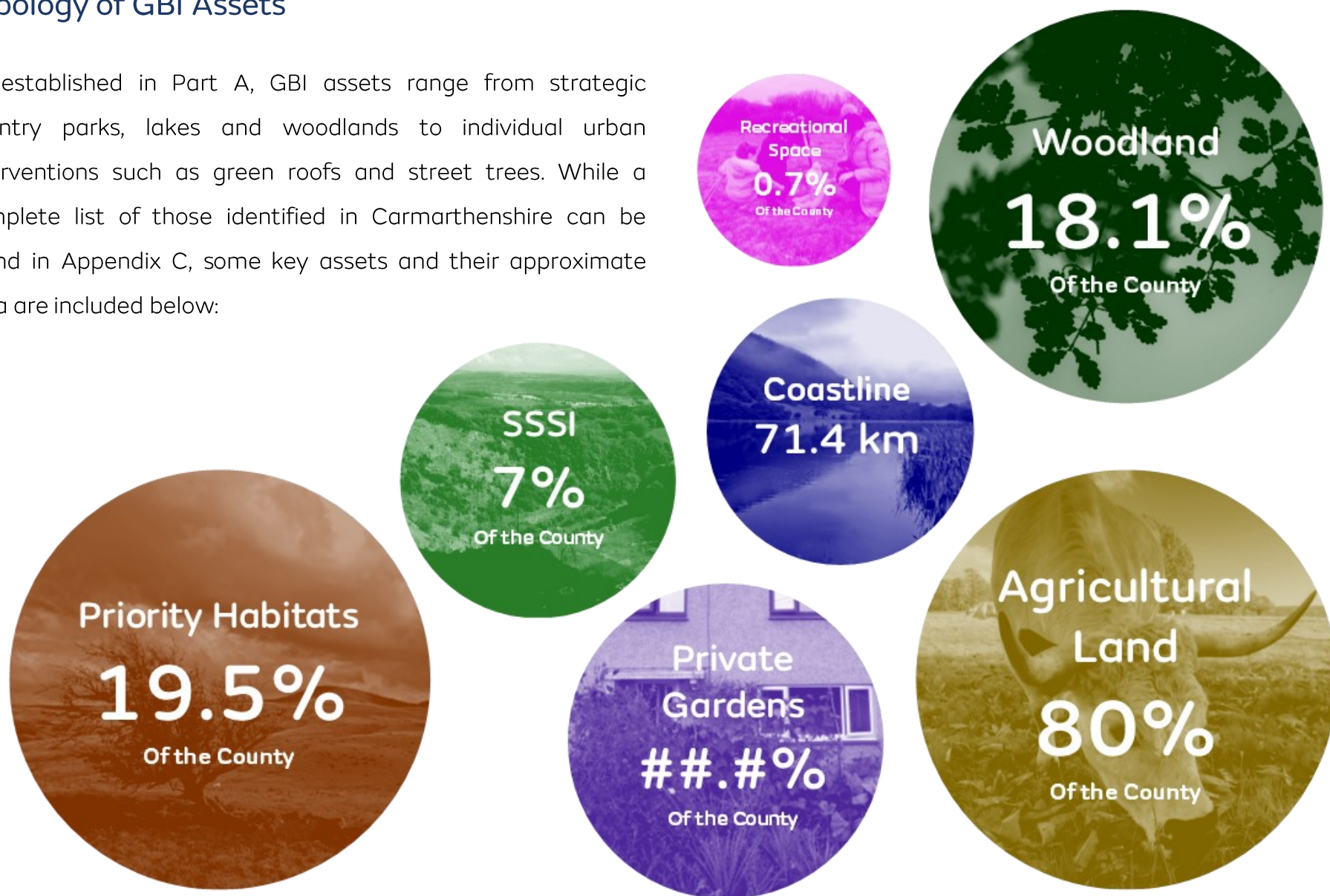


Mapping GBI at all spatial scales is crucial for several reasons:

- ➔ **Land Use Planning:** By mapping GBI in built areas, planners can integrate assets such as greenspaces, parks, and water bodies into their designs, improving quality of life for residents, visitors, and communities.
- ➔ **Conservation & Biodiversity:** Mapping GBI helps identify ecosystems that are important for biodiversity, allowing for better conservation efforts.
- ➔ **Resource Management:** Mapping GBI aids the sustainable management of natural resource, such as water conservation, soil protection, and carbon sequestration.
- ➔ **Climate Change Resilience:** GBI mapping helps in understanding how natural areas can mitigate climate change impacts such as flooding and erosion.
- ➔ **Education & Awareness:** Mapping GBI raises awareness about the importance of preserving natural and semi-natural areas and the benefits they provide to communities, the environment and local economy.

Typology of GBI Assets

As established in Part A, GBI assets range from strategic country parks, lakes and woodlands to individual urban interventions such as green roofs and street trees. While a complete list of those identified in Carmarthenshire can be found in Appendix C, some key assets and their approximate area are included below:

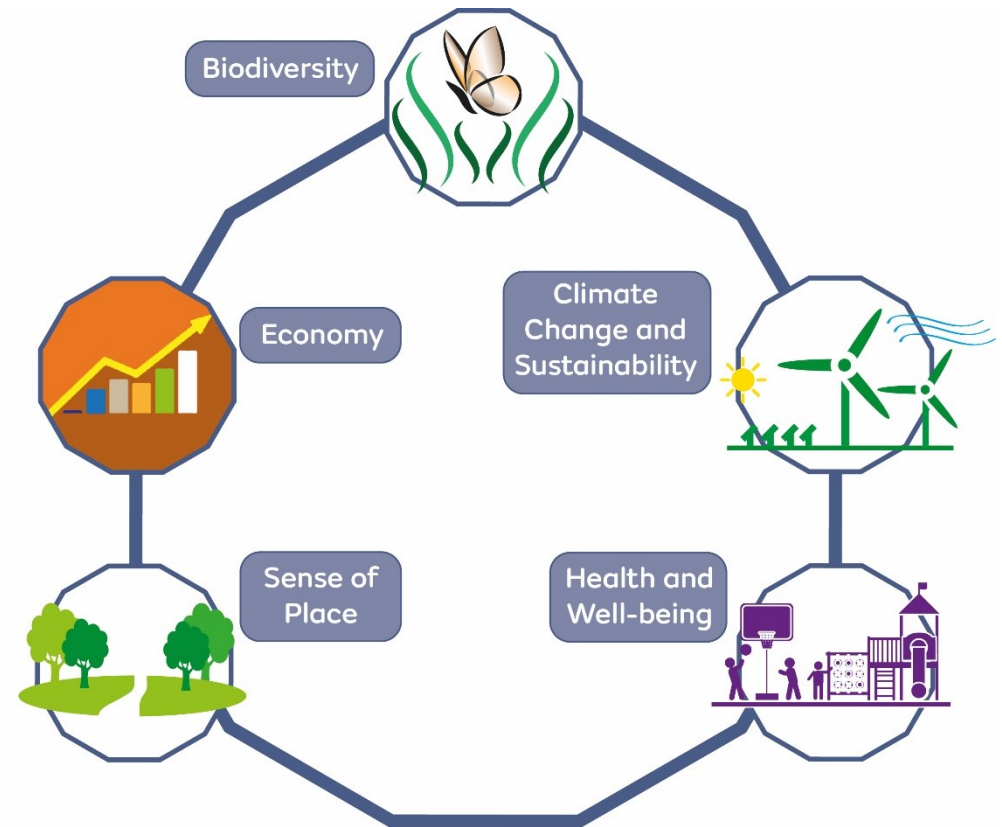


GBI Functionality

The functionality of GBI is centred on the public goods and ecosystem services which certain assets can provide. They may have obvious primary functions, however, many by nature are multifunctional meaning that they perform a range of functions simultaneously. For instance, woodland contributes to mitigating climate change by absorbing and storing carbon, in addition to providing aesthetic, recreation, and habitat value.

Connectivity between different GBI assets can help maximise functionality and the perceived benefits. Interconnected GBI help create a network that is adaptive and resilient to environmental changes. Physical connections make the most impact, often creating 'stepping stones' that help form wildlife corridors and encourage active travel.

Appendix D identifies some of the functions that can be delivered against the aforementioned GBI typology. Helping to describe the importance and value of GBI, mapped assets have been assigned GBI functions which are broadly contained under the five following themes:



Key Findings from GBI Audit

- ➔ Approximately ##.##% of Carmarthenshire (excluding Bannau Brycheiniog National Park) can be classified as GBI. Designated Nature Sites (##.##%), Common Land (##.##%), and Woodlands (##.##%) are integral part of the landscape.
- ➔ GBI is not evenly distributed, and some areas of accessible GBI such as greenspace, play spaces, and community growing spaces are not well connected to (or situated near) places where people live, study or work.
- ➔ Several well-trafficked streets within our Town Centres are void of GBI. Much of this can be attributed to how these areas were historically developed.
- ➔ Heavy industry has left large areas suitable for regeneration. As such, previously developed land could provide further GBI opportunities within key areas.
- ➔ Many residents have access to private household gardens. However, those within urban areas typically have less or none altogether.



Stakeholder Engagement Exercise

Initial consultation work was undertaken in 2021 to identify key challenges and opportunities for the GBI Network within Ammanford, Carmarthen, Cwmamman, Kidwelly, Llandovery, Llanelli, Newcastle Emlyn, and St Clears. Participants included Elected Members alongside a range of stakeholders including Town and Community Councillors, community groups with a GBI focus, and stakeholders with a statutory function relate to the environment.

The consultation consisted of an online survey, an interactive map, and virtual workshops, and was reviewed over the key GBI themes of People, Place, and Nature.



Online Survey Findings

A total of 50 responses were received on questions related to their thoughts on a draft GBI Vision; how the GBI network in their area performs against each key theme and any opportunities for enhancement. In terms of the GBI Vision, participants highlighted the need for a bottom-up approach alongside public engagement, as well as accessibility issues due to the use of complex language. Working collaboratively and simplifying the language used were highlighted as opportunities for improvement. Additionally, the participants also wanted to see more emphasis placed on sustainability and placemaking, blue infrastructure, and the conservation of biodiversity.

People

Survey respondents highlighted concerns for their respective communities such as lack of access to greenspace and the active travel network, insufficient play space provision, and the need for promoting the sustainable management of existing open spaces.

Place

Multiple respondents identified that they felt the history of Carmarthenshire is well promoted. However, they highlighted issues regarding status of town centres with the closure of highstreets, high levels of anti-social behaviour, and an excess of hard 'grey' infrastructure. They also cited some opportunities for improvement such as, promoting and integrating tourism through GBI, maximising outdoor opportunities with events, and focusing on sense of place. Several ongoing projects focused on regeneration and environmental enhancement were identified.

Nature

There were several concerns raised regarding spaces for nature including, a lack of green space and allotments within urban areas, a reliance on grant funding, and fears that unsustainable development contradicts both the nature and climate emergencies. There were also issues around the risks of flooding and impacts on river habitats. Wildflower planting was noted to be an opportunity.

Interactive Map

A link to an interactive map was also provided to the same group of consultees asking them to identify areas of strength, improvement, and opportunity. A total of 149 comments were left on the map, the majority being in Llanelli, Carmarthen and Ammanford. Whilst each area was noted to possess various strengths and face different challenges, there were a number of shared characteristics highlighted below.

People

Commenters felt that there were significant opportunities to improve towns to support both people and GBI. They felt that education and engagement could help promote GBI and help people understand the value of it, and better methods of maintaining it. Many also felt there was a need for a more focused approach for increasing tourism and improving play spaces. Some also commented that antisocial behaviour was an issue which needed to be addressed.

Place

Commenters noted the key challenges to preventing access to GBI were the lack of maintenance and active travel routes, along with a disconnection between greenspaces. It was also highlighted that there appears to be a conflict between nature and development – some perceived that greenspaces have been earmarked for development, and that some open spaces would be less accessible because of development. The opportunity to develop and regenerate the towns sustainably was mentioned. Some also noted that maintenance challenges are due to an unsustainable reliance on grant funding.

Nature

There was significant concern over the need to improve and protect nature and biodiversity within the towns, especially within the flood prone river areas. Commenters felt more could be done to enhance biodiversity and many mentioned that there were opportunities to plant trees and wildflowers. Air pollution was also cited as a cause for concern.

Workshops

Three additional online workshops were also held, attended by 48 participants, to discuss the overarching challenges and opportunities surrounding the GBI Network. While also reiterated during in the other exercises, there were discussions on the perceived delivery challenges with regards to implementing GBI. Maintenance and management were felt to be a fundamental challenge to the longevity of GBI, highlighting the need for a more collaborative, joined up approach. There are also concerns around funding which contribute to the creation and maintenance of spaces. It was stressed that there is a significant need to educate and work collaboratively with communities and stakeholders including those involved within the regeneration of town centres.



People

Participants felt that there was significant opportunity to improve open space across the county. They also noted that there was a need to increase provision of community growing space and focus on educating pupils to grow. In terms of access, participants felt that there was room for improvement to ensure residents can access the much-needed spaces.

Place

Challenges raised included antisocial behaviour and noise pollution. Participants discussed the need for GBI-led regeneration with improvements to existing assets and new active travel routes to ensure spaces are accessible.

Nature

Some of the identified challenges pertinent to nature include flood risk, wastewater and agricultural pollution, and tree maintenance. Participants also highlighted an opportunity to raise awareness and educate residents through a number of methods including information boards.

Previous Consultation Summary

To summarise, the three consultation exercises highlighted a number of challenges and opportunities to improve GBI within the county for people, places and nature. There were a number of themes mentioned several times and the consultation identified commonalities in the challenges facing the eight areas. Key challenges and opportunities include:

People

Community Engagement & Collaborative Working: It was felt that more needs to be done to engage and collaborate with communities, ensuring the process uses accessible language. Many noted that community groups and stakeholders could support better implementation and longevity of GBI if they were to be engaged.

Education & Awareness: There are opportunities to improve the implementation of GBI by raising awareness within the local communities and engaging schools to educate on the importance of GBI. Many noted that educational signs helping

people understand the need to value and protect GBI would be beneficial, especially when explaining different methods of managing areas such as not cutting grass during certain months.

Place

Need for GBI-led Regeneration: Participants felt that there was an opportunity to regenerate the towns through a GBI approach which would mutually benefit people and nature and could also support the economy through increased tourism.

Accessibility: Challenges surrounding accessible and active travel routes were mentioned frequently throughout and can be seen to be a key barrier to successful GBI implementation. There is an opportunity to improve existing routes to spaces and ensure they are considered when designing new GBI.

Antisocial Behaviour: Some participants noted that there are high rates of antisocial behaviour within towns which need to be addressed. This is a key challenge as people need to feel safe in spaces and not negatively impacted by antisocial behaviour which can also impact nature.

Nature

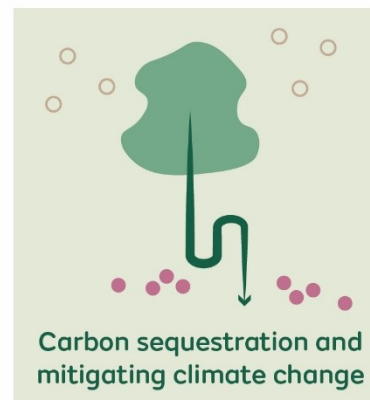
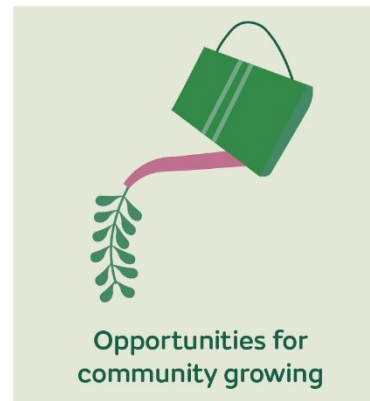
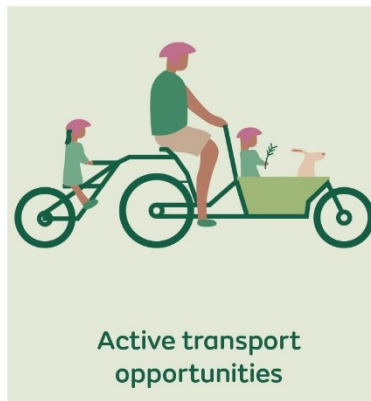
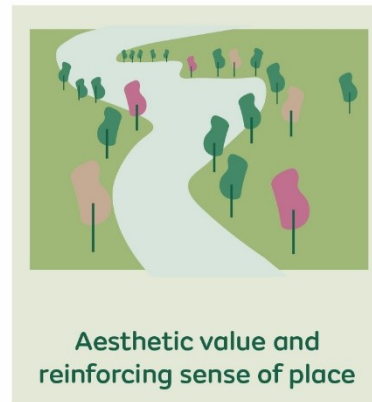
Maintenance: Whilst participants noted that there is a need to increase the amount of green space within urban areas, many also highlighted issues in maintaining existing space which is impacted by funding restraints. This is an area which needs to be addressed as good maintenance of green space is fundamental to maximising benefits.

