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Limerick City and County Council

Limerick City and Environs Green and Blue Infrastructure Strategy

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Limerick City & County Council

ATLANTIC EDGE
LIMERICK
EUROPEAN EMBRACE

Contents

Chapter 1
Introduction

Limerick – A Green City Region on the Waterfront

"By 2030, Limerick will become a Green City Region on the Shannon Estuary connected through people and places. This will be achieved through engagement, innovation and resilient urban development and self-sustaining rural communities".

Strategic Vision - LDP

In 2022, Limerick City and County Council (hereafter 'the Council') published its first county-wide Limerick Development Plan (LDP) (2022-2018). This Plan will shape the development of the City and County over the next six years and beyond, providing a framework for sustainable development, addressing global challenges of climate action, and seeking to create a self-sustaining economy and inclusive society.

The LDP has established an ambitious and collective vision for Limerick in its transition to a carbon neutral society, with the aim to become **"a Green City Region on the Shannon Estuary connected through people and places".**

The achievement of this vision will require collective action across the public and private sector and with the wider community. It will also require new approaches to low carbon planning and place making in order to create a vibrant city centre and develop neighbourhoods where people can live and work, and have access to services and amenities. This Green and Blue Infrastructure (GBI) Strategy (hereafter the GBI Strategy) has been prepared for Limerick City and Environs **(Figure 1.1**) as a key document, underpinned by the Strategic Vision and Key Ambitions (**Figure 1.2**) outlined in the LDP.

Limerick City has a majestic setting on the River Shannon and a wealth of natural assets to support the creation of new green and blue destinations and amenities for visitors and local people. This GBI Strategy seeks to ensure the City can realise the potential of these assets and build on the legacy of Limerick's European Green Leaf for 2020, awarded in recognition of the City's commitment to better environmental outcomes.

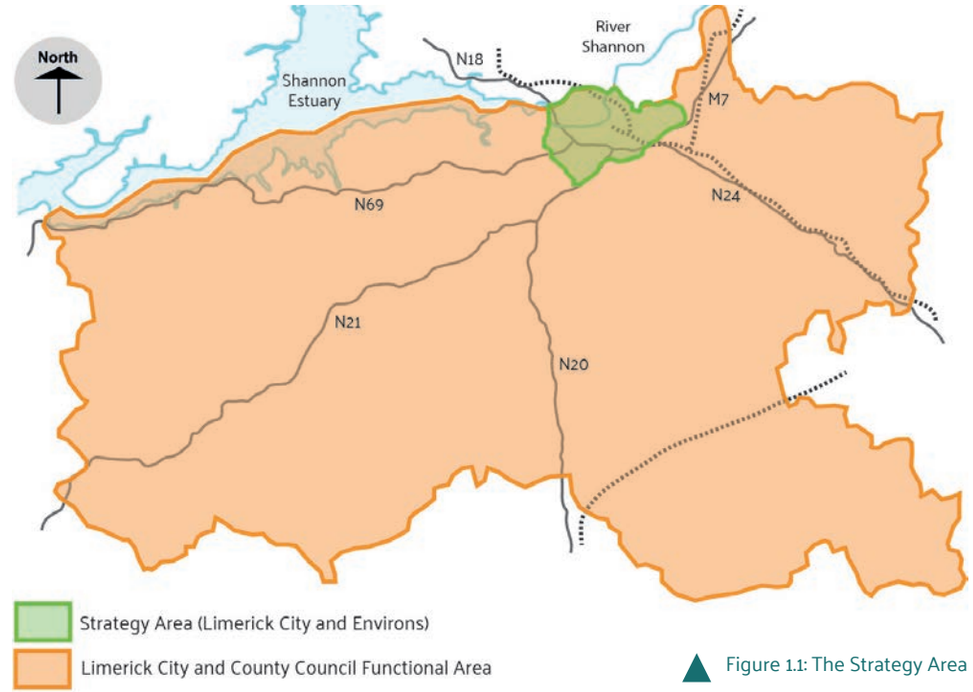
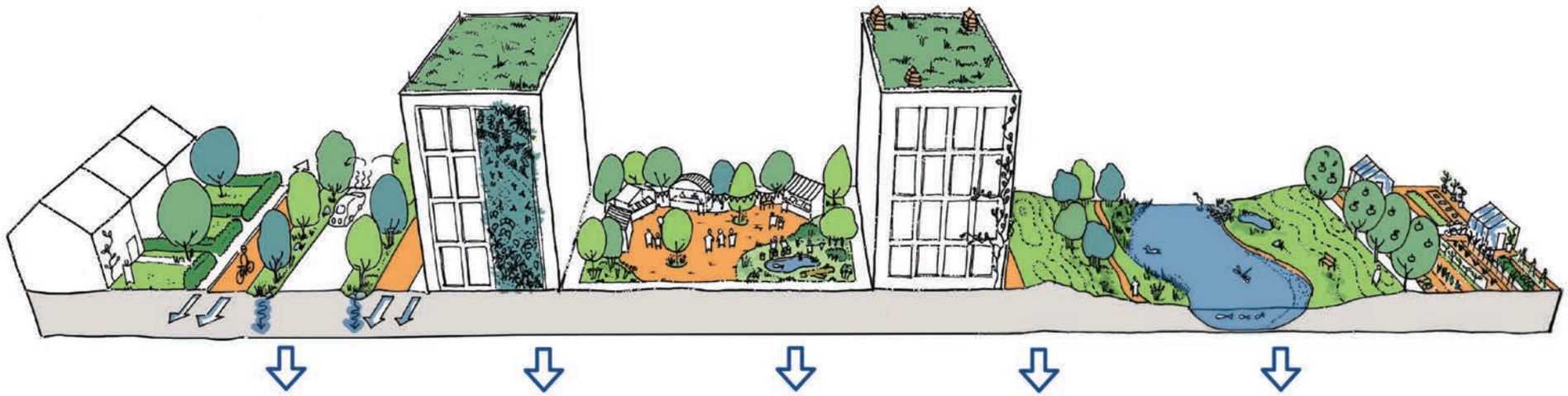


Figure 1.1: The Strategy Area

Figure 1.2: Key Ambitions within the LDP

The aim of the GBI Strategy

The overarching aim of the GBI Strategy is to inform and guide the planning and management of a network of multi-functional green and blue spaces, helping drive the transition to a low carbon and climate resilient society.



Environmental, societal and economic benefits

At the core of the Strategic Vision in the LDP is cohesive and sustainable communities where Limerick's cultural, natural and built environment is protected. The GBI Strategy will support the Council to realise its ambitions of developing a Green City Region which embraces the River Shannon and promotes a vibrant waterfront.

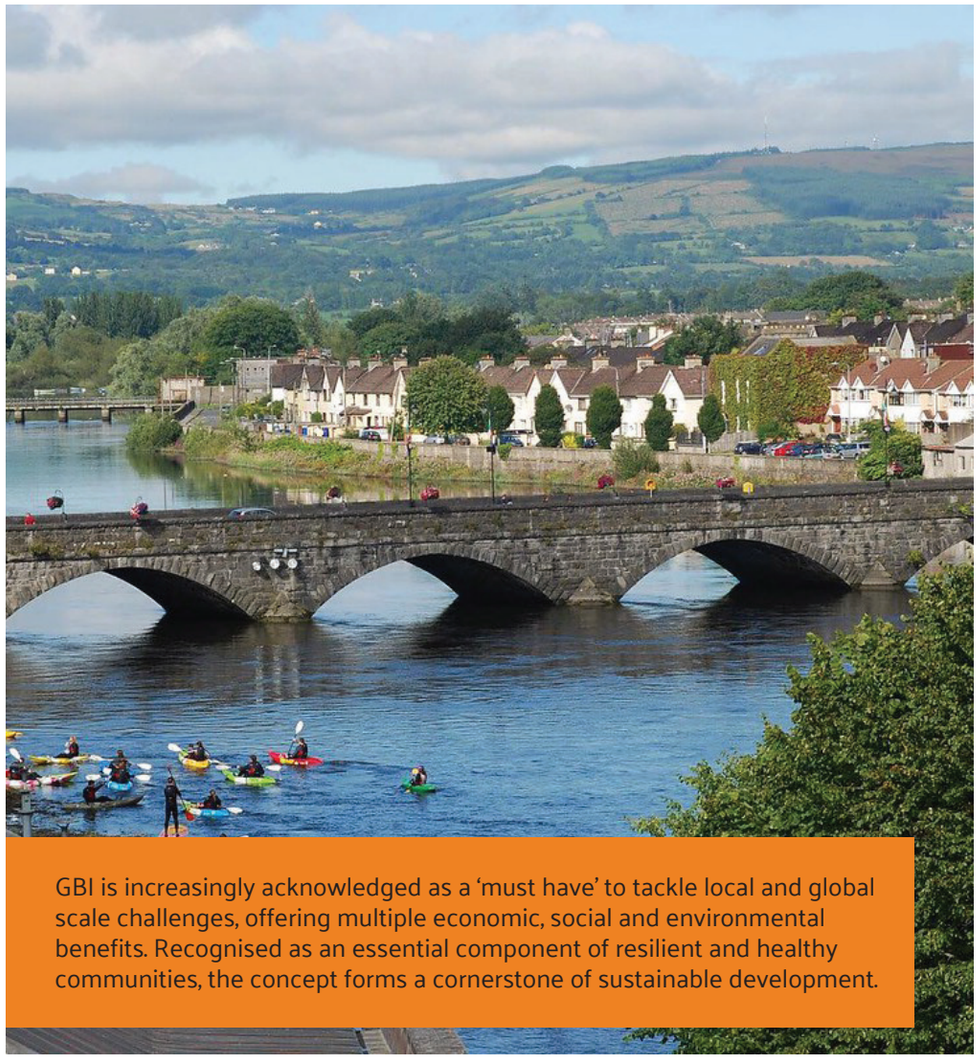
Chapter 1 of this report sets out the policy context for GBI, with **Chapter 2** providing an overview of the benefits and drivers of GBI. **Chapter 3** outlines a series of high-level objectives for delivering the GBI network and **Chapter 4** sets out the action programme of projects and initiatives to be delivered on a partnership basis over the short, medium and long term.

Even though the Strategy is focussed on the Strategy Area identified in **Figure 1.1** the principles, ambitions and guidance it contains are applicable to the wider county.

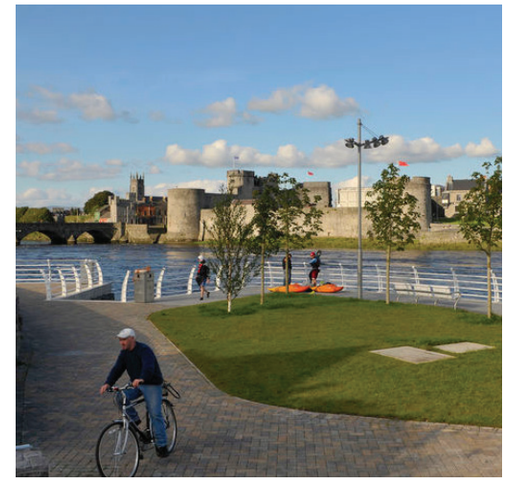
Figure 1.3: Overarching aim of the GBI Strategy

What is GBI?

GBI describes the network of natural and semi-natural spaces and corridors in a given area. These include open spaces such as parks and gardens, but also allotments, woodlands, fields, hedges, lakes, ponds, playgrounds, coastal habitats, footpaths, cycle routes and water courses. These GBI assets are all common features throughout Limerick and the wider Strategy Area.



GBI is increasingly acknowledged as a 'must have' to tackle local and global scale challenges, offering multiple economic, social and environmental benefits. Recognised as an essential component of resilient and healthy communities, the concept forms a cornerstone of sustainable development.



1. 2. 3. 4. 5.

1. Kayaking on the River Shannon
2. People's Park, Limerick
3. Walkway along the River Shannon
4. View from Clancy's Strand
5. Baggot Estate Nature Park

What is GBI?

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

Elements of the built environment
Road verges, street trees, private gardens, amenity space and urban greening

Managed and natural green spaces
Public parks, open space, allotments and nature conservation sites

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

Figure 1.4: Components of GBI

Crucially, GBI provision is not limited to traditional green spaces such as parks. The term can relate to various interventions to thread nature into streetscapes or provide corridors of connectivity between GBI features known as 'assets' (see **Figure 1.4**). Above all, GBI is defined by its multi-functionality. A single GBI asset can deliver a range of benefits to people (linked to both physical and mental well-being), biodiversity and wider environmental functions of the landscape.

GBI may be used to drive the creation of high quality, attractive and functional places which provide a setting for day-to-day living. In addition, an intact GBI network is capable of addressing the negative impact of habitat loss and fragmentation by promoting habitat creation, enhancement and connectivity (on site as part of development or through biodiversity off-setting). A well connected network of green spaces plays an important role in climate change resilience and adaptation, optimising the absorption and storage of carbon in soils and vegetation, contributing to reduction of local temperature rise, as well as alleviation of flood risk.

Why is GBI important to Limerick?