Environmental Pollution: Pollution is identified as a key issue impacting both the environment and people. This includes the current phosphate crisis and other wider water quality issues affecting rivers such as wastewater discharge and diffuse agricultural pollution, both of which can be harmful to biodiversity and human health.

Flooding: It was highlighted that there are significant risks of flooding which need to be managed effectively. Using NbS, whenever possible, can benefit biodiversity in addition to homes and community infrastructure.



Benefits Provided by GBI





Part C: Vision & Objectives

Vision for GBI within Sir Gâr

Within Carmarthenshire, a well-connected and valued Green & Blue Infrastructure network safeguards ecosystem services and provides vital public goods for future generations.

In collaboration with local communities, stakeholders, and policymakers, Carmarthenshire cultivates a culture of environmental stewardship and thrives as a model of sustainable development, well-being, and climate and nature resilience.

Nature-based solutions effectively address both local and global issues (such as flood risk, water quality, and air pollution), while also providing habitat for biodiversity and accessible recreational opportunities.

The planned integration of multifunctional GBI within our built environment, alongside the sustainable management of those within the wider landscape, fosters a harmonious relationship between people, place, and nature.”

This vision will be supported by a series of strategic objectives which have been informed by the key issues identified under each of the themes – *people, place, and nature*.

Importantly, the objectives cannot be achieved through planning policy or one Council department alone. Collaboration across a wide range of departments, communities, and external partners through a GBI-led approach will be fundamental to achieving the objectives (and therefore, attaining the vision). This will include regeneration, transport, planning, and park management and outdoor recreation, to name a few.

Whilst the ensuing objectives form the basis for implementation and monitoring, it is important to note that the Strategy will need to be flexible in light of a rapidly shifting policy agenda, and the need to capture changing needs and opportunities. This is likely to include evolving legislation on planning, net zero and nature recovery.

People Objective One

Safeguard Carmarthenshire's GBI Network for present and future generations

Why? Protecting GBI is essential for the health and well-being of communities, as well as our environment and local economy. Prioritising this not only improves people's lives today, but also lays the foundation for a sustainable and thriving environment for future generations. While strategic planning is required to safeguard, integrate, and improve GBI in a holistic manner that maximises the range of benefits provided, other initiatives including the promotion of local decision-making, principles of sustainable development and placemaking, and sustainable management of natural resources can help ensure the vitality of GBI within Carmarthenshire.



People Objective Two

Prioritise access to Public Open Space and encourage Active Travel

Why? Both recreation and exercise are essential for physical and mental well-being. As key components interwoven within the built environment, these assets also offer a distinct range of functions including supporting biodiversity, improving air quality, and access to nature. Further interventions should be evidence-based, responding to those communities lacking adequate provisions.



People Objective Three

Promote Opportunities for Community-based Food Growing

Why? Carmarthenshire has long been dubbed the 'Garden of Wales'. Exploring interventions which increase the GBI Network in terms of the area and quality of GBI assets such as allotments, community growing spaces, and orchards, will help continue this tradition. Furthermore, growing your own produce can have benefits for both people and the planet through improved physical and mental well-being, providing a space for communities to get together, or by limiting the number of food miles on our plates.

Place Objective One

Embed a GBI approach to help create attractive environments with a distinctive sense of place

Why? As a central component of healthy placemaking, conserving existing or developing and integrating new GBI is particularly important within the areas where people live, work, and study. Often regarded as defining features of a place, GBI helps foster a greater sense of belonging among residents and contributes towards local identity and character. Creating vibrant townscapes also promotes economic vitality, community cohesion, and well-being. Upholding the [five Ways of Working](#) and involving communities and partners will be fundamental in actualising this objective.



Place Objective Two

Ensure quality GBI is provided within new developments and complements the wider GBI network

Why? Providing quality GBI in new developments is a vital component in attaining sustainable development. This approach helps to strengthen local sense of place, promote active lifestyles, and improve well-being – the result of which is more attractive built fabric and vibrant communities. The delivery of new GBI (or enhancements to existing features) should prioritise integration with the GBI network to achieve multifunctionality.



Place Objective Three

Focus town centre improvements on reconnecting with their natural and historic surroundings

Why? Re-establishing the connection between population centres and the natural environment will help promote health and well-being, support tourism and economic growth, and encourage a deepened sense of belonging between communities and their environment. Regeneration initiatives centred on increasing and enhancing greenspaces in our towns will help encourage people to live, work and invest in the area. They will also promote inclusivity, provide opportunities for recreation and play, and create wildlife corridors.

Nature Objective One

Champion the use of Nature-based Solutions to tackle environmental issues and increase climate resilience

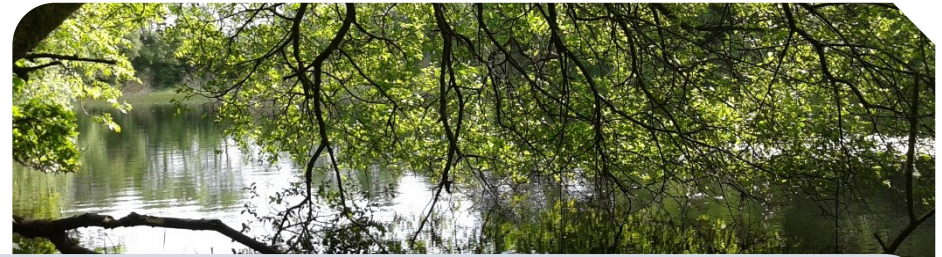
Why? NbS take a holistic approach to addressing multiple environmental, social, and economic challenges simultaneously. Whilst promoting the conservation of ecosystems which is crucial for maintaining and restoring biodiversity, implementing NbS can be more cost-effective than traditional grey approaches. Many such as wetland restoration, woodland plating, and grassland management help sequester carbon dioxide, contributing to climate change mitigation efforts while providing additional benefits such as habitat restoration and flood mitigation.



Nature Objective Two

Maximise multifunctionality through promoting sustainable management practices

Why? Whether adapting existing maintenance plans or prioritising multifunctionality within the planned delivery of new GBI assets, enhancing biodiversity will have countless benefits. Such benefits include helping improve ecological networks and connectivity, supporting priority species, and creating a more sustainable environment that supports both nature and the needs of communities. Rethinking traditional practices and onward support is needed to effectively adopt more sustainable and nature-friendly approaches to land management.



Nature Objective Three

Explore GBI Network enhancements which enhance ecological networks

Why? Improvements to GBI networks can facilitate connectivity between fragmented habitats, allowing wildlife to move freely. This connectivity is important for species' movement through the landscape, reproduction, and genetic diversity, especially in the face of environmental changes such as climate change. Future development and regeneration initiatives should consider this when seeking to deliver net benefits for biodiversity. Additionally, improving the management of underappreciated spaces for nature conservation (such as road verges and unused amenity grasslands) is one method which can increase the overall quality of the GBI network within Carmarthenshire.



Part D: Action & Implementation

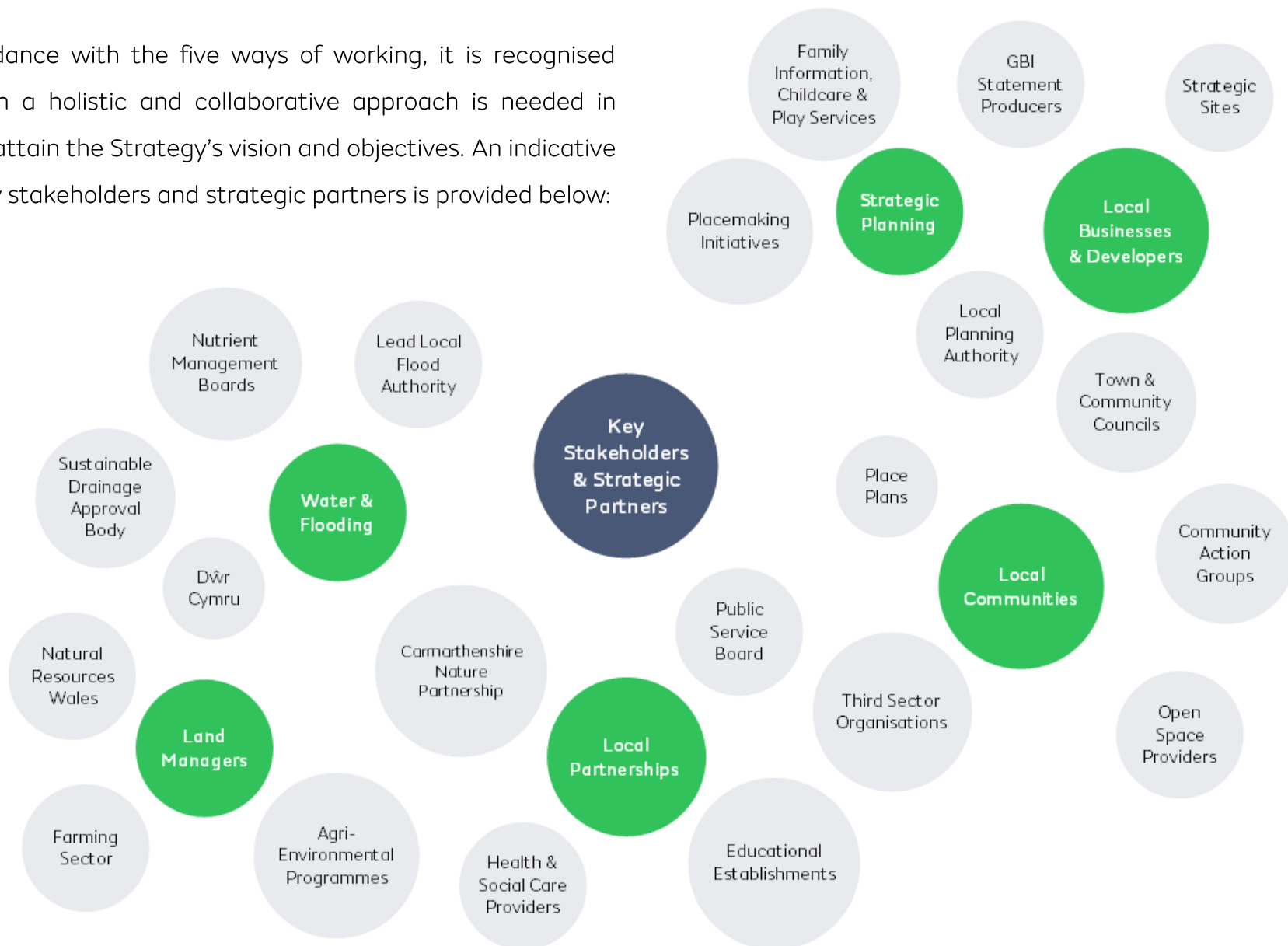
Supporting Local Policy

The Strategy plays an important role in supporting delivery of the Council's Corporate Strategy, Carmarthenshire Public Services Board's Wellbeing Plan, and the Local Development Plan 2018-2032, in addition to other local ambitions, plans, and programmes. In recognition of the numerous benefits which GBI and NbS can offer, this interrelationship across policy areas is critical given the need for resource efficiency, delivering value for money, and promoting a prevention-led approach. It is acknowledged that implementing a GBI approach within Carmarthenshire will require multidisciplinary collaboration, even within the local authority itself.



Key Partners

In accordance with the five ways of working, it is recognised that both a holistic and collaborative approach is needed in order to attain the Strategy's vision and objectives. An indicative list of key stakeholders and strategic partners is provided below:



Delivering Better & More GBI in Sir Gar

This section explores the characteristics of quality GBI, potential opportunities for securing more GBI assets locally, and some of the ways in which GBI can be delivered, both from the perspective of grassroots initiatives and what Carmarthenshire County Council strives to do in order to achieve the GBI vision and objectives.



Principles of Quality GBI

Effective GBI exhibits several key characteristics that enhance its functionality, sustainability, and benefits to both communities and the environment. As explored on the following pages, key principles delivering of quality GBI that future projects within Carmarthenshire should champion include:



Multifunctionality

While some assets may be specifically designed for certain functions (like NbS for flood alleviation, for instance), all GBI should deliver a series of functions and benefits for people, place, and nature. Multifunctionality (GBI which services a range of land-users whilst providing a variety of distinct benefits) is particularly important in areas where there is a deficiency of existing provision, or they are of low quality. Consider human-centric design solutions (associated with the development of new built infrastructure) and interventions (retrofitting projects) which complement the sense of place whilst providing habitats for biodiversity.



Community

GBI should be driven by local needs to facilitate the creation of healthy, liveable places which allow communities to thrive and connect with each other alongside nature. Regardless of where people live, work, or study, these places should provide everyone with adequate opportunities for recreation, exercise, and learning that are inclusive, safe, well-managed and accessible for all. Additionally, often the most successful projects involve community input and participation in their design and maintenance. This engagement fosters a sense of ownership and stewardship among nearby residents. Communities should be at the heart of GBI.

Connectivity

At all spatial scales, GBI should function as a living network for people, place, and nature. While complementing the wider GBI Network, new projects and enhancements should strengthen ecological networks, ensure the delivery of ecosystem services and public goods, and meet needs by connecting provision to those who will benefit the most.

Sustainability in Practice

Consciously designed and properly integrated GBI can provide a range of benefits pertinent to securing holistic sustainability. Economically, it can lead to financial savings, such as reduced energy expenses from green roofs and lower stormwater management costs. Socially, GBI can help prevent health and well-being ailments and their associated costs by providing recreational opportunities, promoting community engagement, and improving quality of life. Many assets also bolster resilience against climate change, allowing communities to be adapt better to challenges such as flooding and heatwaves. Additionally, the incorporation of sustainable practices such as the use of low-maintenance planting schemes, environmentally friendly management techniques, and low-impact development strategies, within the design and maintenance of GBI can help ensure long-term success. Upholding sustainability during the design and management of GBI fosters a healthier and more vibrant built environment while addressing ecological concerns and the economic needs of present and future generations.

Variety

GBI within a local community should represent a diverse offering. Comprising of a variety of asset types and sizes, new projects should seek to complement the existing surrounding GBI network to best provide a range of different functions, benefits and NbS to address specific needs.