The focus for future delivery of GBI in the Strategy Area will be to ensure benefits are provided where they are most needed and global challenges can be addressed at the local scale. This includes identifying priority locations for:

- Improving health and well-being outcomes - '**Healthy Spaces**';
- Climate adaptation – '**Resilient Spaces**';
- Ecological improvements – '**Wilder Spaces**'; and
- Recreation, income generation and regeneration – '**Destination Spaces**'.

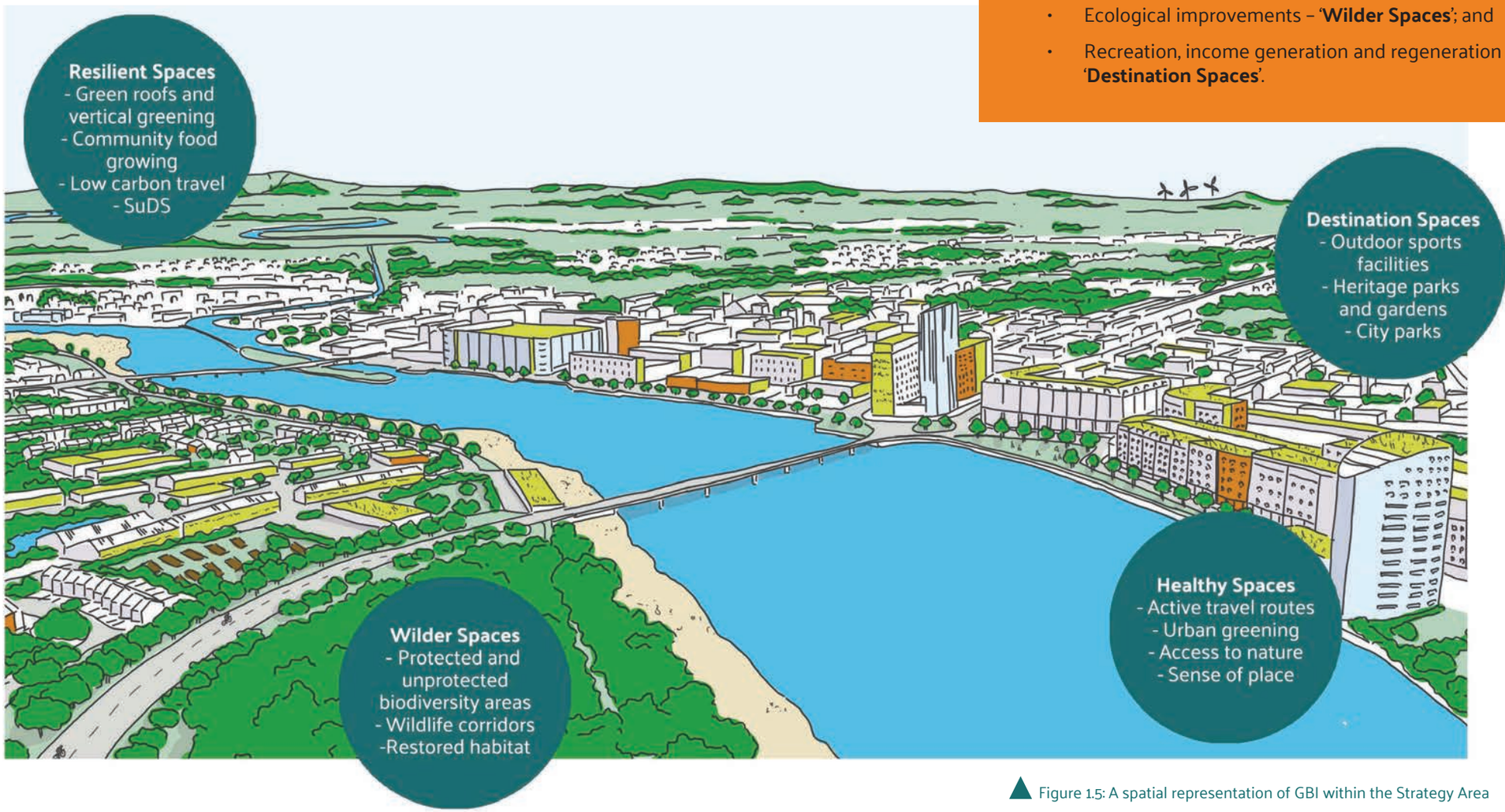


Figure 1.5: A spatial representation of GBI within the Strategy Area

The Living Bridge crossing the River Shannon

Policy context

National

Project Ireland 2040 National Planning Framework (NPF)[1] and the National Development Plan (NDP)[2] recognise the value of planning for GBI, such as greenways, blueways, and Nature-based Solutions (NbS) (e.g., Sustainable Drainage Systems (SuDS)) in the same way as other infrastructure, to provide long term benefits. The NPF identifies the importance of GBI in placemaking, providing recreational opportunities, strengthening the economy, providing benefits for health and well-being and acting as a carbon sink. The role GBI plays in assisting with adaptation and mitigation to climate change, aiding improvements in air quality and water quality, and providing benefits to biodiversity is also recognised in the NPF.

At the national level, a range of policies and strategies highlight the important role of GBI. For instance, the National Marine Planning Framework (NMPF)[3] outlines how the development of an integrated network of greenways and blueways may act as a mechanism to promote sustainable and active travel modes. The National Adaptation Framework[4] and the suite of sectoral Climate Change Adaptation Plans[5] recognise the role GBI plays in enhancing the resilience of communities, biodiversity, landscapes, the historic and built environment and the water environment.

The Climate Action and Low Carbon Development (Amendment) Act 2021[6] supports Ireland's transition to Net Zero and a climate neutral economy, no later than 2050. This will be delivered through actions identified in the Climate Action Plan 2021[7], including the continued improvement and expansion of the Active Travel and Greenway Network, and the construction of an additional 1,000 km of cycling and walking infrastructure.

The Draft River Basin Management Plan (RBMP) 2022-2027[8] highlights that NbS, such as GBI, can help to address many of the complex challenges that are associated with balancing development and its impact on the environment. Due to the multi-functional nature of GBI, it can help to deliver multiple benefits; including improved water quality, reduced flood risk, habitat creation, climate regulation, climate change adaptation, soil management improvements and the creation of amenities.