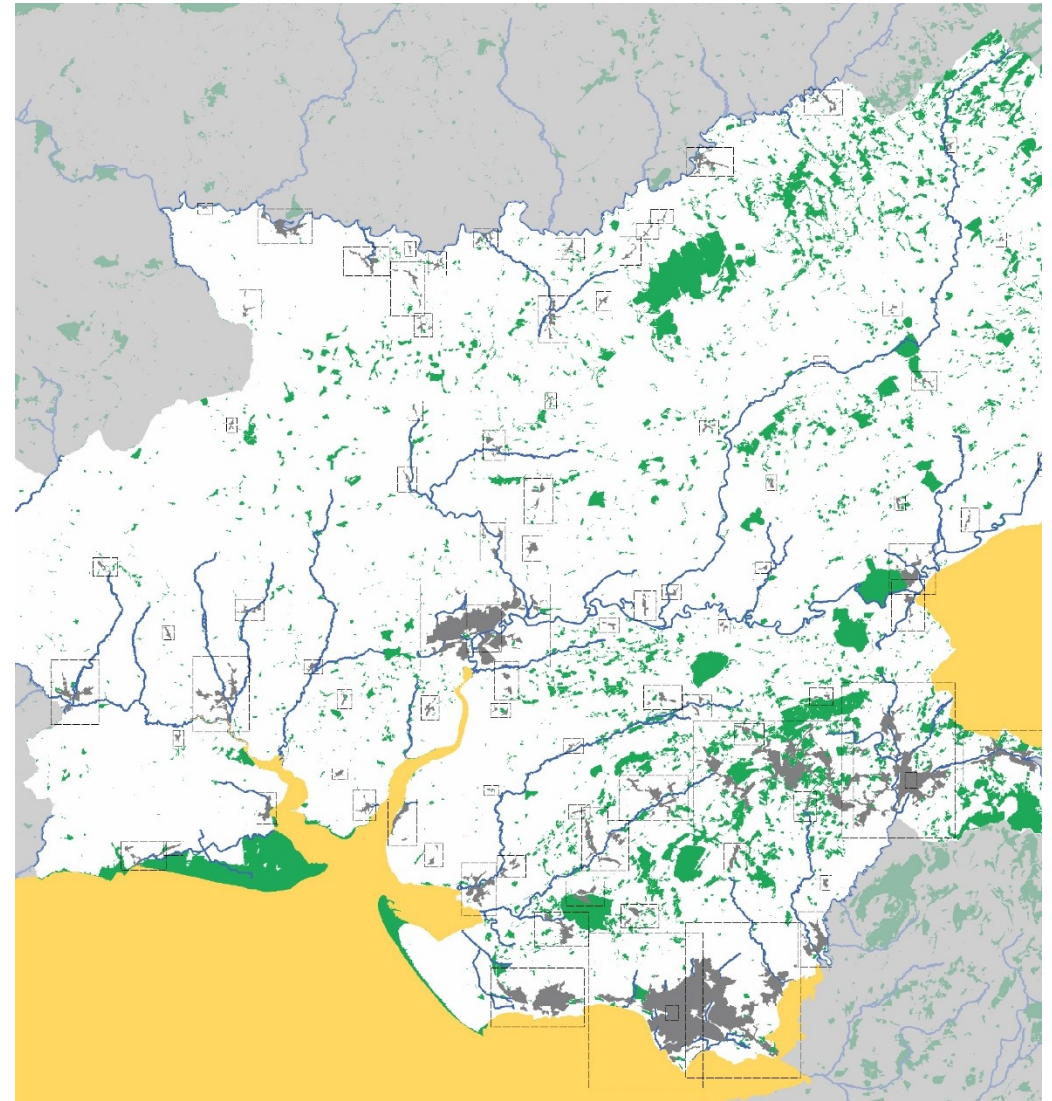
Sir Gar Centric

GBI is a way to celebrate the unique character of Carmarthenshire. It should contribute to the protection, improvement and/or restoration of landscapes (including those of built nature) to which people feel connected to.



Setting the Scale

Foreseeably, as future growth will be expected to deliver new GBI assets including NbS across the County, local decision making and grass roots action from respective communities is needed to help shape this, alongside safeguarding GBI beyond the Strategic Network level. The production of community-led place plans and/or other types of hyper-local, land management or environmental plans (such as Llanelli Town Council Biodiversity and Environmental Development Action Plan) may represent a key opportunity for implementing a GBI approach. Within the Local Development Plan 2018 -2033, a settlement framework was devised to help distribute the provision of future growth. The framework is centred on Principal Centres, Service Centres, Sustainable Villages, Rural Villages, and ensuing development limits were defined to help promote effective and appropriate use of land and direct development in areas which would be sustainable. Depicted on the following map in grey, spatial areas such as these may prove useful in consolidating efforts to conserve, deliver, and integrate GBI on a local level.



Priority Opportunities

Informed through the challenges experienced within Carmarthenshire and shaped through **public consultation** and the aforementioned stakeholder engagement exercise, this section explores some of the opportunities to enhance Carmarthenshire's GBI Network. While there remain many other possibilities, those interventions discussed in the Opportunity Toolbox ([Appendix E](#)) are centred on:

- Creating Playful Spaces
- Enhancing Tree Cover
- Establishing a Green Settings for Historical Sites
- Exploring Environmental Storytelling
- Finding Spaces for Community Growing
- Greening the Places Where People Live, Work & Visit
- Promoting Sustainable Drainage (SuDS)
- Protecting & Connecting Coastal Places
- Providing Green Routes for Active Travel
- Restoring Blue Corridors
- Rethinking the Functions of Parks & Grassy Areas



This Strategy does not explicitly outline the situation and extent of potential GBI enhancements. This has been intentionally reserved for more local, community place plans and other local placemaking initiatives, which can often be more responsive and proactive to any local opportunity and/or pressure which may arise.

Intervention Relationship with Objectives

The table below looks at how the possible interventions will contribute towards the objectives. Note, while physical interventions will be instrumental in helping to meet the objectives, many tools will be developed to holistically ascertain the vision.

Intervention	GBI Vision	Objective								
		People			Place			Nature		
		○	○	○	○	○	○	○	○	○
Creating Playful Spaces	●		●	●		●			●	●
Enhancing Tree Cover	●					●	●	●	●	●
Establishing a Green Settings for Historical Sites	●		●		●	●	●		●	●
Exploring Environmental Storytelling	●	●				●	●		●	●
Finding Spaces for Community Growing	●		●	●		●			●	●
Greening the Places Where People Live, Work & Visit	●		●	●	●	●	●		●	●
Promoting Sustainable Drainage (SuDS)	●		●			●		●	●	●
Protecting & Connecting Coastal Places	●	●			●	●		●	●	●
Providing Green Routes for Active Travel	●		●			●	●		●	●
Restoring Blue Corridors	●	●				●		●	●	●
Rethinking the Functions of Parks & Grassy Areas	●	●		●		●			●	●

● = Direct link

● = Dependent upon its implementation

Key Delivery Opportunities

Incorporating GBI interventions within other plans, proposals, and decision-making processes (in accordance with the principles of Quality GBI) will present Carmarthenshire with its greatest opportunity to achieve the objectives and vision. The key opportunities and activities to implement a GBI approach include (but are not limited to):

Proposals for New Development

In alignment with local and national planning policy, delivering GBI within development plans for housing and employment will be crucial for mitigating impacts and securing benefits for the surrounding community, environment, and economy.

Retrofitting GBI into Existing Developments

A major driver for ‘replacing the grey with green’ is when an intervention is needed to resolve particular issues such as mitigating flood risk, addressing environmental pollutants (such as water or air) or deficiency in public open space, in addition to improving access to active travel or public rights of way.

Land Management Initiatives

Rethinking the current use and management practices of existing sites provides an opportunity to deliver for biodiversity whilst refining efficiencies as highlighted within the Grassland Management Strategy. Additionally, Safeguarding programmes such as Caeau Mynydd Mawr Marsh Fritillary Project and other agri-environment schemes will be a key mechanism for promoting sustainable management.

Regeneration & Town Centre Improvements

Taking a GBI approach within regeneration initiatives will help revitalise our urban areas, increase access to nature and quality open space, alongside promote resilience to climate change.

Infrastructure Projects

Proposals for large-scale projects such as transport, waste, energy, minerals, and water can either be complemented with GBI, or could consider GBI as an alternative to traditional design solutions. Additionally, the restoration of disused or derelict sites also presents an opportunity.

Community-Led GBI Toolkit

Representing another key delivery opportunity includes Community-Led GBI. Sitting alongside this Strategy is a toolkit which aims to support grassroots GBI initiatives. This document can be accessed [here](#).

The purpose of the toolkit is to provide an overview of the key considerations needed for community groups, third sector organisations and Town and Community Councils alike to engage in the process of safeguarding, managing, and creating GBI at a local level. Topics covered include:

- ➔ Steps in Setting up a Community Space
- ➔ Details on Governance & Funding
- ➔ Design Guidance
- ➔ Need for Planning Permission
- ➔ Routes for Obtaining a Space



Securing a suitable site for the development of community-led GBI projects can be challenging. Details on Community Asset Transfer (the handing over land or buildings from the Council to the stewardship of a local organisation) can be found [here](#).

GBI Action Plan

Securing the wellbeing of present and future generations, Carmarthenshire County Council is committed to nature recovery, promoting sustainable development and placemaking, alongside tackling the climate emergency. As part of a multifaceted approach, it recognises that GBI will play a key tool in helping to resolve these challenges.

The GBI Action Plan details the steps which will be undertaken to ascertain these in relation to GBI, in accordance with the objectives of this Strategy.

Provided as a separate document, please visit our website for more information.

Please note, it is proposed that the draft GBI Action Plan will be developed once the draft strategy's vision and objectives have been informed through public consultation.

Resourcing

As detailed within the Action Plan, many of the activities proposed towards meeting the objectives are centred on embedding a GBI approach and understanding of placemaking and holistic sustainability within current ways of working, alongside improving the efficiency of services the Council already provides. Additional implications on Council resources will be further mitigated by promoting a collaborative approach with external stakeholders and partners, sharing expertise and resources. Other actions are in line with existing statutory duties and responsibilities place upon the local authority under national legislation and guidance.

Sources of funding for capital projects creating GBI asset and their long-term maintenance may be met through a range of sources including government funds, third and private sector grants, and environmental stewardship schemes. Those intrinsically linked to the delivery of new developments could be met through Planning Conditions or Planning Obligations such as Section 106 Agreements or Community Infrastructure Levies.

Monitoring

Establishing clear metrics for success and a framework for ongoing evaluation can help identify areas for improvement, ensuring that resources are used effectively, and sufficient progress is made over time. While the Strategy will be kept under review and updated as necessary to have regard to changing circumstances, monitoring against each of the objectives has been integrated within the GBI Action Plan.



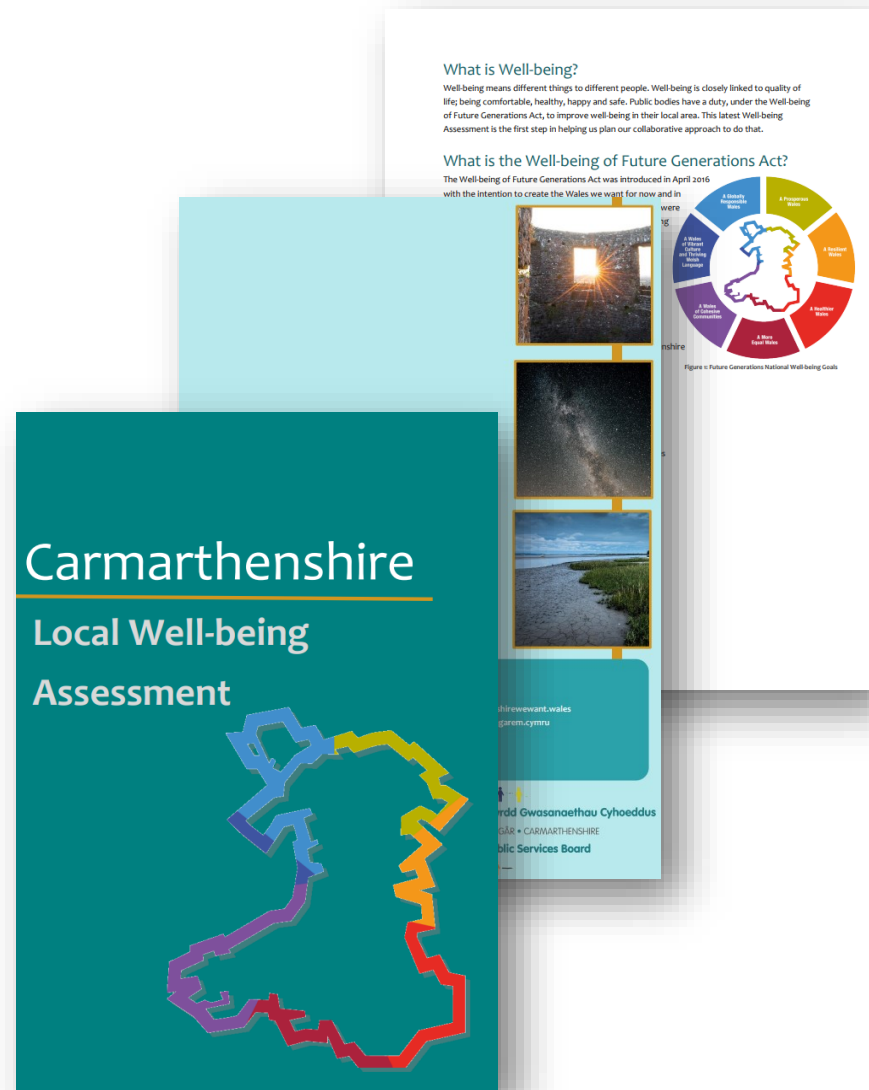


Appendices

Appendix A: Outlining the Need for GBI within Carmarthenshire

The section describes some of the primary environmental and socioeconomic drivers that influence Carmarthenshire's need for GBI. These are reviewed in alignment with local well-being objectives contained within the [Corporate Strategy \(2022–27\)](#) in addition to [Carmarthenshire Public Service Board's Well-being Plan \(2023–28\)](#).

Much of the data presented within this appendix is summarised from [Carmarthenshire's local well-being assessment](#).



Enabling our Communities & Environment to be Healthy, Safe & Prosperous

This well-being objective has direct relevance to “Improving well-being and reducing health inequalities” contained within the Carmarthenshire Public Service Board’s Well-being Plan.

Carmarthenshire County Council is devoted to understanding local needs and tackling the issues pertinent to establishing communities which are healthy, safe, and prosperous. It is also committed to working with partners to strengthen the local economy, increase prosperity, and invest in housing, education, culture, infrastructure, and the environment. While undertaking the necessary steps to uphold these commitments and provide an opportunity to embed a GBI approach, in some instances, GBI offers a permanent solution to address the root cause of these problems, not just a short-term remedy.



Specific aspects of upholding this well-being objective in relation to GBI are discussed in further detail below. Many of these are also related to the promotion of other Well-being Objectives, including those locally to “Start Well” and “Live & Age Well”, but also those nationally such as “A healthier Wales” and “A Wales of more cohesive communities”.

Addressing Deprivation

Poverty and deprivation have serious detrimental effects, impacting all aspects of well-being. Over a third of our households within Carmarthenshire continue to live in poverty (35.6%), a level which has increased by 0.9% over the last ten years. This translates to around 29,500 households, suggesting that almost 600 additional households have slipped below the income threshold over the last ten years. Deprivation comes in many forms and, while poverty is often centred on material deprivation, barriers to accessing a quality environment which is conducive to a healthy life is directly relevant to GBI. Typically, the different forms of deprivation are highly correlated, meaning a holistic approach is needed to address them.



The [Welsh Index of Multiple Deprivation](#) is the Welsh Government's official measure of relative deprivation for small areas. It identifies areas with the highest concentrations of eight different domains of deprivation which include Physical Environment and Community Safety. The index ranks all small areas in Wales from 1 (most deprived) to 1,909 (least deprived), these areas have an average population of 1,600 people in order to make fairer comparisons between areas located in different parts of Wales.

Carmarthenshire has 112 Lower Super Output Areas and 4% of these are included in the 10% most deprived in Wales. Additionally, 25 are ranked as being in the 30% most deprived areas in Wales. The majority of these areas (60%) are located in the Llanelli area (15) with 20% in the Amman area (5), 12% in the Gwendraeth area (3) and 8% located in the Carmarthen area (2). The area which is ranked as the most deprived area in within the County is Tyisha 2. The indicators used to access deprivation with direct relevance to GBI include Proximity to Accessible, Natural Green Space; Ambient Green Space Score; Flood Risk; and travel times to Sport Facilities.

Promoting Health & Well-being

Within Carmarthenshire, 30.4% of households had one person with a long-term health problem or disability, one percentage point higher than the national average. Additionally, the county is the 5th worst for levels of childhood obesity, 7th highest for the number of adults who are overweight or obese, and 3rd for adult substance misuse. Nevertheless, life expectancy is in line with the national average, male/female inequality gap in healthy life expectancy is one of the lowest, and levels of reported physical activity are comparatively high.

Mental health is something that 1 in 4 adults will experience in their lifetime. Looking after mental health is as important as physical health, the link between the two factors of health is becoming increasingly better understood. For some, poor psychological and emotional well-being can act as a barrier to everyday activities. Mental well-being in Carmarthenshire has improved in line with the rest of the country. Despite this, the proportion of adults worrying about their mental well-being increased as a result of the pandemic, and those living in more deprived areas, as well as women and younger people show

higher levels of worry. Additionally, Carmarthenshire experiences one of the highest suicide rates in Wales.

The prevention of physical and mental illness through creating an environment which promotes healthy lives, allows people to fulfil their potential, meet educational aspirations, and actively participate within their respective community. It is, therefore, vitally important to have the best start in life by being born into a Carmarthenshire that has a healthy environment, with functional ecosystems and minimal pollution including air, light, and noise. This is supported by findings from Carmarthenshire's Residents Survey which noted that there was an overall agreement that consideration should be given to supporting people's mental health and well-being. It is well-known that GBI is critical to sustaining and promoting health and well-being, particularly as a preventative measure. Across the UK, [Fields in Trust](#) estimates that the well-being benefit of accessible greenspace is more than £34 billion annually, saving the NHS at least £111 million per year by reducing trips to the GP. Accessible, quality GBI that is integrated with active travel can increase physical activity alongside connection with nature.

Providing for our Future Population

The 2022 mid-year population estimates give Carmarthenshire a total population of 189,117 residents, making it the 4th largest local authority in Wales. Net migration continues to be the dominant driver of population change and, by 2043, the population is anticipated to grow to 197,218. However, it is not without future demographic challenges which include a declining birth rate and, as later discussed, an ageing population.

As outlined within the Revised Local Development Plan 2022-2032, Carmarthenshire County Council has made provision for 9,704 new homes to meet the identified housing requirement of 8,822 over the plan period. This level of future growth provides the basis for upholding the principles of sustainable development whilst responding to the needs of a growing population and a regionally important economy. Access to quality homes that adhere to a GBI approach can promote improved health and well-being, meeting the individual needs of residents, building strong sustainable communities and places where people want to live. Nevertheless, further development

will place pressure on local services including GBI such as parks and greenspaces. This is in addition to potentially creating environmental impacts on natural resources, although GBI will play a crucial role in mitigating these.

Providing for an Ageing Population

According to the Census 2021, Carmarthenshire has an ageing population, whereby 11% of the County's population are aged 75 or over (above the national average of 9.8%). In Wales, the number of people within this age bracket is projected to increase by 24.2% to 381,000 between 2021 and 2031. This will require the NHS and the Local Authorities to plan for the expected increased demand for health and social care services, including specialist support for age-related conditions such as dementia and diabetes. These public bodies acknowledge that many of the preventive services and interventions lie outside health and social care system. This includes safeguarding the provision of accessible outdoor public spaces, such as parks and allotments, which can provide the opportunity for people to stay physically fit and mentally well as they age.

Making our Communities Safer & more Cohesive

Carmarthenshire exhibits increasing crime rates in some areas despite ranking 13th safest out of the 22 counties in Wales with a rate of 83.6 crimes per 1,000 population. While remaining among the safest areas in the UK, GBI can help to both retain and promote this particularly within the public realm. Well frequented open spaces provide excellent chances for social interaction and community cohesion, which contribute to the growth of strong and resilient communities. Additionally, the presence of greenspace including parks and trees has been found to reduce incidence of violent crime within urban areas. Creating safe, inclusive environments through 'designing out crime' is a key aspect of placemaking and is required to be considered strategically when developing any feature of the built environment.

Accessible GBI can provide an important space for communities to connect and share everyday experiences. While of direct benefit to anyone who visits them, indirect benefits are also felt throughout communities through the public goods and ecosystem services they provide. However, [research](#) has shown

that women and girls often feel less safe in parks and open green spaces which impacts their desire to visit them, and [certain socio-demographic groups](#) are also less likely to use the natural environment for physical activity. Although thoughtful design and management is unable to address all barriers which may deter certain groups from utilising accessible GBI, with mindful planning, support and funding, the benefits can be enjoyed more equally by everyone.

As identified within Carmarthenshire's local well-being assessment, bullying is an issue which affects mental health and emotional well-being of young people, and their ability to connect to society. Thoughtful play space design can help reduce instances of conflict through integrating passive supervision, promoting diversity and inclusivity, and encouraging cooperative play. Promoting informal learning opportunities can also provide space for children who feel like they can express themselves better and learn more outdoors. Access to nature for physical health and well-being is fundamental to providing children with the building blocks for life and can help tackle inequalities.

Tackling Water Quality

Our water environment provides us with many ecosystem services, many of which contribute to the well-being of local communities and the wider population. These include providing fresh drinking water, water for industry and for agriculture, and clean rivers and seas for habitat, recreation, and enjoyment. In Carmarthenshire, water quality is primarily affected by sewage and agriculture which increases the amount of nitrate, phosphorus, and sediment pollution. This is exemplified through the current phosphate crisis whereby a compliance assessment against tighter standards for riverine Special Areas of Conservation found over 60% of waterbodies failed, and, in respect of Carmarthenshire, failures were found within in the Afon Cleddau and Afon Teifi. This has had a significant impact on the development of new homes within rural areas. Water quality can be improved through measures such as effective design, construction and operation of sewerage systems, however, the use of NbS such as wetlands, SuDS, or greenspace can also protect water quality whilst providing other distinct benefits including flood alleviation and aquatic habitats.

Tackling Air Quality

Clean air is a critical public good and essential to not only our health, well-being and enabling greater physical activity, but also to wildlife and habitats. Air pollution occurs in both urban and rural areas, and disproportionately affect those in deprived areas. Local authorities are responsible to declare Air Quality Management Areas if national air quality objectives are not likely to be met. In Carmarthenshire, we have three such areas – Llandeilo (declared in 2011), Llanelli, and Carmarthen (both declared in 2016). Encouraging the use of active travel, increasing tree canopy cover, and the creation of quality greenspace are key tools to help reduce the traffic emissions causing these three failures. Additionally, several areas within the County still experience problems with deliberate wildfires. The environmental harm caused by arson is significant, principally affecting air quality but also damaging to vulnerable habitats, open space, and grazing. Alongside promoting the adoption of appropriate land management practices, GBI assets such as street trees and woodlands can act as NbS towards achieving good air quality.

Responding to the Climate & Nature Emergencies

Within the Carmarthenshire Public Service Board's Well-being Plan, a key step identified to tackle these emergencies is "to embed a partnership approach to developing GBI in the county". The present strategy signifies the strategic action undertaken by Carmarthenshire County Council in meeting this action.

Carmarthenshire County Council is committed to accelerating its commitment and contribution to combating climate change, having also declared a nature emergency in 2022. It follows that, in accordance with the extent of its function and duties, the Council must consider the necessary steps towards tackling these challenges. The stresses placed on Carmarthenshire's GBI Network as a consequence of extreme weather and biodiversity loss are thought to increase over the coming century. However, during this time, GBI offers significant prospects for both mitigation and adaptation towards climate change whilst also restoring and conserving nature.



Specific aspects of the climate and nature emergencies in relation to their effect on the County and its GBI assets are discussed in further detail below. Many of these are also related to the promotion of other Well-being Objectives, including those nationally for "A resilient Wales" and "A globally responsible Wales".

Flood Resilience

The majority of Carmarthenshire's settlements are located by rivers or the coast. Currently, over 15,000 properties within the County experience some level of flood risk from river, surface water flooding or coastal overflow. 3,151 properties are at high risk, 2,292 at medium risk, and 9,713 properties are at low risk. The vast majority of these are residential properties.

Climate change and extreme weather events may increase the number of properties, infrastructure and key services at risk of flooding. The Communities at Risk Register made by Natural Resource Wales identifies five Carmarthenshire communities most at risk. Llanelli is considered a 'Significant Flood Risk Area' as it falls within some of the top places for flood risk within Wales. Other areas on the register include Ammanford, Ferryside, Llwynhendy, and Dafen.



A holistic approach to surface water management is essential to limit the risk of localised flooding, particularly in urban areas or areas with a significant amount of non-permeable hard surfacing. GBI can help increase flood resilience through intercepting rainfall and attenuating water. This may comprise of strategic, catchment level interventions such as large scale bioswales, or consist of smaller-scale interventions such as the inclusions of SuDS and street trees within a development.

Creating Habitat for Biodiversity

The resilience of our natural environment is threatened by climate change, development, unsustainable land management practices, pollution, and non-native invasive species. Globally, biodiversity loss is accelerating with rates of extinction unprecedented in human history. The State of Nature Wales 2023 report found that of the species assessed, species abundance (the number of individuals) declined on average by 20%, and 1 in 6 were at risk of extinction. Based on the best available data, many Priority Species within Carmarthenshire are also declining, including those once much more common such as the Brown Hairstreak Butterfly and breeding Curlew. Turtle Doves and Corn Buntings have been lost from Carmarthenshire skies all together. Nevertheless, there are also conservation success stories, with targeted action and survey effort leading to the rediscovery of the Fen Orchid and Ruderal Bumblebee, both once thought extinct in the County.



A biodiverse, natural environment is good for well-being, with healthy functioning ecosystems also supporting both social and economic resilience. Strategic planning plays an integral role in attain this, particularly within the built environment. The Environment (Wales) Act 2016 requires public authorities to *'...maintain and enhance biodiversity so far as consistent with the proper exercise of their functions and in so doing promote the resilience of ecosystems'*. Ensuring the sustainable management of existing GBI assets such as nature conservation sites; promoting the integration of habitat features within urban GBI including existing open space provision; and seeking opportunities to promote ecological connectivity where gaps have been identified within the GBI network, are all direct ways of upholding this. Additionally, embedding placemaking within land-use planning is also compliant by promoting concepts such as net benefit for biodiversity in addition to a GBI approach, mechanisms which can create new habitat and increase ecosystem resilience.

Creating Educational Opportunities

Publicly accessible GBI can play a key role in enhancing a greater appreciation for the value of our environment in addition to the challenges it faces. While the educational attainment of children in Wales has improved overall, children living in deprivation show poorer attainment on all performance measures. Spending time in nature is shown to deliver a range of well-being benefits for people of all ages. [Nature-based education](#) has also been shown to improve academic performance, increase physical activity levels, and lead to better school attendance rates, and can be particularly valuable for those with additional learning needs. Additionally, the outdoors can make a great location for promoting learning, understanding and communicating through [Welsh](#). Accessible GBI can also provide informal learning opportunities through the medium of play which can have lifelong benefits.

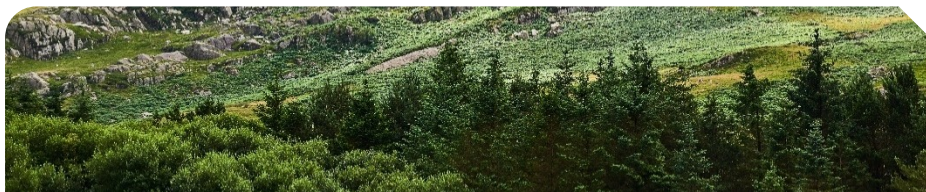


Reducing Emissions through Active Travel

Following the same pattern as seen throughout Wales, carbon dioxide emissions per capita in Carmarthenshire are reducing. Whilst emissions from transportation are in decline locally, it remains a contributor to our overall greenhouse gas emissions, in addition to other air pollutants including particulate matter. Promoting active travel, enhancing the active travel network, alongside the creation of GBI aimed at both mitigating air pollution and complimenting active travel provision, has a key role in reducing emissions further. This directly aligns with the Net Zero agenda, in addition the principle of reducing environmental impacts from transport as adopted within Transformations 2015–2030 – the strategic regeneration plan for Carmarthenshire.

Carbon Sequestration

Carmarthenshire remains a net emitter of carbon dioxide, and the local authority has made the commitment to achieving Net Zero by 2030. The ability of certain GBI assets to store carbon from the atmosphere is an important function which has received a lot of focus in light of the climate emergency. While trees and woodlands are frequently noted, most GBI captures and stores some carbon whether it within soils, vegetation, or other living organisms. Spatially safeguarding and sustainably managing semi-natural habitats are crucial ways of ensuring carbon sequestration is continued to be provide as an ecosystem service. Nevertheless, as recognised within Carmarthenshire's Tree and Woodland Strategy, the establishment of new woodlands to increase overall tree cover within the County is one key tool for meeting Net Zero, whilst also providing benefits for both biodiversity, people, and the local economy.



Mitigating Urban Heat

Rising temperatures and heat waves can have significant influences on human health, economic productivity, and agriculture through animal welfare, increased water demand, and the availability of certain crops. Additionally, dense urban environments without greenspace can exacerbate local ambient air temperatures through a phenomenon known as the 'urban heat island effect'. While this has mostly been recorded in large population centres, in the future this may affect settlements of a size and character found within Carmarthenshire. Nevertheless, urban greening – the incorporation of vegetation into the built environment – and quality public open spaces can help reduce temperatures and provide valuable shade. In fact, [neighbourhoods within a 10-minute walk](#) of a park can be up to 3°C cooler than those outside that range. The temperature within buildings can also be improved through GBI. Green roofs and walls, and street trees have been shown to reduce energy demands for cooling by providing shade and regulating air moisture, and also heating by providing shelter from inclement weather.

Appendix B: Policy Context

Local		
Cabinet Statement	Vision 2022-2027	The vision prioritises tackling poverty and climate change, strengthening the economy and increasing prosperity, and investing in housing, education, culture, infrastructure, and the environment in order to make a real difference to people's lives.
Corporate Strategy 2022-2027		Driven by the above vision statement, this strategy sets out the direction for the local authority over the next 5 years, incorporating local well-being objectives. It includes a number of principles relating to each stage of life and sets out an ambition for Carmarthenshire to become the 'cycling capital of Wales' by delivering greenways, trails and other infrastructure.
Carmarthenshire Public Service Board Well-being Plan 2023-28		As one action to improve the economic, social, environmental and cultural well-being of Carmarthenshire, this plan highlights embedding a 'partnership approach to developing GBI.' The implementation of GBI is identified as an action to meet objective 3 – responding to the climate and nature emergencies.
Carmarthenshire's Local Development Plan (2018-2033) (subject to adoption)		This development plan provides the framework for all future development within the County (excluding Bannau Brycheiniog National Park). It shapes future investment opportunities and infrastructural improvement programmes and guides the determination of planning applications. It also contains specific policies for embedding a GBI approach in order to attain sustainable development and uphold the principles of the placemaking.
Forward Plan for Environment (Wales) Act 2016		The plan has been created in accordance with obligations under the Environment (Wales) Act 2016. The plan explicitly highlights the importance of GBI implementation.

Local Flood Risk Management Strategy 2024-2030 (subject to adoption)	This strategy clarifies where we are now in terms of flood risk management, where we want to be by 2030, and how we will get there. Where feasible, interventions under this strategy aim to follow a GBI approach.
Tree and Woodland Strategy 2023-2028 (subject to adoption)	This strategy delivers against the climate and nature emergencies through the sustainable management of trees and the creation of woodlands. It recognises the importance of NbS that support socio-economic development, with trees and woodlands being key GBI assets.
Allotment and Community Growing Strategy (2024) (subject to adoption)	The purpose of this strategy is to allow more people the opportunity to get their hands dirty and grow their own food. It also promotes the use of placed-base solutions for addressing the climate and nature emergencies. Growing spaces are key GBI assets which deliver multifunctional benefits.
Leisure, Culture, and Outdoor Recreation Strategy (2023–2033) (subject to adoption)	Centred on helping create places where people want to live, work and visit, this high-level strategy plays a vital part in directing the Leisure Service to secure public health and well-being whilst promoting cultural identity and community cohesion.
Grassland Management for Pollinators Strategy (2024–29)	This strategy aims to maximise the area and extent of wildflower-rich grassland habitat managed by the Council on amenity grassland. It is made in response to a vision to increase the biodiversity of all council-owned land, and recognise the strong interrelationship between climate change, the loss of biodiversity and human well-being.
Rights of Way Improvement Plan (2019-2029)	This plan details the strategic management, development, and improvement of Public Rights of Way within Carmarthenshire. Many of these are key GBI assets which interconnect our communities.
Route towards becoming a Net Zero Carbon Local Authority by 2030	Carmarthenshire County Council is committed to the net zero agenda and this action plan set out how this will be achieved. Whilst the preferred method of compensating for residual carbon footprint is to significantly increase the amount of renewable energy generated on Council-owned land, offsetting through tree-planting is set to be explored.
Carmarthenshire Nature Recovery Plan 2020-2030	Produced by Carmarthenshire Nature Partnership, this plan focuses on the local priorities in relation to the national objectives of the Wales Nature Recovery Action Plan

Regional		
NRW	Area	The Area Statements outline the key challenges facing localities, opportunities to meet those challenges, and how we can better manage our natural resources for the benefit of future generations. Themes for South West Wales are reducing health inequalities; ensuring sustainable land management reversing the decline of, and enhancing, biodiversity; whereas the themes for the Marine Area are building resilience of marine ecosystems; NbS and adaptation at the coast; and making the most of marine planning. Both have the cross-cutting theme of mitigating and adapting to a changing climate.
Statements (2021)		

National		
Well-being of Future Generations (Wales) Act 2015		This Act requires public bodies to improve the social, economic, environmental and cultural well-being of Wales to meet the needs of today without compromising the ability for future generations to meet theirs. It established seven well-being goals which public bodies must work towards, and includes GBI related indicators for monitoring implementation, such as: Areas of healthy ecosystems in Wales; Status of Biological diversity in Wales; Percentage of water bodies achieving good or high overall status; The Ecological Footprint of Wales; Percentage of people feeling safe walking in the local area and when travelling.
The Environment (Wales) Act 2016		This Act sets out the legislation required to manage Wales' natural resources sustainably. The Act also puts a duty upon public bodies, known as the Section 6 Duty, who 'must seek to maintain and enhance biodiversity so far as consistent with the proper exercise of their functions and in so doing promote the resilience of ecosystems'.