[1]Government of Ireland (2018) Project Ireland 2040: National Planning Framework (https://npf.ie/wp-content/uploads/Project-Ireland-2040-NPF.pdf)

[2]Government of Ireland (2021) Project Ireland 2040: National Development Plan 2021-2030 (https://www.gov.ie/en/publication/774e2-national-development-plan-2021-2030/)

[3]Government of Ireland (2021) National Marine Planning Framework (https://www.gov.ie/en/publication/a4a9a-national-marine-planning-framework/)

[4]Department of Communications, Climate Action & Environment (2018) National Adaptation Framework: Planning for a Climate Resilient Ireland (https://www.nwra.ie/wp-content/uploads/2020/05/national-adaptation-framework.pdf)

[5]Nine Climate Change Sectoral Adaptation Plans have been prepared under the National Adaptation Framework for the following sectors: Agriculture, Forestry and Seafood; Biodiversity; Built and Archaeological Heritage; Transport Infrastructure; Electricity and Gas Networks; Communications Networks; Flood Risk Management; Water Quality and Water Services Infrastructure; and Health.

[6]Climate Action and Low Carbon Development (Amendment) Act 2021 (https://www.gov.ie/en/publication/984d2-climate-action-and-low-carbon-development-amendment-bill-2020/)

[7]Government of Ireland (2021) Climate Action Plan 2021 (https://www.gov.ie/en/publication/6223e-climate-action-plan-2021/)

[8]Government of Ireland (2022) Draft River Basin Management Plan for Ireland 2022-2027 (https://www.gov.ie/en/consultation/2bda0-public-consultation-on-the-draft-river-basin-management-plan-for-ireland-2022-2027/)

The Strategy for the Future Development of National and Regional Greenways[9] and the National Physical Activity Plan for Ireland[10] support the delivery of multi-user, active travel infrastructure including a strategic Greenway Network throughout Ireland. The Government's Tourism Policy Statement: People, Place and Policy - Growing Tourism to 2025[11] recognises the contribution the GBI network makes to Ireland's tourism offering. The National Landscape Strategy for Ireland 2015-2025[12] recognises the importance of greenways and blueways in providing a range of environmental services. The All-Ireland Pollinator Plan[13] recognises the importance of pollinator friendly management of green spaces and greenway cycle routes, with an objective of creating a cohesive network of diverse habitats. The Nature-based Solutions to the Management of Rainwater and Surface Water Runoff in Urban Areas: Best Practice Interim Guidance[14] promotes the implementation of nature-based surface water management solutions using an urban design and plan led approach.

Regional

The importance of GBI is further recognised at the regional level through a range of strategies and policies. The Regional Spatial Economic Strategy (RSES) for the Southern Region[15] supports the growth and improvement of strategic scale GBI. The document also highlights that GBI should form a key component of a local authority's Development Plan, informing actions and strategy relating to economic development. Regional Policy Objectives 124 and 125 seek co-ordination across local authority boundaries to protect and enhance GBI, and achieve strategic regional connections including greenways, blueways and peatways. The requirement for all Development Plans to protect, enhance and manage GBI in an integrated and coherent manner; addressing the themes of biodiversity protection, water management and climate action, is also emphasised. Regional Policy Objectives 200 and 201 support the development of strategic GBI throughout the region.

The Limerick-Shannon Metropolitan Area Strategic Plan (LSMASP)[16] is an essential component of the RSES for the Southern Region. Policy Objective 20 of the LSMASP supports the delivery of a healthy, green and connected Metropolitan Area through the preparation of a Metropolitan Open Space, Recreation and Greenbelt Strategy which requires co-ordination between relevant stakeholders.

The Southern Regional Assembly is the Irish partner in an Interreg Europe Project named Blue Green City: Blue and Green Infrastructure for Sustainable Cities[17]. The project seeks to improve policies that promote GBI as an integral part of local and regional policies across planning, heritage and biodiversity. As a constituent local authority within the Southern Region, the Council has an important role in implementing GBI policies at the local level.

The Mid-West Area Strategic Plan 2012-2030[18] seeks to reduce car dependency and supports the provision of high-quality active travel routes linking residential, commercial and employment areas throughout Limerick and the Mid-West Region. Similarly, the Limerick Shannon Metropolitan Area Transport Strategy[19] (LSMATS), prepared by the National Transport Authority (NTA), focuses on reducing car dependency within the city, thereby alleviating issues such as declining urban centres, poor public health and reduced air quality. The strategy combines land use and transport planning to discourage private vehicle use and prioritise walking, cycling and public transport. This will form an important link to the active travel and connectivity aspects of GBI. Section 12.2 (Limerick Regeneration) also makes reference to the lack of permeability, legibility and connectivity as the primary transportation issue affecting regeneration areas and surrounding neighbourhoods.

The Shannon Tourism Masterplan[20] sets out a bold and integrated framework for sustainable tourism development along the Shannon and Shannon Erne Waterway, repositioning the region as a key tourism destination. Limerick is identified as one of four of the most significant settlements (Shannon Hub Towns) along the Shannon River which should act as a focal point for tourism and experience development in a number of areas such as expanding visitor infrastructure and improving public realm to support better integration with the River Shannon.

The implementation of GBI in the Strategy Area will be a crucial link to enhancing blueways and improving waterside experiences and activities.

[9]Department of Tourism, Transport and Sport (2018) Strategy for the Future Development of National and Regional Greenways (https://assets.gov.ie/10364/abd98a35c61e4de4ba00a341eb7e0d13.pdf)

[10]Healthy Ireland (2018) National Physical Activity Plan for Ireland (https://assets.gov.ie/7563/23f51643fd1d4ad7abf529e58c8d8041.pdf)

[11]Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media (2019) People, Place and Policy Growing Tourism to 2025 (https://assets.gov.ie/15792/8b4627126837 48e7bcec6c7d5c7ecd2a.pdf)

[12]Government of Ireland (2015) National Landscape Strategy for Ireland 2015 – 2025 (https://www.gov.ie/en/publication/8a59b-national-landscape-strategy/)

[13]National Biodiversity Data Centre (2021) All-Ireland Pollinator Plan 2021-2025 (https://pollinators.ie/wp-content/uploads/2021/03/All-Ireland-Pollinator-Plan-2021-2025-WEB.pdf)

[14]Government of Ireland (2021) The Nature-based Solutions to the Management of Rainwater and Surface Water Runoff in Urban Areas: Best Practice Interim Guidance (https://www.gov.ie/en/publication/10d7c-nature-based-solutions-to-the-management-of-rainwater-and-surface-water-runoff-in-urban-areas-best-practice-interim-guidance-document/)

[15]Southern Regional Assembly (2020) Regional Spatial Economic Strategy for the Southern Region (http://www.southernassembly.ie/uploads/general-files/Regional_Spatial__Economic_Strategy_for_the_Southern_Region_LOW_RES.pdf)

[16]Southern Regional Assembly (2020) Limerick-Shannon Metropolitan Area Strategic Plan (https://www.southernassembly.ie/uploads/general-files/LS_Southern_Regional_Assembly_MASP_Report_LS_v3.pdf)

[17]Sothern Regional Assembly (2019) Blue Green City: Blue and Green Infrastructure for Sustainable Cities Action Plan (http://www.southernassembly.ie/eu-projects/blue-green-city)

[18]Limerick City and County Council (2013) Mid-West Area Strategic Plan (2012-2030) (https://www.limerick.ie/sites/default/files/media/documents/2017-03/Mid%20West%20Area%20Strategic%20Plan%202012-2030.pdf)

[19]National Transport Authority (2022) Limerick Shannon Metropolitan Area Transport Strategy (https://www.nationaltransport.ie/limerick-shannon/)

[20]A Tourism Masterplan for the Shannon 2020 – 2030: Reimagining the River Shannon and Shannon Erne Waterway https://www.waterwaysireland.org/Documents/Plans%20+%20Policies/210301%20Tourism%20Masterplan%20for%20the%20Shannon_Mar21%20WEB%20Final.pdf.

Prepared by the Office of Public Works (OPW), Flood Risk Management Plans (FRMPs) set out the strategy for the sustainable, long-term management of flood risk for the Shannon Upper and Lower River Basin[21]; Shannon Estuary South River Basin[22] and Shannon Estuary North and Mal Bay River Basin[23]. The FRMPs support the creation of GBI as a preventative measure against flood risk that is appropriate across all areas of the River Basins. To inform the Draft RBMP, third Cycle Catchment Reports have been prepared for the Lower Shannon and Mulkear[24] and Shannon Estuary South[25] which outline the water quality status, risks and pressures of all waterbodies in these catchments. GBI can improve water quality by removing contaminants from the water as well as by decreasing the amount of stormwater that reaches a watercourse.

Outlook across the River Shannon

[21]OPW (2018) Flood Risk Management Plan for the Shannon Upper and Lower River Basin (https://s3-eu-west-1.amazonaws.com/docs.floodinfo.opw/floodinfo_docs/Final_FRMPs_For_Publication/FRMP_Final2018_RiverBasin_25_26.pdf)

[22]OPW (2018) Flood Risk Management Plan for the Shannon Estuary South River Basin (https://s3-eu-west-1.amazonaws.com/docs.floodinfo.opw/floodinfo_docs/Final_FRMPs_For_Publication/FRMP_Final2018_RiverBasin_24.pdf)

[23]OPW (2018) Flood Risk Management Plan for the Shannon Estuary North and Mal Bay River Basin (https://s3-eu-west-1.amazonaws.com/docs.floodinfo.opw/floodinfo_docs/Final_FRMPs_For_Publication/FRMP_Final2018_RiverBasin_27_28.pdf)

[24]EPA (2021) Third Cycle Draft Lower Shannon and Mulkear Catchment Report (https://catchments.ie/wp-content/files/catchmentassessments/25D%20Lower%20Shannon%20Catchment%20Summary%20WFD%20Cycle%203.pdf)

[25]EPA (2021) Third Cycle Draft Shannon Estuary South Catchment Report (https://catchments.ie/wp-content/files/catchmentassessments/24%20Shannon%20Estuary%20South%20Catchment%20Summary%20WFD%20Cycle%203.pdf)

Local

The LDP[26] sets out the statutory framework for land-use planning and sustainable development in Limerick for the period up to 2028. GBI is a cross cutting theme throughout the LDP, addressing topics including but not limited to increasing biodiversity and the provision of ecological corridors, climate change adaptation and mitigation, water treatment, flood mitigation, local amenity provision, air quality improvement, and cultural and heritage preservation.

The LDP references the following:

- Supports the protection and enhancement of the GBI network throughout Limerick;
- Promotes connecting corridors for the movement of species and encourages the retention and creation of features of biodiversity value, ecological corridors and networks that connect areas of high conservation value;
- Supports the removal of barriers to species movement, such as the removal of in-stream barriers to fish passage;
- Supports the integration of GBI into the preparation of Local Area Plans;
- Requires proposals to demonstrate how GBI has been considered in the design of developments;
- Supports the use of an ecosystem services approach as a decision-making tool in plans and projects; and
- Projects which would be detrimental to the existing GBI network will not be permitted.

The LDP refers to this GBI Strategy and will be used by the Council to inform and guide the planning and management of GBI within Limerick City and Environs. The document also aims to increase the use of NbS throughout Limerick, including urban greening interventions such as green roofs / walls, SuDS, etc. The value of GBI to the local environment is also reflected in the Landscape Character Assessment integrated within the LDP, which notes the contribution of GBI to landscape

The importance of GBI is also reflected in additional local planning policies and strategies. Goal 4 (Transition to an environmentally sustainable carbon neutral economy) of the Limerick City and County Corporate Plan 2019-2024[27] aims to develop GBI at a local level and promote the use of NbS for the delivery of a coherent and integrated network. It also supports no net loss of biodiversity through appropriate offsetting and / or investment in GBI.

The Limerick Climate Change Adaptation Strategy 2019-2024[28] recognises the important and integral role GBI plays in adapting to and mitigating against the effects of climate change. It highlights the role that green corridors and greenways can play in supporting and promoting active travel such as walking and cycling. In addition, the Limerick Metropolitan Cycle Network Study[29] recognises the fundamental role of GBI, notably greenways, in encouraging a shift from unsustainable modes of travel. The Limerick Metropolitan Cycle Network Study not only encourages active travel, thereby reducing carbon emissions associated with transport, but also recognises the impact of GBI in providing recreational and leisure opportunities, and its contribution towards improvements to quality of life.

The purpose of the Limerick Tourism Development Strategy 2019-2023[30] is to provide a clear direction and enabling framework for a cohesive and integrated approach to tourism development and growth in Limerick. The strategy recognises four key drivers, with the waterways being Theme 1 'Into the Blue'. The document recognises Limerick's rich abundance of waterways, with the Shannon Estuary defining its northern boundary. The strategy further recognises the opportunity for Limerick to develop blueways and provide greater accessibility to the water.

The Limerick Heritage Plan 2017 – 2030[31] refers to the natural and built environment and is seen as a catalyst for promoting improvement to heritage across Limerick. This Strategy supports the aims of the Heritage Plan by protecting and supporting built / natural heritage and using GBI to create spaces that strengthen tourism.