Natural Resources Policy (2017)	This policy seeks the sustainable management of natural resources in order to maximise their contribution to the national well-being goals. It outlines three priorities: delivering NbS; increasing renewable energy and resource efficiency; and taking a place-based approach.
Planning Act (Wales) 2016	This Act provides a framework to sustainably manage land use to contribute to improving the economic, social, environmental and cultural well-being of Wales in accordance with the national well-being goals.
Planning Policy Wales: Edition 12	Chapter six of Planning Policy Wales (PPW) sets out the Welsh spatial planning focus of maintaining and incorporating GBI as key components of distinctive and natural places that maximise health and well-being of communities. PPW requires planning authorities to adopt a strategic and proactive approach to GBI and biodiversity by producing up-to-date Green Infrastructure Assessments. Additionally, all planning applications should now submit a GBI statement which describes how GBI has been incorporated into their proposals.
Technical Advice Note 5: Nature Conservation and Planning (2009)	This guidance provides advice about how the land use planning system should contribute to protecting and enhancing biodiversity and geological conservation.
Technical Advice Note 12: Design (2016)	This guidance provides information on how promoting sustainability through good design can be achieved via the planning system. This includes awareness of how climate adaptation measures can offer multiple benefits and support other objectives of good design (such as promoting biodiversity through the incorporation of green roofs).
Technical Advice Note 15: Development, Flooding and Coastal Erosion (pending)	This guidance identifies that by combining crucial drainage and flood defence assets with green infrastructure and quality public realm, the integration of sustainable drainage systems (SuDS) into developments provides an opportunity to achieve multiple positive outcomes.

Technical Advice Note 16: Sport, Recreation and Open Space	Provides advice for communities, developers and local planning authorities in Wales preparing local development plans and making decisions about planning applications with regards to sport, recreation and open space.
Children and Families (Wales) Measure 2010	This measure includes a duty for local authorities to secure sufficient play opportunities for children (known as the Play Sufficiency Duty). Many GBI assets can offer both formal and informal opportunities for play.
Flood and Water Management Act 2010	Under this Act, Sustainable Drainage Systems (SuDS) are required on certain developments. This type of GBI must adhere to the underpinning principles of sustainable drainage, namely: water quantity, water quality, visual amenity and biodiversity.
Active Travel Action Plan for Wales (2016)	Upholding the associated Act, this plan outlines initiatives that will improve levels of walking and cycling in Wales in order to achieve the benefits that active travel delivers for health and society.
Community Grown Food Action Plan 2010	This action plan seeks to promote and encourage community growing throughout Wales to work towards food security through local produce, connect people to the food chain, improve health and well-being, provide best practice for future communities and increase interest in growing food.
Net Zero Carbon Status By 2030	The Welsh Government has committed to decarbonising the public sector by 2030 through a strategic framework including priority for reducing emissions in Buildings; Mobility and transport; Procurement; and Land use.

Appendix C: Strategic GBI Sites

Contributing towards [Carmarthenshire Strategic GBI Network](#), the following list of strategic scale GBI sites is non-exhaustive and split over five distinct categories.

Designated Sites for Nature/Geological Conservation

Sites designated for nature, key species, or geological conservation play a crucial role in contributing to strategic GBI by serving as key components of a connected network of protected and managed areas. Integrating these sites into local planning and broader GBI consideration can enhance landscape connectivity, protect critical habitats, and promote sustainable land use practices that benefit both people and the environment. Other benefits these sites provide are commonly centred on: Habitat Connectivity: Nature conservation sites help maintain and enhance habitat connectivity by providing corridors for wildlife movement between different ecosystems, promoting biodiversity and genetic diversity.

- ➔ Ecosystem Services: These sites offer a range of ecosystem services such as carbon sequestration, water purification, pollination, and soil retention, which are essential for supporting human well-being and environmental sustainability.
- ➔ Climate Change Mitigation and Adaptation: They also contribute towards climate change mitigation by storing carbon in vegetation and soils, while also helping communities adapt to the impacts of climate change through natural flood control and temperature regulation.
- ➔ Recreation and Education: These sites provide opportunities for outdoor recreation, nature-based tourism, and environmental education, fostering a deeper connection between people and nature.
- ➔ Research and Monitoring: Nature conservation areas serve as living laboratories for scientific research, monitoring biodiversity trends, and studying ecosystem dynamics, which can inform conservation strategies and land management practices.

There are a number of designation types, each for a specific purpose related to the significance of the particular habitat and/or species found within that site. In Carmarthenshire, these include:

Special Areas of Conservation (or SACs)

There are eight of these sites designated under the Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora:

- Afon Teifi
- Afon Tywi
- Afonydd Cleddau
- Carmarthen Bay and Estuaries
- Carmarthen Bay Dunes
- Cwm Doethie - Mynydd Mallaen
- Caeau Mynydd Mawr
- Cernydd Carmel

Special Protected Areas (or SPAs)

There are three of these sites designated under the European Union Directive on the Conservation of Wild Birds:

- Burry Inlet (also a Ramsar site)
- Elenydd Mallaen
- Carmarthen Bay

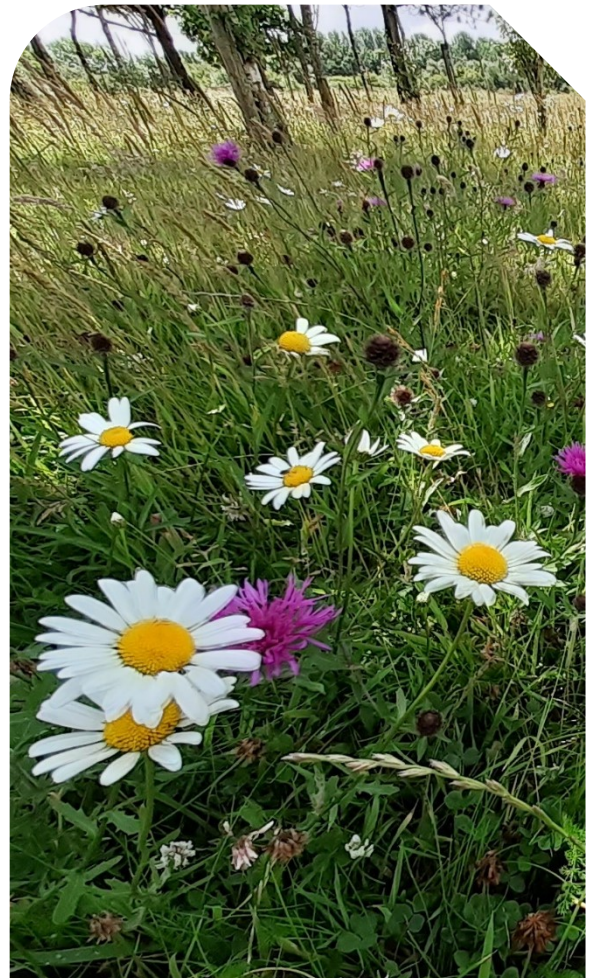
Sites of Special Scientific Interest (SSSIs)

There 89 of these sites including three only partly in Carmarthenshire:

- Aber Taf / Taf Estuary
- Afon Cleddau Dwyreiniol / Eastern Cleddau River
- Afon Teifi
- Afon Tywi
- Allt Penycoed Stream Section
- Allt y Gaer
- Allt y Wern
- Arfordir Marros-Pentywyn / Marros-Pendine Coast
- Arfordir Pen-bre / Pembrey Coast
- Arfordir Saundersfoot - Telpyn / Saundersfoot - Telpyn Coast
- Beacon Bog
- Birdshill Quarry
- Bishops Pond
- Broad Oak and Thornhill Meadows
- Burry Inlet and Loughor Estuary
- Cae Blaen-dyffryn
- Cae Cwm-tywyll
- Cae Gwynfryn
- Caeau Afon Gwili
- Caeau Blaenau-mawr
- Caeau Blaen-bydernyn
- Caeau Blaen-yr-Orfa
- Caeau Bryn Ifor
- Caeau Capel Hendre
- Caeau Caradog
- Caeau Ffos Fach
- Caeau Lotwen
- Caeau Nant Garenig
- Caeau Nantsais
- Caeau Pant-y-Bryn
- Caeau Rhyd-y-gwail
- Cefn Blaenau
- Cernydd Carmel
- Chwarel Talar Wen (Talar Wen Quarry)
- Coed Cochion Quarry
- Coed Gwempa
- Coed Llandyfan
- Coedydd Capel Dyddgen
- Coedydd y Garn
- Cors Farlais
- Cors Goch, Llanllwch
- Corsydd a Rwyth Cilyblaid
- Craig Ddu - Wharley Point Cliffs
- Creigiau Llansteffan (Llanstephan Cliffs)
- Crug Farm Quarry
- Crychan Forest Tracks
- Cwm Clydach, Cydweli
- Cwm Crymlyn Road Section
- Cwm Doethie - Mynydd Mallaen
- Cwm Twrch
- Cwm yr Abbey Stream Section
- Dan-Lan-Y-Castell Quarry
- Derwen-fach Meadow

- Dinefwr Estate
- Dolaucothi Gold Mines
- Felin Fach Meadows, Cwmgwili
- Ffair Fach Railway Cutting and River Section
- Glan Pibwr Stream Section
- Gwel y Coed
- Gwernydd Penbre
- Gweunydd a Choed Pen-Ty (Pen-Ty Pastures & Wood)
- Gweunydd Glan-y-glasnant
- Llanfallteg Track Section
- Llety - Wen
- Llyn Llech Owain
- Llyn Pencarreg
- Llynoedd Tal-y-llechau, (Talley Lakes)
- Maesyprior
- Mandinam a Coed Deri
- Meidrim Road Section
- Mwyngloddfa Nantymwyn
- Mylett Road Section
- Mynydd Llangyndeyrn
- Mynydd Ystyfflau-Carn
- Pine Lodge Meadow
- Pont y Fenni Quarry and Road Cutting
- Pwll Lagoon
- Pyllau Machynys (Machynys Ponds)
- Rhos Dolau-Bran

- Rhos Pwllgawnen
- Rhosydd Castell-du & Plas-y-bettws
- Rhosydd Llanpumsaint
- Smarts Quarry
- Twyni Lacharn - Pentwyn / Laugharne - Pendine Burrows
- Waun-fawr
- Wernbongam Stream Section and Quarry
- Whitehill Down
- Ydw Valley and Fron Road Geological Exposures
- Ynys Uchaf



Local Nature Reserves (LNRs)

There are six (potentially seven) Local Nature Reserves designated under Section 21 of the National Parks and Access to the Countryside Act 1949. These are:

- Ashpits Pond and Pwll Lagoon
- Carreg Cennen
- Glan-yr-Afon, Kidwelly
- Morfa Berwig
- North Dock Dunes (all in the Llanelli coastal area)
- Pembrey Burrows and Saltings
- Ynysdawela (potential LNR)

National Nature Reserves (or NNRs)

There are a total of five National Nature Reserves designated under Part III of the National Parks and Access to the Countryside Act 1949. These are:

- Carmel (Wildlife Trust of South and West Wales)
- Cors Goch, Llanllwch (Wildlife Trust of South and West Wales)
- Dinefwr (National Trust)
- Gwenffrwd Dinas (Royal Society for the Protection of Birds)
- Waun Las (National Botanic Garden of Wales)

Regionally Important Geological Sites (also referred to as RIGS)

These sites are also considered to serve as strategic GBI essential components due to their significant contributions to landscape diversity, conservation, and education. They provide a window into the geological past, with designated features which can influence hydrological processes, soil formation, and nutrient cycling. There are 50 of these sites in Carmarthenshire, some notable ones are located in Aberglasney Gardens, Crychan Forest, Gilman Point (Pendine), Llyn Brianne, and the Sugar Loaf.

Country Parks

Country parks can indeed serve as valuable components of GBI, offering a range of environmental, social, and economic benefits to local communities. Some of the ways in which country parks contribute to GBI:

- **Recreation and Well-being:** Country parks offer opportunities for outdoor recreation, exercise, and relaxation, promoting physical and mental well-being among visitors.
- **Water Management:** Those with lakes, ponds, or wetlands can help manage stormwater runoff, improve water quality, and provide valuable ecosystem services.
- **Educational and Cultural Value:** Country parks often host educational programs, events, and interpretive displays that raise awareness about nature, conservation, and cultural heritage.

Country Parks within Carmarthenshire are:

- Gelli Aur County Park (privately owned by the Golden Grove Trust)
- Llyn Llech Owain Country Park
- Mynydd Mawr Woodland Park
- Pembrey Country Park

Whilst not designated as County Parks, Carmarthenshire also benefits from a number of large recreation parks which include:

- Allt Nant-y Ci Recreation Park
- Carmarthen Wetlands Recreation Park
- Gelliwerdd Recreation Park

Additionally, the county is also home to the Millennium Coastal Park which has miles of coastal cycling and walking paths to enjoy.

Historical Sites

Historical sites can serve as strategic GBI, providing a unique opportunity to blend cultural heritage with environmental conservation. Several specific benefits include:

- ➔ Cultural and Recreational Value: GBI in sites can enhance the visitor experience, providing opportunities for recreation, relaxation, and cultural appreciation alongside education on history and built heritage.
- ➔ Heritage Preservation: Integrating GBI assets sensitively can help preserve the historical integrity of the site while enhancing its sustainability for future generations. This is particularly true of registered gardens.
- ➔ Biodiversity Conservation: Incorporated GBI within historical sites provides habitats for flora and fauna and can enhance biodiversity in urban areas.
- ➔ Community Engagement: GBI projects and volunteering opportunities can foster community involvement, education, and awareness about the importance of environmental conservation and heritage preservation.

Those historical sites contributing to Carmarthenshire's Strategic GBI Network include:

- Carreg Cennen Castle
- Dinefwr Castle (including surround National Nature Reserve)
- Dolaucothi
- Dryslwyn Castle
- Golden Grove Estate
- Kidwelly Castle
- Laugharne Castle
- Llandovery Castle
- Llansteffan Castle
- Moridunum Roman Amphitheatre
- Newcastle Emlyn Castle
- Parc Howard Museum & Gardens
- Paxton's Tower
- Talley Abbey

Priority Habitats

Welsh Government has published a list of habitat types that they consider are of key significance to sustain and enhance biodiversity within the country – known as Priority Habitats or Section 7 habitats. Under the Environment (Wales) Act 2016, public bodies have a duty to take all reasonable steps to maintain and enhance these of habitat.

In Carmarthenshire, we have many of these priority habitats – some are scarce, while others are more common. A number of organisations work in the county to maintain and enhance them. If they are to thrive, they require organisations and individuals to work together in partnership - including landowners, government agencies, wildlife conservation groups, Local Authorities and industry.

Made from over 15,500 individual habitat areas, those Priority Habitats found within the county and their approximate combined area is shown in the table below:

Priority Habitat Type	Area (Hectares)
Blanket Bog	246
Coastal & Floodplain Grazing Marsh	8000
Inland Rock Outcrop & Scree Habitats	12
Lowland Calcareous Grassland	6
Lowland Dry Acid Grassland	2055
Lowland Fens & Reedbeds	444
Lowland Heathland	436
Lowland Meadows	166
Maritime Cliff & Slopes	58
Open Mosaic Habitats of Previously Developed Land	513
Purple Moor Grass & Rush Pastures	6917
Saltmarsh	1610
Upland Flushes, Fens & Swamps	320
Upland Heathland	3080
Wood-Pasture & Parkland	289

Note, these are taken from the countrywide Phase 1 habitat survey first published 1990, and, given its age, these must be seen as approximates.