A summary of policy context is provided in **Figure 1.6.**

[26]Limerick City and County Council (2022) Limerick Development Plan 2022-2028 https://www.limerick.ie/council/services/planning-and-property/limerick-development-plan/limerick-development-plan-2022-2028#:~:text=The%20Limerick%20Development%20Plan%202022,Environmental%20Reports%20are%20provided%20below'

[27]Limerick City and County Council (2020) Limerick City and County Corporate Plan 2019 to 2024 (https://www.limerick.ie/sites/default/files/media/documents/2020-07/limerick-city-and-county-council-corporate-plan-2015-2019.pdf)

[28]Limerick City and County Council (2019) Climate Change Adaptation Strategy (https://www.limerick.ie/sites/default/files/media/documents/2021-01/limerick-city-and-county-council-climate-change-adaptation-strategy-2019-2024-final.pdf)

[29]ARUP and Limerick City and County Council (2019) Limerick Metropolitan Cycle Network Study (https://www.limerick.ie/sites/default/files/media/documents/2019-04/Limerick-Metropolitan-Cycle-Network-Study.pdf)

[30]Limerick Tourism Development Strategy - Action Plan 2019-2023 https://www.limerick.ie/sites/default/files/media/documents/2019-04/Limerick-Tourism-Development-Strategy-Action-Plan_1.pdf

[31]The Heritage Council and Limerick City and County Council (2017) Limerick Heritage Plan 2017-2030 (https://www.limerick.ie/sites/default/files/media/documents/2017-10/Heritage%20Plan%202017%20-2030_0.pdf)

View looking east towards Sarsfield Bridge

Policy context

The GBI Strategy sits within a hierarchy and wider strategic context of international, national, regional and local policy / programmes. It is also important to ensure that the GBI Strategy conforms to environmental protection legislation at each of these levels. **Figure 1.6** illustrates the policy context:

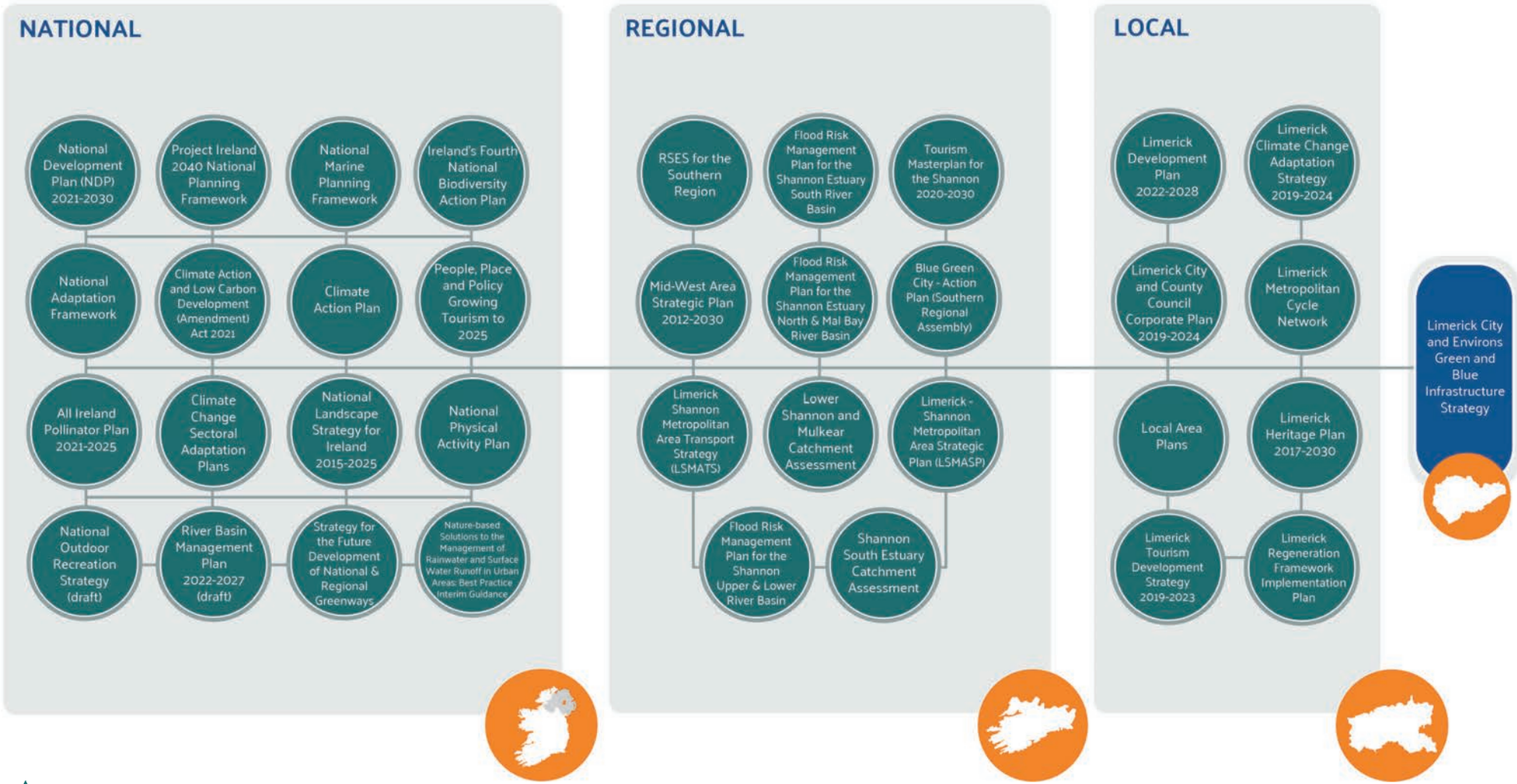


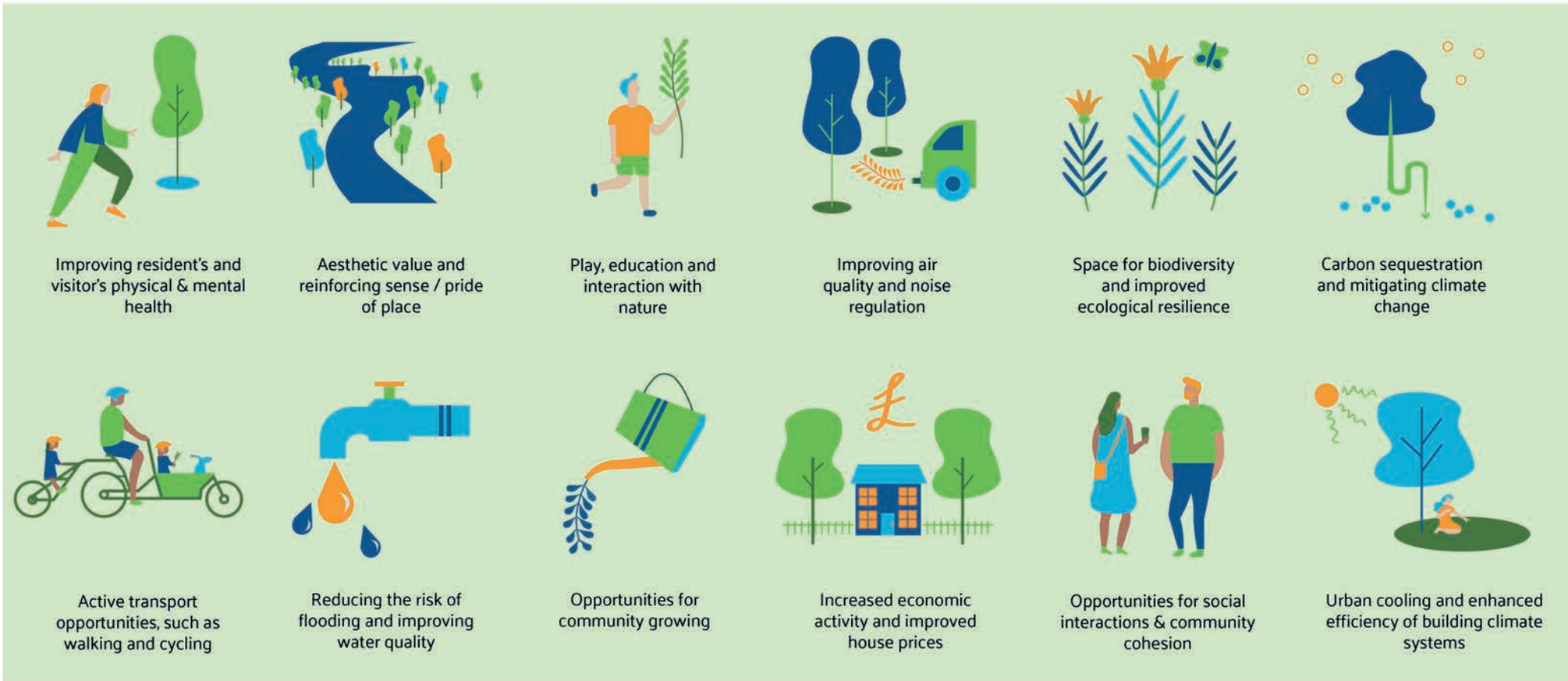
Figure 1.6: Planning policy context

Benefits of GBI

High quality GBI can deliver a range of environmental, social and economic benefits (see **Figure 1.7**). The rich variety of GBI features within the Strategy Area provides a diverse range of benefits which can be achieved for residents, visitors and wildlife.

The evidence base for the multi-functional benefits of GBI is constantly evolving. GBI interventions are frequently appreciated at a local level by residents benefiting from increased access to nature and improved green space, forming cross boundary features. However, there is now a robust evidence base to support the need for GBI and to build a strong case for future investment. More widely, GBI offers the opportunity to target society's major global challenges: biodiversity, climate change, health and the economy.

Figure 1.7: Benefits of GBI



The key drivers for the provision and ongoing stewardship of GBI within the Strategy Area are outlined in this chapter. Assessing the drivers for GBI can identify both the specific types of, and geographic locations for, GBI improvements. In addition, this supports a high-level identification of how new GBI, or improvements to existing GBI, may be best delivered. Drivers have been identified and categorised to reflect the overarching global challenges, as outlined in **Figure 2.1**.

Chapter 2
Overview of GBI in Limerick and key drivers

Figure 2.1: Drivers and benefits of GBI in Limerick

The Strategy Area is characterised by a wealth of green and blue assets, including a network of vibrant and diverse landscapes, a wide range of ecosystems and unique built, natural and archaeological heritage. The River Shannon forms the Strategy Area's principal blue infrastructure asset, supplemented by a network of streams / rivers, canals, flood plains and wetlands which characterise the wider landscape. Rivers and waterways form an important aspect of Limerick culture, adding to amenity value and biodiversity whilst also proving to be a source of flood risk. Limerick City has experienced a number of flood events in recent years and is particularly susceptible to fluvial and coastal flooding from the River Shannon, Abbey River and Shannon Estuary.

Limerick also contains a range of parks, woodlands and open spaces, semi natural open space, hedgerows and agricultural lands. All these features enhance the identity and sense of place. The Strategy Area also boasts a network of sites designated for their conservation importance, including the eastern extents of the Lower River Shannon Special Area of Conservation (SAC) and the River Shannon and River Fergus Estuaries Special Protection Area (SPA). Additional designated sites include the Fergus Estuary and Inner Shannon, North Shore, Inner Shannon Estuary, South Shore, Knockalisheen Marsh and Loughmore Common Turlough Proposed Natural Heritage Areas (pNHAs).

There are 328 archaeological monuments included on the Sites and Monuments Record within the Strategy Area. These vary from notable and nationally important landmarks such as King John's Castle, the Limerick City Defences, the Monastic Complex at Mungret and St. Mary's Cathedral to more humble earthen enclosures. Waterways are of special significance in the archaeological record as they provided travel corridors and natural resources from earliest pre-history. Of particular significance is the fact that Limerick is a Viking foundation which rose in importance through the medieval period, becoming an important trading port and fortified city. Sensitivity to archaeological heritage is required in the future development of GBI in relation to river systems and throughout the walled city.

The Strategy Area encompasses an area of approximately 63km^2 . Whilst it covers only part of the functional area of the Council, it is likely that many of the GBI principles will be relevant to the wider area and county itself.

Drivers for GBI - Climate

Opportunity for GBI within Limerick?

GBI plays a vital role in climate change mitigation and adaptation through surface water and flood management, storage of greenhouse gases, improvements to air quality and provision of habitats for wildlife. GBI can also help mitigate against other predicted effects of climate change by sequestering carbon, providing cooling and shading and creating opportunities for low carbon energy schemes.

The Council declared a Climate Emergency in September 2018. This was followed in May 2019 by the declaration of a Climate and Biodiversity Emergency by the Irish Government. The Government's response to these declarations was contained in the Climate Action and Low Carbon Development (Amendment) Act 2021 and the revised National Climate Action Plan. These initiatives set a target of reducing carbon emissions by 51% by 2030 and becoming carbon neutral by 2050. Local Authorities are to be at the forefront of realising these goals by working through their regulatory and strategic functions to meet these targets. Central to this is the preparation of a Local Authority Climate Action Plan that is required to be adopted by March 2024.

The Local Authority Climate Action Plan will deliver and promote evidence based and integrated climate action by way of adaptation and mitigation measures centred around a strong place based approach to climate action. An essential element of the GBI Strategy is the integration of a strategic approach to GBI across all operational areas. The provision of greenways and other active travel corridors is an example of this approach at a strategic level. However, the impact of these schemes can be enhanced through the use of NbS at the design stage of projects to reduce rainfall run-off and decrease flood risk.