Produced as part of the [Carmarthenshire Nature Recovery Plan 2020-2030](#), detailed information on Priority Habitats can be found here:

- [Brownfield, Gardens and Urban Open Space](#)
- [Coastal Habitats](#)
- [Farmland Habitats](#)
- [Freshwater Habitats](#)
- [Lowland Grassland & Heathland](#)
- [Marine Habitats](#)
- [Uplands](#)
- [Wetlands](#)
- [Woodlands](#)

Woodlands

Carmarthenshire is known for its extensive woodland and forest areas including Brechfa, Caio, and Pendine, providing habitats for a variety of plants and wildlife, in addition to public goods such as clean air. Forestry also provides employment opportunities and timber resources, benefiting the local economy. Additionally, street trees which contribute to urban canopy cover offer a number of benefits to our built environment including aesthetics and well-being, stormwater management, and air quality improvements. According to the National Forest Inventory 2020, approximately 18% of land area within Carmarthenshire (excluding Bannau Brycheiniog National Park) is under some form of woodland management.

Appendix D: Typology & Function

GBI Assets (Typology)	GBI Functions															
	Aestheti c Value	Carbon Storage	Coastal Protectio n	Communit y Spaces	Employmen t	Flood Mitigatio n	Food Productio n	Fostering Connectio n Nature	Habitat for Wildlife	Heritag e & Culture	Lifelong Learnin g & Skills	Pollutant Remediatio n	Provide s Shadin g	Recreatio n & Leisure	Supports Pollinator s	Wildlife Corrido r
Active Travel Routes				✓	✓			✓		✓				✓		
Allotments & Community Growing	✓	✓		✓			✓	✓		✓	✓			✓	✓	✓
Amenity Greenspaces	✓	✓		✓		✓		✓	✓					✓	✓	✓
Bogs (including Peatlands)	✓	✓				✓		✓	✓	✓		✓				✓
Churchyards & Cemeteries	✓	✓		✓	✓	✓		✓	✓	✓				✓	✓	✓
Common Land	✓	✓		✓		✓	✓	✓	✓	✓				✓	✓	✓
Designated Geological Sites	✓	✓		✓	✓			✓	✓	✓	✓	✓				
Designated Nature Sites	✓	✓	✓	✓	✓			✓	✓	✓	✓			✓	✓	✓
Fen Swamps	✓	✓				✓		✓	✓	✓		✓			✓	✓
Grazing Floodplains	✓	✓	✓			✓	✓	✓	✓	✓					✓	✓
Green Roofs	✓	✓			✓	✓		✓	✓	✓		✓	✓		✓	✓
Green Walls	✓	✓			✓	✓		✓	✓	✓		✓	✓		✓	✓
Heathlands	✓	✓				✓		✓	✓	✓				✓	✓	✓
Hedgerows	✓	✓			✓			✓	✓		✓	✓			✓	✓
Marshy Grassland	✓	✓				✓		✓	✓	✓					✓	✓
Open Country	✓	✓		✓	✓	✓	✓	✓	✓	✓				✓	✓	✓
Outdoor Sports Facilities		✓		✓	✓	✓		✓		✓	✓			✓	✓	✓
Parks & Gardens	✓	✓		✓	✓	✓		✓	✓	✓				✓	✓	✓
Play Spaces	✓	✓		✓		✓		✓						✓		✓
Private Gardens	✓	✓		✓	✓	✓	✓	✓	✓	✓				✓	✓	✓
Public Rights of Way				✓	✓			✓		✓				✓		
Saltmarshes	✓		✓			✓		✓	✓	✓					✓	✓
Sand Dunes	✓	✓	✓					✓	✓	✓				✓	✓	✓
Standing Water	✓			✓		✓		✓	✓	✓				✓		✓
Urban Street Trees	✓	✓		✓	✓	✓		✓	✓	✓		✓	✓		✓	✓
Wetlands	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓			✓	✓
Woodland	✓	✓		✓	✓	✓		✓	✓	✓		✓	✓	✓	✓	✓

Appendix E: Opportunity Toolbox

This Appendix explores ways to strengthen Carmarthenshire's GBI Network whilst tackling local challenges for people, place, and nature. Those priority interventions here discussed are centred on:

- ➔ [Creating Playful Spaces](#)
- ➔ [Enhancing Tree Cover](#)
- ➔ [Establishing a Green Settings for Historical Sites](#)
- ➔ [Exploring Environmental Storytelling](#)
- ➔ [Finding Spaces for Community Growing](#)
- ➔ [Greening the Places Where People Live, Work & Visit](#)
- ➔ [Promoting Sustainable Drainage \(SuDS\)](#)
- ➔ [Protecting & Connecting Coastal Places](#)
- ➔ [Providing Green Routes for Active Travel](#)
- ➔ [Restoring Blue Corridors](#)
- ➔ [Rethinking the Functions of Parks & Grass Areas](#)



For each of the discussed interventions, information on the following has been provided:

- ➔ A brief overview of the opportunity
- ➔ Why is it important in the context to some of the challenges faced within Carmarthenshire
- ➔ Possible mechanisms to support delivery
- ➔ Key considerations needed during delivery
- ➔ Indicative costs for a number of specific interventions
- ➔ Notable case studies and important pieces of guidance

Development of Indicative Costings

High-level cost estimates have been provided for each of the GBI interventions. These were calculated using recognised industry rates or informed by case study examples of similar works. It is important to recognise that these are indicative in nature, with some being presented as a “low to high” range. Additionally, as they focus on capital and maintenance costs, no allowance has been made for land acquisition.

While all costs have been amended to June 2024 using the [Consumer Price Index](#), future inflationary pressures should be considered when relying upon this information to support the costing of any onward project. These rates are not a replacement for detailed costing based on design development of indicative costings proposals and are intended to be used as a guide for project scoping. Certain projects may benefit from undertaking feasibility studies to better inform costings for potential funding bids.

Costs are provided as unit rates and can be used to understand the relative cost difference between specific interventions and area. It is recommended that percentage allowances of project capital cost are added to cover the following costs:

- ➔ Professional fees: approx. 10-15%
- ➔ Preliminaries: approx. 7.5 - 15%
- ➔ Contingency: approx. 5-10%
- ➔ Maintenance (if not provided): approx. 10% per annum

There are multiple factors that may affect actual costs including ground conditions, access restrictions, and constraints concerning heritage, environment, and/or ecology, amongst others. Land purchase costs have also not been considered. The provision of certain features such as artificial surfacing, alongside preparing for factors including general wear and tear, can also need an allowance for a sinking fund. The amount annually ring-fenced should be in line with industry recommendations or estimated by forecasting the future replacement cost.

Creating Playful Spaces

Play is an integral part of healthy physical and mental development. It offers an opportunity for children to explore their environment and wider world. Many GBI assets can help establish an environment which is conducive to play, creativity, and relationship-building at all ages.

It is important to recognise that play should happen everywhere, and not be reserved for formal play provisions. Spaces for play should be considered at an early-stage within planning and regeneration efforts, especially in deprived communities deficient in play provisions, alongside urban centres.

Keyways to do this are centred on ensuring that new development proposals provide adequate play provisions; encouraging walking and cycling, particularly to places of education; alongside sustainably maintaining and revitalising existing provisions.

Why is this Important for Carmarthenshire?

Helping children live healthy lifestyles is a key objective within Carmarthenshire's Well-being Plan and relates to reducing health inequalities as prioritised within our Area Statement.

Carmarthenshire County Council recognises that play is an essential part of children and young people's lives and acknowledges children need to be allowed to choose what they want to do, how they want to do it and why they want to do it. It also believes that providing appropriate play opportunities can be best achieved by developing as wide a range of inclusive play provision as possible.

Barriers to providing play opportunities mentioned in consultation with Town and Community Councils include lack of space, cost, and maintenance challenges.

Carmarthenshire's Play Sufficiency Assessment provides detailed guidance on how and where to deliver high quality play opportunities as part of an integral part of the wider GBI network.

Possible Delivery Mechanisms

- ➔ Public Open Space Provision integrated within new development. Proposals for all new residential developers of 5 or more units will be required to provide this in accordance with Carmarthenshire County Council's Open Space Standards.
- ➔ Collaboration with Town and Community Councils who manage the majority of outdoor play spaces within Carmarthenshire. Potential funding via developer contributions if meeting the demand created by a nearby development.
- ➔ Grass roots, community-led initiatives. Third sector, local businesses, and community groups working together to transform disused public assets. These can acquire publicly owned land or buildings through [Community Asset Transfer](#).
- ➔ Integrating play into town centre regeneration programs including [Transforming Towns](#).
- ➔ [Local Places for Nature](#) initiatives integrating play with nature. Other funding opportunities including specific community grants can be found [here](#).

Delivery Considerations

Communication with local communities will be important to enable the delivery of play areas that take a calculated approach to risk, and which are integrated with the wider public realm, GBI network, and active travel provisions. This may need to address potential preconceptions about where play should happen, and any associations between play areas and anti-social behaviour.

Co-design is a powerful way of overcoming such challenges and will help increase the likelihood of community acceptance. It is also important to raise awareness among key decision makers to think differently about what makes a quality play space and where play should happen. This will facilitate a new approach to delivering higher quality play.

Other things to consider when setting up a community space including governance, design, maintenance, and the need to obtain planning permission are discussed within our [Community-led GBI Toolkit](#).

Indicative Costs

Formal play spaces vary significantly in scale, nature and design. The below tables set out itemised, indicative costings for delivering play spaces at a range of scales.

Doorstep 100m ²	Unit	Cost	Line Total
3 item moving equipment	item	£2,000	£6,000
2 item static equipment	item	£3,500	£7,000
Natural play features	Item	£5,000	£5,000
Surfacing	m2	£100	£10,000
Boundary	lin m	£130	£5,200
Gates	Item	£800	£1,600
Seating	item	£1,000	£1,000
Bin	item	£800	£800
Allowance for planted areas and landscaping	Item	£5,000	£5,000
Sub total			£41,600
Professional fees, inspection, sign off (15%)			£6,240
Grand total			£47,840
maintenance per annum (10% capital cost)			£4,784
Engineers' inspection per annum			£150
Litter pick per annum			£150
20 yrs maintenance cost			£101,680

Local 400m²	Unit	Cost	Line Total
2 item moving equipment	item	£2,000	£4,000
3 item large moving equipment	item	£4,000	£12,000
2 item static equipment	item	£3,500	£7,000
Natural play features	Item	£5,000	£5,000
Surfacing	m2	£100	£40,000
Boundary	lin m	£130	£20,800
Gates	Item	£800	£2,400
Seating	Item	£1,000	£2,000
Cycle racks	Item	£1,500	£1,500
Bin	Item	£800	£1,600
Allowance for planted areas and landscaping	Item	£10,000	£10,000
		Sub total	£106,300
		Professional fees, inspection, sign off (15%)	£15,945
		Grand total	£122,245
		maintenance per annum (10% capital cost)	£12,224
		Engineers' inspection per annum	£150
		Litter pick per annum	£600
		20 yrs maintenance cost	£259,490

Neighbourhood 1000m ²	Unit	Cost	Line Total
6 item moving equipment	item	£2,000	£12,000
4 item large moving equipment	item	£4,000	£16,000
3 item large static equipment	item	£3,500	£10,500
Natural play features	Item	£15,000	£15,000
Surfacing	m2	£100	£100,000
Boundary	lin m	£130	£32,500
Gates	Item	£800	£2,400
Seating	Item	£1,000	5,000
Cycle racks	Item	£1,500	4,500
Bin	Item	£800	£2,400
Allowance for planted areas and landscaping	Item	£15,000	£15,000
		Sub total	£215,300
		Professional fees, inspection, sign off (15%)	£32,295
		Grand total	£247,595
		maintenance per annum (10% capital cost)	£24,759
		Engineers' inspection per annum	£150
		Litter pick per annum	£1,500
		20 yrs maintenance cost	£528,190

* = Removal these features affords the ranges presented. In actuality, this will be determined by site constraints, risks posed, and meeting stakeholder needs.

Case Study: Natural Playground, Whitestone



Led by [Natural Resources Wales in 2023](#), this project aimed to replace ageing timber play equipment with a new natural exploration space, fostering engagement with nature whilst providing a space for children to play and explore. It included the creation of a spiral mound with a fort accessible via a spiral path, stepping stones, logs, tunnels, secret log circles and balancing logs to encourage exploration and play. The installation of new picnic benches provided further visitor amenities.

Guidance

Supplementary Planning Guidance for integrating Public Open Space within New Development establishes design criteria for providing quality play spaces. Whilst this is intended to support developers when designing development proposals, it can also be used more widely within community-led and/or council initiatives. Our [Community-led GBI toolkit](#) provides an overview of the key considerations needed to deliver GBI at a local level.

[Play Wales](#) provides comprehensive guidance on play, including:

- [Play and risk](#)
- [Play and inclusion](#)
- [Playing and meeting outdoors](#)



Enhancing Tree Cover

In 2020, the Welsh Government announced its commitment to the [National Forest for Wales](#) which seeks to create areas of new accessible woodland, as well as restoring and maintaining existing ones. This is intended to help protect nature and address biodiversity loss whilst also supporting the health and wellbeing of communities. However, identifying appropriate locations to expand tree and woodland cover is crucial to avoiding potential land-use conflicts such as the loss of important habitats or agricultural land. Equally important is ensuring the sustainable management of existing woodlands.

In addition to being a carbon store, woodland and hedgerows provide crucial habitats to enhance biodiversity, providing both food and shelter. Expanding their coverage and increasing both species and structural diversity can help connect habitats together – forming wildlife corridors. In this way, they can play an important role in restoring fragmented habitat networks.

The best woodland for biodiversity is often one with a bit of everything – trees of all ages from seedling to veteran, plenty of different species, damp areas, dark areas, sunny areas, grasses, brambles, spring flowers, dry banks, stony banks and mossy banks.

Why is this Important for Carmarthenshire?

Woodlands and forests cover around one seventh of Carmarthenshire. They provide beautiful landscapes and valuable places for recreation and education as well as a home, food and shelter for a wide range of important species. When implemented thoughtfully, increasing tree cover can help respond to the Climate and Nature Emergencies.

However, there has been a significant reduction in woodlands and hedgerows across the UK – almost half of the hedgerows have been lost in the UK over the last 40 years. There has also been a significant loss of biodiversity and woodland species. Drivers for this include unsustainable management practices, the spread of diseases such as ash die-back, and land use change for development.

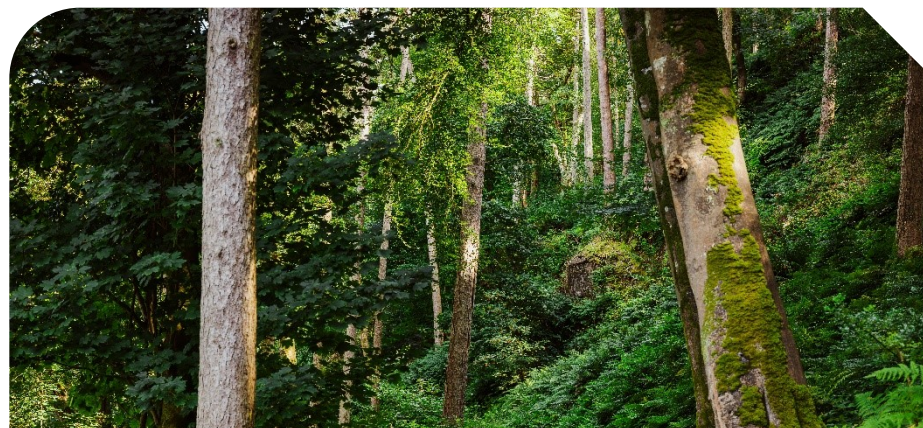
Possible Delivery Mechanisms

- ➔ Collaboration with Town and Community Councils who manage a number of parks and green spaces may provide opportunities to enhance tree cover through tree planting which benefit people and nature.
- ➔ Grass roots, community-led initiatives, third sector organisations, and community groups may be interested in participating in tree planting activities on publicly owned land (with appropriate permissions). They may also be interested in acquiring publicly owned land to develop a woodland through [Community Asset Transfer](#). The [Community-led GBI Toolkit](#) discusses this opportunity further.
- ➔ Integrating street trees into town centre regeneration programs including [Transforming Towns](#).
- ➔ [Local Places for Nature](#) initiatives aim to restore and improve public land to benefit people and nature. They work with a wide range of partners to facilitate approaches led by community involvement including tree planting and woodland maintenance.

- ➔ Woodland creation of CCC's rural land holdings is an important factor in meeting the authority's overall woodland creation target.

Delivery Considerations

When considering enhancing tree cover and planting new trees in an allocated area, it is important to think about what type of trees are best suited to the environment. The Tree and Woodland Strategy can be used to identify preferential species for the area to address local decline in biodiversity. [Keep Wales Tidy](#) and [Community-led GBI Toolkit](#) also have further information on tree planting and selecting the right species. [The Woodland Trust](#) also has further guidance on tree planting.



Case Study: Old Tregib School Sports Ground

The Old Tregib School sports field covers 5.5 hectares of amenity grassland including a number of areas which were not being utilised but were maintained. An adjacent area of council owned farmland was also being grazed by horses however the land was in poor condition. LPfN supported the planting of 16 parkland trees and 300 shelterbelt and small woodland trees, mulch mats to remove pesticide use, accessible provision through the site and a bridge to link to the Woodland Trusts Tregib wood site. They have also initiated a conservation grazing regime for the grassland within the holding.



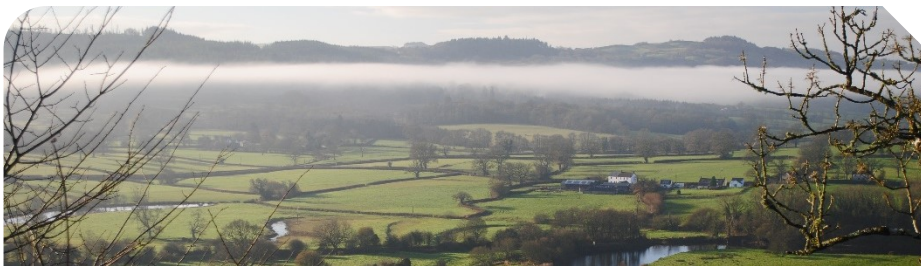
Indicative Costs

Woodland & Tree Cover	Cost
Woodland edge and understory planting tree, stake, guard, mulch one weeding, irrigation (Small and medium scale plantings)	£12 per m ²
Selected standard bareroot, one stake, 1m3 tree pit preparation	£350
Semi mature tree in soft landscape area (25-30cm girth) - double timber stake, soil amendments	£800
Semi mature tree in soft landscape area (25-30cm girth) - underground guying, soil amendments	£1,100

Establishing a Green Setting for Historical Sites

Promoting a more holistic, landscape-led approach to the county's historic environment can help maintain important viewpoints and create an attractive public realm. Where appropriate, maintaining trees and shrubs, and introducing appropriate planting, can help to improve the appearance of heritage assets whilst providing habitat for biodiversity. Quality greenspace within many historic sites can also provide opportunity for quiet reflection, lunch breaks, or play.

Green connections to heritage assets encourage local residents and tourists to visit, enjoy, and learn about the historic environment. As a wider network, heritage routes such as [St Clears Town Heritage Trail](#) or Pontyates Heritage Walk can encourage longer visits that take in all of what the area has to offer.



Why is this Important for Carmarthenshire?

Tourism is of significant importance to coastal and rural towns in Carmarthenshire. It has the potential to bring economic investment and regeneration projects. This is in large part due to the county's rich historic environment and distinctive culture and heritage.

A GBI-led approach to heritage can also help to tell the story of the wider natural landscape, rather than a narrow focus on individual assets. GBI that enhances the setting of historic assets can help attract visitors – drawing them to nearby towns and local business. This can add value for the local economy and help to regenerate market towns as part of the post-Covid recovery efforts. This is supported by the 8 Towns consultation which found significant interest in a GBI-led approach to regeneration and promoting tourism.

Possible Delivery Mechanisms

- ➔ Collaboration with Town and Community Councils who may be interested in managing and maintaining the landscapes surrounding local historical sites.
- ➔ Grass roots, community-led initiatives, third sector organisations, and community groups may also be interested in participating in planting and maintenance of such spaces.
- ➔ [Local Places for Nature](#) initiatives focused on urban/peri-urban and lower economic areas aim to restore and improve public land to benefit people and nature, they may be able to support through advice or funding of such activities which engage the local community.



Delivery Considerations

Maintenance is a key consideration when developing green spaces, consultees from the 8 Towns project noted that maintaining existing green spaces had been a challenge due to funding / financial constraints. When delivering new green spaces, the long-term maintenance and financial implications will need to be considered. CADW must also be consulted when managing or enhancing assets near scheduled structures.

Additionally, projects funded under the Local Places for Nature initiative must adhere to a five-year maintenance plan.

Indicative Costs

Soft landscape	Cost
Woodland Edge & Understory Planting	£12 per m ²
Hedgerow planting	£40 per lin m
SuDS	(see Page 103)
Wildflower meadow	£5 per m ²

Case Study: Parc yr Esgob Bishop's Park Walled Garden, Abergwili

The project aims to restore and develop one of Abergwili's remaining key historical areas, the walled garden. It intended to restore the garden and protect the surviving historical features by:

- Restoring the dipping pond
- Reconstructing the network of paths
- Create a multifunctional space for a range of activities to benefit the community including food production and education.



Exploring Environmental Storytelling

Environmental storytelling is crucial because it helps convey important messages about the environment, sustainability, and conservation in a compelling and engaging way. It can help people understand complex environmental issues, connect with nature, and motivate them to make positive changes in their daily lives. This also applies to the interpretation and education of historical sites which form part of a town's 'sense of place'.

This can be achieved by using interpretation panels to help understand GBI assets, natural processes, or the wider 'story' of the surrounding landscape. It can also take the form of public art. Locations might include along a heritage trail to wetlands, along a coastal path or on a roadside grass verge.

Good interpretation panels are designed for the context. For example, more pictures and less text can be appropriate for children.

Why is this Important for Carmarthenshire?

Carmarthenshire has committed to identify new and existing natural spaces that can be used to enhance connections to nature. The Council will promote these spaces and encourage an understanding of the importance of and a love for nature, which is strongly associated with the culture and history of Carmarthenshire.

It is important to continue the tradition of stewardship and connection to the natural environment in the local area. The natural world has influenced the names of farms, houses and streets in Carmarthenshire e.g. Cwrt-y-Cadno (Cadno = fox), Cwmysgyfarnog (ysgyfarnog = hare), Cilyblaid (blaid = wolf), Dôl-Haid Isaf (dôl = meadow; haid = barley). While some of these species and habitats are still common, others are now rare or extinct from the local area.

There is also an opportunity to promote and share the natural world which makes Carmarthenshire's landscape so unique.

The 8 Towns research highlighted significant interest in utilising environmental education and awareness to improve

stewardship and understanding of NbS. It was felt that improved education would be beneficial to young people as well as the general public to support their understanding of environmental efforts.

Possible Delivery Mechanisms

- Collaboration with education and outdoor services as well as third sector stakeholders provide opportunities to maximise engagement by ensuring the intervention is best placed.
- [Local Places for Nature](#) are committed to enhancing the connection between people and nature, they may be able to provide support through advice or funding for activities and interventions which engage the local community.

Delivery Considerations

- Engagement efforts must consider accessibility and inclusivity, ensuring interventions are appropriate for the intended audience.
- The long-term costs associated with signs and interpretation panels will predominantly be linked to replacement due to vandalism and weathering which must be monitored.

- It is important that any information provided is kept up to date therefore if QR codes or website links are used, it is vital that the platforms linked are maintained for the duration of the intervention.

Indicative Costs

Item	Cost	Maintenance	Notes
Interpretation trail (interpretation boards along a defined route, manufacture, installation).	£18k - £24k (depending on size and vandal proofing) per km	Whole life replacement cost: assume 10-15% capital cost per annum.	Minimal maintenance - except for monitoring of vandalism and weathering.
Directional signage.	£180 - £901 each	Whole life replacement cost: assume 10-15% capital cost per annum.	Minimal maintenance - except for monitoring of vandalism and weathering.

Case study: Local Places for Nature's bench planters

Local Places for Nature have installed a number of bench planters around Carmarthenshire that integrate seating with native wildflowers, habitat features and interactive signage. The educational signs display a QR code which is linked to the Local Places for Nature platform, where the public can find information on environmental efforts being undertaken within the county as well as complete a short survey about their experience of nature to better inform future work.



Finding Spaces for Community Growing

Community growing spaces are a great way to create social spaces where neighbourhoods can come together and take part in sustainable and healthy food growing. Such schemes can take many forms from growing vegetables, fruiting trees, or pollinator-friendly herbs, in pots, raised wooden planters, or directly into the ground. Transforming disused strips of land at the edges of public parks, school playing fields, run-down or other underused spaces are also ways of generating civic pride in an area. This can create a sense of belonging and engagement amongst the community. Alternatively, temporary planters are a good way to begin a community growing initiative, if a permanent space is not immediately available.



Why is this Important for Carmarthenshire?

Expanding opportunities to access growing spaces means re-assessing the traditional uses of space in our towns and villages and prioritising opportunities for recreation and outdoor community activities, alongside fostering a connection with nature. Social activities that get us outside in nature are now being recommended by health services to improve physical health and mental health as part of schemes called 'social prescribing' or 'green prescribing'. Social prescribing outdoor initiatives have been piloted in Llanelli with promising results. They suggest there would be benefits to community well-being if growing opportunities were available across the county.



Possible Delivery Mechanisms

- ➔ Collaboration with Town and Community Councils who manage the majority of allotment sites within Carmarthenshire.
- ➔ The promotion of potential funding opportunities such as via developer contributions if meeting the demand created by a nearby development. Other funding opportunities including specific community grants can be found [here](#).
- ➔ Grass roots, community-led initiatives. Third sector, local businesses, and community groups working together to transform disused public assets. These can acquire publicly owned land or buildings through [Community Asset Transfer](#).
- ➔ [Local Places for Nature](#) can offer advice and support for initiatives, particularly when integrating community growing and education.



Delivery Considerations

Communication and engagement with local communities are fundamental to successful, integrated community growing spaces which are well situated to address need, support the GBI network, and link active travel provisions. Co-design and collaboration will help ensure this is achieved and increase the likelihood of long term, community buy in.

Other things to consider when setting up a community space including governance, design, maintenance, and the need to obtain planning permission are discussed within our [Community-led GBI Toolkit](#).

Indicative Costs

Public Open Space	Cost
Accessible greenspace	£35 per m ²
Community growing space (not including any additional facilities such as storage)	£12 per m ²

Case Study: The Climate Change Garden

The Climate Change Garden is a scheme which has been run for two years to develop productive growing spaces and support the 'field to fork' model in schools across Carmarthenshire. The schools have been trained and supported to establish productive growing spaces in their grounds.



Greening the Places Where People Live, Work & Visit

‘Greening’ often refers to maximising the green (or blue) features within the built environment. Greener neighbourhoods and town centres can help to create a healthier environment for local communities. However, it can also improve the visual appeal of high streets – in turn attracting investment for local businesses. GBI features can include:

- ➔ Planting trees and shrubs along key routes to connect paths and streets.
- ➔ Quality greenspaces, in the right places (e.g., removal of parking and replacement with community-led pocket parks).
- ➔ Living walls and other green elements to retrofit buildings.
- ➔ Better management of amenity grassland to encourage pollinator friendly flowering plants

Why is this Important for Carmarthenshire?

Creating healthier, walkable and attractive towns can promote investment and improve sense of place. Centred on placemaking, the Welsh Government publication [Building Better Places \(2020\)](#) states that repurposing outside spaces in town centres will be crucial for revitalising Welsh town centres. Particularly as they struggle with the effects of Covid-19. It suggests that traditional retailing demand will be low and that, in order to bring life back to towns, there must be creative uses of open spaces. This might include creating new open spaces on empty plots and car parks, or using pavements, highways and urban greenspaces to shape engaging and sensory spaces. These features will both help businesses operate, create attractive walkable destinations, transform air quality and boost physical and mental well-being – highlighted as a key challenge in the county.

Possible Delivery Mechanisms

- ➔ Public Open Space Provision integrated within new development. Proposals for all new residential developers of 5 or more units will be required to provide this in accordance with Open Space Standards.
- ➔ Collaboration with Town and Community Councils who manage a number of parks and green spaces within Carmarthenshire. Funding via developer contributions if meeting the demand created by development.
- ➔ Grass roots, community-led initiatives, third sector organisations, local businesses, and community groups working together to transform disused public assets. These can acquire publicly owned land or buildings through [Community Asset Transfer](#).
- ➔ Integrating greenspace into town centre regeneration programs including [Transforming Towns](#).
- ➔ [Local Places for Nature](#) initiatives working to enhance the connection between people and nature. Other funding opportunities including specific community grants can be found [here](#).

Delivery Considerations

Planning is key when developing greening interventions, it is important to ensure the right kind of intervention is delivered for the community and the environment. Thus, it is important to consult with a number of stakeholders including the public to ensure the intervention will have maximum benefit.

Indicative Cost

Trees in Hard Landscape	Cost
Tree to existing paved area - existing soil, standard tree 30-35cm girth	£1,425
Tree pit with cellular load support cells, underground guying, irrigation system, existing soil enriched 30-35cm girth 7.5 tonne traffic weight limit	£3,425
Tree pit with cellular load support cells, underground guying, irrigation system, existing soil enriched 30-35cm girth 40 tonne traffic weight limit	£13,500
Removal of existing soil and replace with imported topsoil if required (30-35cm tree)	£325 per m ²
Urban tree soil to individual tree pits	£175 per m ³

Case Study: Manor Road Day Care Centre

Local Places for Nature have worked with staff and clients at the day centre to plant a mixed tree orchard and native hedgerow along with wildflower/herb bench planters and rubber grass mats for wheelchair access. Whilst the site is fenced, it is also accessible to the public as a community space.



Green roofs	Cost
Extensive green roof	
Flat roof system, 90mm depth, sedum mat or plugs.	£335 m ²
Biodiverse green roof	
Flat roof system, 150mm depth, planted with wildflowers.	£285 m ²
Intensive green roof	
Up to 400mm deep growing medium, benches, bins, paving flags on pedestals, turf, shrubs, some trees. Waterproof membranes, additional drainage infrastructure and containment not included.	
Lower specification (dependent on depth, planting and level of public access features)	£235 m ²
Higher specification (dependent on depth, planting and level of public access features)	£600 m ²

Promoting Sustainable Drainage (SuDS)

Depaving involves removing sections of hard paving, such as concrete and tarmac. This is then replaced with a permeable surface such as gravel or soil. Rain gardens are a tool for slowing and filtering rainwater around our homes, community spaces, schools, car parks etc. Once captured, water is stored and slowly released into watercourses or sewers – either via the ground, by ‘evapotranspiration’ from plants, or other storage methods. These types of features are often referred to as SuDS. Welsh legislation since 2019 requires that all new developments include SuDS features. It is important these SuDS perform multiple roles beyond flood risk mitigation (including biodiversity) and are also retrofitted into existing spaces.



Why is this Important for Carmarthenshire?

Drainage systems in older towns can struggle to manage surface water run off sustainably, particularly as the residential population, roads and hard surfacing increases.

Hard surfaces like rooves, tarmac and paving slabs block water from filtering into the soil, directing increased volumes of water into the sewer system.

Older areas of Carmarthenshire’s towns often have combined sewers – where a combination of rainfall, foul drainage, and sometimes streams, flow within the same pipes. This pushes a much greater volume of water through the sewage treatment works and can lead to them struggling to cope in periods of high rainfall, leaving to river and sea pollution.

Most wildlife also finds it hard to make a home in these hard surfaces, so a rain garden can enhance local wildlife connections and biodiversity. Nature-based solutions to flooding such as these are a key priority for the stakeholders consulted for this Strategy. Find more information at [SuDS Wales](#).

Possible Delivery Mechanisms

- ➔ Natural resources Wales provide a range of technical resources which are relevant to SuDS including flood risk management, water quality and biodiversity. They can support projects that integrate natural flood management and habitat restoration through SuDS implementation and are often involved with the evaluation of drainage strategies.
- ➔ Welsh Government provides funding for sustainable water management projects through a range of grant schemes.
- ➔ Dwr Cymru is a major partner and can offer technical support for SuDS projects especially in areas where surface water and foul drainage interact. This is to reduce pressure on wastewater treatment facilities through sustainable management of surface water.



Delivery Considerations

It is important for developers to consult with the Pre-Planning Application services as early as possible and undertake discussions with SAB and LPA simultaneously. This will ensure the most cost effective and viable SuDS scheme is designed. They should be consulted throughout and kept up to date with all decisions to aid project success.

Different types of SuDS intervention will also require varying levels of maintenance which will require additional resource. For example, raingardens may require a level of monthly maintenance to remove litter and debris and ensure inlets and outlets are clear. It is important to account for such requirements and ensure the maintenance needs can be met.

Case Study: Dŵr Cymru [Rainscape project](#)

Dŵr Cymru/Welsh Water's [Rainscape project](#) in Llanelli is part of Dŵr Cymru/Welsh Water's approach to managing surface water and reducing sewer flooding. It separates rainwater from the existing system, slowing down the rate it enters the network and redirects it to local rivers and watercourses. They have completed 36 projects in the Llanelli area since the project was launched in 2012.



Indicative Costs

Permeable Paving	Cost
Permeable pavers	
Permeable pavers SuDS compliant (pedestrian)	£150 per m ²
Permeable pavers SuDS compliant high spec (vehicular / conservation grade)	£215 per m ²
Cellular Paving	
Grass Crete in situ 150mm thick, drainage, filled with graded topsoil, seeded with rye-based mix	£115 per m ²
Grass Reinforcement	
Plastic geogrid soil / seeded or filled with aggregate	£40 per m ²
De-paving	
Soft works in hard landscape areas (metal edging, soil, seeding)	£95 per m ²

SUDs (at scale)	Cost
Rain gardens (planting, kerbs, inlets, drainage or attenuation	

voids - e.g. to edge of highway / footway)	
With aggregate / stone filter medium for drainage	£200 per m ²
With plastic crates to create voids	£300 per m ²
Swales / attenuation ponds	
Vegetated swales with drainage, connecting drainage pipework as part of a larger system	£115 per m ²
Natural pond with EDPM with underlay (small- e.g. 500m ²)	£55 per m ²
Natural pond with EDPM with underlay (large- e.g. 2000m ²)	£40 per m ²
Natural pond with no liner using site clay (small- e.g. 500m ²)	£35 per m ²
Natural pond with no liner using site clay (large- e.g. 2000m ²)	£25 per m ²
Constructed shallow seasonal wetlands / flood storage in urban areas (Graded soil and bunds, herbaceous native containerised planting)	£25 per m ²
Constructed shallow seasonal wetlands / flood storage in urban areas (Graded soil and bunds, seeded with native species)	£10 per m ²
SUDs (Individual buildings)	
Large domestic water butt	£80
20,000 Litre rainwater tank	£3,000
20,000 Litre underground rainwater tank	£10,000

Protecting & Connecting Coastal Places

Reconnecting to the coast is a tool that supports sustainable human use of the coast, whilst protecting its nature conservation and climate resilience value.

This will require proactive management of coastal processes to restore and connect the habitat for birds, fish and other species.

Soft engineering management and the use of natural defences are a more sustainable and natural approach to managing coastal erosion and flooding than hard infrastructure. This approach is supported by [‘Future Wales’ – the National Plan to 2040](#).

The educational component of this tool is key. The Blue Marine Foundation highlights how, despite a growing global appreciation of the ocean and the challenges it faces, many people are disconnected from truly understanding it. This limits its potential value.

Interventions should carefully manage the balance between people, nature and climate. Measures might include access

control (delineated cycleways, boardwalks, restrictions on dog walking etc), education/interpretation boards and engagement. These can be used to steer people away from the most sensitive habitats.

This approach would go beyond the individual existing marine designations to deliver a more holistic and integrated approach to the stewardship of Carmarthenshire’s coastline.



Why is this Important for Carmarthenshire?

The [State of Natural Resources Report](#) in 2020 identified the potential for increased coastal erosion in Wales. This would affect beaches, intertidal areas and other coastal features. Already, a large number of properties are at risk of flooding from rising sea levels. For coastal communities, managing tidal flood risk is crucial.

The coastal margin is particularly important for Carmarthenshire's wildlife. Partners must ensure that sand dune environments are re-vitalised and connected and that cliff-top grasslands do not become fragmented and are appropriately grazed. The saltmarsh habitat must also be sensitively managed.

Beyond these benefits, the coast in Carmarthenshire is also a key but underused 'placemaking' asset that already provides significant value to the visitor economy. However, it could do more – through public realm improvements, green walking and cycling links and better connections to Carmarthenshire's towns and other heritage assets.

The [Southwest Wales Area Statement](#) recommends expanding the level of saltmarsh and improvements to sand dunes within designated SACs such as Carmarthen Bay and Estuaries. This could also provide opportunities for coastal habitats to be valued and responsibly enjoyed by communities and visitors.



Possible Delivery Mechanisms

- ➔ Public Open Space Provision integrated within new development. Proposals for all new residential developers of 5 or more units will be required to provide this in accordance with Carmarthenshire County Council's Open Space Standards.
- ➔ Collaboration with Town and Community Councils who manage the majority of outdoor play spaces within Carmarthenshire. Potential funding via developer contributions if meeting the demand created by a nearby development.
- ➔ Grass roots, community-led initiatives. Third sector, local businesses, and community groups working together to transform disused public assets. These can acquire publicly owned land or buildings through [Community Asset Transfer](#).
- ➔ Integrating play into town centre regeneration programs including [Transforming Towns](#).
- ➔ [Local Places for Nature](#) initiatives, particularly when integrating play with nature. Other funding opportunities including specific community grants can be found [here](#).

Delivery Considerations

Communication with local communities will be important to promote community buy in and promote cohesive regeneration of coastal places. Consultation may need to address potential preconceptions about the project. Co-design is a powerful way of overcoming such challenges and will help ensure long-term stewardship of the area.

It is also important to raise awareness among key decision makers to think differently about coastal protection.





Indicative Costs

Item	Cost	Maintenance	Comments
Benches / Site furniture.	£901 - £1,2012	Whole life replacement cost: assume 10-15% capital cost per annum.	Minimal maintenance - except for monitoring of vandalism and weathering.
Informal mixed-use path (self-binding gravel - 1.2 wide).	£90 - £180 per lin m	Whole life replacement cost: assume 10-15% capital cost per annum.	Fairly limited maintenance for many years, assuming no erosion from the sea.
Recreation impact study.	£72,1123 - £120,188		

Case Study: Controlling Aquatic Invasives

The aquatic invasive plant, Parrot's Feather has become an increasing issue at sites near Llanelli. Welsh Government Biodiversity grant funding through Local Places for Nature is helping to start the management at two sites; Dafen Pond and Pembrey Canal. Special care was taken to being removing the invasive plant from the bodies of water, especially Pembrey which is home to the protected water vole. This will be continued over the coming years to try and eradicate the invasive species.



Providing Green Routes for Active Travel

Green walking and cycling routes should connect people to key destinations without a car along 'greenways'.

This should encourage 'modal shift' toward more active modes, by creating pedestrian and cycle-friendly routes, both for recreation and short practical (A to B) trips around towns.

A greenway is a **traffic**-free route that is attractive, generally well separated from vehicles and continuous. It should look to use existing permissive routes where possible. For maximum connectivity, it should be planned strategically and 'join the dots' between key destinations, tourism and heritage assets – including the Millennium Coastal Path.

Active, low **traffic** green routes through neighbourhoods and towns can also significantly improve areas of poor environmental air quality. As active travel infrastructure requires altering the layout of public space, this offers a valuable opportunity to take a GBI approach and integrate high-quality linear urban greening features.

Re-shaping the environment in this way can encourage people to walk and cycle as part of their daily lives. This might be by "greening" the school run, making shopping trips easy by bike, e-bike or cargo bike, or providing opportunities for social encounters in streets.

Why is this Important for Carmarthenshire?

Walking and biking trails criss-cross Carmarthenshire's rural landscape. They attract cyclists and walkers from around the UK to visit the county's beautiful countryside.

However, more needs to be done to make the trails greener and safer. Work is also needed to connect the trails through Carmarthenshire's towns and to shape much more walkable town centres. This is backed up by the Welsh government's publication Building Better Places (2020).

This would benefit local residents, helping them access the surrounding landscapes as a well-being resource. It would also showcase the range of activities for visitors to do "off the beaten track" in Carmarthenshire's welcoming villages and colourful market towns.

This Strategy establishes that there are significant variations in health and well-being across southwest Wales. There are also low levels of walking and cycling.

Green walking and cycling routes are an important step to increase the number of commutes made by bike and on foot and to provide more equal access to services.

The Tywi Valley Path is currently underway. It follows the former railway track between Carmarthen and Llandeilo, transforming it into a leisure and visitor attraction. Once finished, it will provide a 16-mile traffic free pathway for walking and cycling that runs almost adjacent to the River Tywi.

Possible Delivery Mechanisms

- ➔ Connection to active travel routes should be implemented into new developments and should be a key consideration.
- ➔ Collaboration with Town and Community Councils will be crucial as they may own or manage some of the spaces included in the proposed active travel route.

Delivery Considerations

Communication with local communities will be important to enable the delivery of active travel routes which are integrated into the wider communities. This may help address potential preconceptions about the proposed routes and help reduce anti-social behaviour. Co-design is a powerful way of overcoming such challenges and will help increase the likelihood of community acceptance. Other things to consider when establishing an active travel route include maintenance, and safety by design.

Indicative Costs

Active Travel Corridors	Cost (per km)
Integrated routes / upgrades to existing highways / footways	£0.3m - £0.5m
Active travel routes fully segregated from roads	£1.2 - 1.5m
Partially segregated (a mixture of on / off road routes)	£0.8m - £1m
Enhancements / upgrades to existing public rights of way - surfacing	£150-180k
Route signage scheme	£15-20k

Case Study: Pontyberem Park

The creation of a new shared use path throughout Pontyberem park is a key connector for the local community. The path connects the local school to the Memorial Hall enabling members of the public and school children to safely travel, promoting active travel methods as well as improving accessibility.



Restoring Blue Corridors

As a NbS, and natural flood management (NFM) technique river corridor and wetland restoration can provide greater resilience to the effects of our changing climate. The multiple benefits provided by this tool including reducing flood risk (by slowing the flow of water through wetlands), filtering water and capturing carbon. It can also improve and connect the habitat for a wide variety of species from plants to insects, amphibians, reptiles, fish, birds and mammals. Wetland creation also provides opportunities for encouraging recreation and providing valuable access to natural landscapes and waterscapes. Techniques that encourage minimal intervention and self-recovery of habitats by natural processes should be prioritised, rather than artificial structures or modifications.



Why is this Important for Carmarthenshire?

In Carmarthenshire, climate-related changes in weather patterns are significant concerns. These include tidal and fluvial flooding. As a result, we need to rethink the management of our coastal and riverside communities to reduce flood risk and improve biodiversity. Carmarthenshire is an area where agriculture is the dominant land-use in rural areas. However, the growth and intensification of farming has not been matched by an equivalent investment in water and river corridor management. Some of Carmarthenshire's rivers are suffering from high nutrient concentrations, particularly phosphates. This results from a combination of farming fertilisers and sewage treatment works, amongst other factors. Wetlands offer an opportunity to capture these nutrients and return them to the soil.

The natural beauty of Carmarthenshire's rivers is also an attraction for tourists and an important part of local life and sense of place. Protecting and enhancing river corridors and reconnecting towns to their blue corridors will help to maintain this important resource.

Delivery Considerations

There are a number of delivery considerations which should be discussed prior to intervention. Sites should be selected carefully based on ecological importance and existing biodiversity. Any interventions should enhance habitats and allow species to move freely across the corridor. Incorporating strategies which make the blue corridor more resilient to climate change impacts such as flooding, and drought should be prioritised. Public awareness and education are key to involving local communities from an early stage in design, monitoring and data collection which can support stewardship of the project.



Possible Delivery Mechanisms

- ➔ Collaboration with local Town and Community Councils.
- ➔ Engagement of the agricultural sector to promote sustainable land use along river corridors and pollution reduction through reduced run off from agricultural land.
- ➔ Natural Resources Wales are a key partner in managing water resources, improving biodiversity and restoring natural habitats. They provide a number of important services including technical assistance, funding and management.
- ➔ Local conservation groups may be interested in supporting efforts to restore blue corridors. For example, the angling community have undertaken INNS removal.



Indicative Costs

Wetland & River Corridors	Cost
Daylighting of watercourses / re-meandering of watercourses (costs significantly variable depending on location / existing engineering.	£500-£1,500 per lin m
Creation of riffles bars and point bars using gravel beds	£105 per m ²
Restoration of river banks to create wildlife habitats	£35 per m ²
Revetment establishment / stabilisation / coir rolls to river banks	£180 per lin m
Leaky dam installation	£500 - £1,000
Interpretation trail	£15-£20k per km

Directional signage	£150-£175
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Case Study: Teifi Demonstrator Catchment Project

NRW has launched a multi-year initiative aimed at improving water management in the Teifi catchment. This has including significant stakeholder consultation including farming unions and Local Authorities. The project seeks to think differently and use innovative solutions with focus on how value and additionality can be demonstrated. It is hoped that the project will develop a ‘best practice’ model which can be replicated elsewhere.



Rethinking the Functions of Parks & Grass Areas

Too often, parks and green spaces are designed with a single function in mind. Particularly given the scarcity of open space, there is a need to start delivering more multifunctional open spaces. Those functions might include biodiversity value, energy production, natural play, recreation and floodwater storage.

These green spaces are found at various scales – from Country Parks to roadside verges and roundabouts. It also includes school grounds and privately owned spaces such as golf courses and private gardens.

One key method of increasing biodiversity value can include changing the mowing regimes within existing grass areas to allow for more natural habitats with native wildflowers. This can provide habitats for insects, birds and mammals and help to address the ongoing decline in pollinators.

By simply leaving grass to grow tall by changing mowing regimes, reducing the use of fertilisers and pesticides, grasses and wildflowers can be encouraged to flower and seed open grassy spaces.

There is also increasing attention on the use of green space for water storage in areas of high flood risk, as part of a strategy to create ‘sponge towns’ as a nature-based solution (NBS) to climate resilience.



Why is this Important for Carmarthenshire?

Carmarthenshire's existing green spaces can do more to provide multiple functions that would strengthen the GBI network. Flood risk in Carmarthenshire is a significant concern. This means that the county needs to identify which parts of the land can be used to soak up floodwater (SuDS) in order to be more resilient to the impacts of climate change (see "Depave and create rain gardens" tool). Biodiversity in Carmarthenshire is another significant concern. In particular, the 2013 Action Plan for Pollinators in Wales highlights that bee and pollinator health and declining populations have been increasingly highlighted as a cause for concern. This is largely driven by land-use intensification, habitat destruction and fragmentation, disease, the use of agro-chemicals, and climate change. Restoring the meadow and wildflower habitats would create vital 'biodiversity corridors' as well as adding a splash of colour to urban areas, contributing an improved 'sense of place'. Carmarthenshire County Council has already carried out some work to support pollinators, including on 'late-cut' highway verges. There is potential for this approach to be expanded more widely.

The work of the Bumblebee Conservation Trust, together with local residents, at Sandy Water Park in Llanelli has enhanced local green space for pollinators.

Delivery Considerations

When implementing interventions such as changing the mowing regimes it is important to share information and raise awareness of the practices and rationale behind them with the public to ensure they support the intervention. Some interventions will require consultation and approval from the LA's highways department to ensure the proposed intervention aligns with road safety requirements.



Possible Delivery Mechanisms

- ➔ Collaboration with Town and Community Councils who manage some parks and green areas.
- ➔ Grass roots, community-led initiatives. Third sector, local businesses, and community groups working together to transform disused public assets. These can acquire publicly owned land or buildings through [Community Asset Transfer](#).
- ➔ [Local Places for Nature](#) initiatives, particularly when integrating play and education with enhancing nature. Other funding opportunities including specific community grants can be found [here](#).

Indicative Costs

Item	Cost	Maintenance	Comments
Creation of species rich grassland / meadow.	£2,404-£8,413 per ha	£721- £962 per ha	Costs associated with limited mowing regime.
Interpretation board.	£3,005	Whole life replacement cost: assume 10-15% capital cost per annum.	Minimal maintenance except for monitoring of vandalism and weathering.

Case Study: Planting Hedgerows

LPfN have been working to plant new hedgerows across the county which have been planted to create a natural buffer from the view and noise pollution of nearby roads. They are also great habitats for biodiversity and require reduced maintenance.