Trees, vegetation and green roofs also offer the potential to achieve a reduction in energy use for cooling and heating through insulation and temperature regulation. Additional methods of mitigation include the careful management of the water environment and the protection of open spaces for carbon sequestration.

GBI can also help in adapting the Strategy Area to a higher frequency and magnitude of extreme weather events which will likely occur due to the changing climate. Limerick is at a particular risk due to its location at the head of the Shannon Estuary and is therefore susceptible to both fluvial and coastal flooding. Localised events which can occur due to heavy rainfall can also be managed through NbS. Within urban areas, increases in temperature are exacerbated by the 'urban heat island effect' (see **Figure 2.2)**, whereby the concentration of built development retains heat, resulting in a cumulative effect on overall temperatures. Well designed and managed GBI is therefore a key component in the provision of climate resilience.

The GBI Strategy will therefore be incorporated into the Local Authority Climate Action Plan. The GBI Priority Actions (see **Chapter 3**) will be integrated into the delivery strategy of the plan.

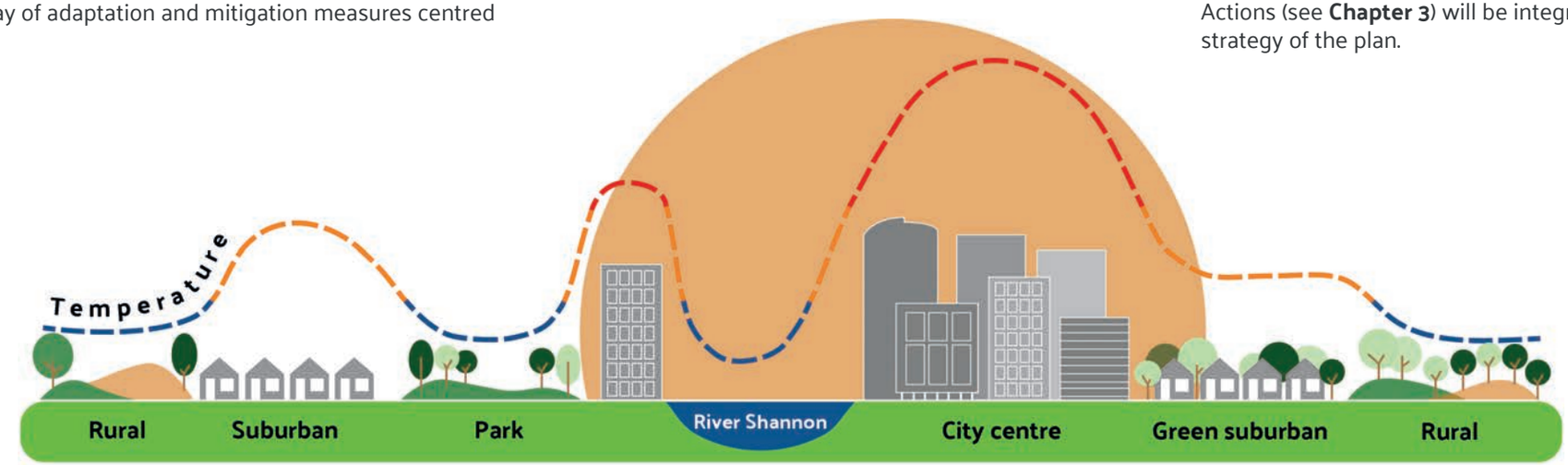


Figure 2.2: Limerick urban heat island effect

Wetland habitat at Knockalisheen Marsh

Opportunity for GBI within Limerick?

Green space, including natural and semi-natural elements, are increasingly recognised as important assets for supporting health and well-being. These resources offer the potential to address a range of societal issues, including a reduction in health inequalities and taking positive actions to address climate change. The Strategy Area includes approximately 1,229ha of protected natural heritage, including SPAs, SACs and pNHAs. These are entirely related to the River Shannon. As part of its award as a European Green Leaf City in 2020, the Council is committed to creating additional habitat for biodiversity to thrive. The opportunity exists to develop a coherent ecological network, improve connectivity and restore natural processes. In recognising biodiversity imperatives and vulnerabilities, well-designed and generous GBI can also accommodate health, education and recreational needs whilst protecting and buffering sensitive assets from damage or disturbance.

Drivers for GBI - Biodiversity

All elements of the GBI network can contribute towards the provision of space for nature. Adopting a strategic and coordinated approach to the provision of GBI provides the best opportunity to apply the key principles for conserving and enhancing biodiversity. The Strategy Area's GBI will play an important role in creating a framework for an integrated and multi-functional nature recovery network, both locally and through enhancing connections with the wider strategic nature network. This approach will ensure the key principles, as set out within the Lawton Review[32], for conserving and enhancing biodiversity are applied. These include:

- **Recognise imperatives:** Maintenance of the qualifying features of national and international designations in favourable condition is recognised as an imperative. Where these suffer poor or declining condition, provision of GBI should seek to reduce and / or buffer the pressures which occur or are predicted.
- **Bigger:** The overall habitat resource can be increased in size by ensuring that GBI is protected and created within new development. Analysis of the GBI network can help to identify where habitat creation can deliver greatest benefit by extending or buffering existing areas, as well as where strategic new areas may most successfully appease current or future pressures on the habitat resource.
- **Better quality:** Enhancement of existing habitats (both within and between designations) may include increase in species or structural diversity and may target local conservation priorities, but should always reflect the local soils, hydrology and topography to ensure long-term viability has a high likelihood of success.
- **Better connected:** A connected network is more resilient to change. Connectivity may be achieved both through 'stepping stone' habitats to allow areas of otherwise intensive land use or built development to become more permeable. Gaps in the network can also be strengthened through the provision of urban greening, for example tree-lined streets, green roofs and pockets parks.

Creating priority sites for ecological improvements in the Strategy Area will enable nature recovery, further enhancing natural capital benefits and ecosystem services.

[32]Lawton, J.H., Brotherton, P.N.M., Brown, V.K., Elphick, C., Fitter, A.H., Forshaw, J., Haddow, R.W., Hilborne, S., Leafe, R.N., Mace, G.M., Southgate, M.P., Sutherland, W.A., Tew, T.E., Varley, J., & Wynne, G.R. (2010) Making Space for Nature: a Review of England's Wildlife Sites and Ecological Network (https://webarchive.nationalarchives.gov.uk/ukgwa/20130402170324/http:/archive.defra.gov.uk/environment/biodiversity/documents/201009space-for-nature.pdf)

Drivers for GBI - Health

Opportunity for GBI within Limerick?

The potential benefits of GBI are far reaching, including development of priorities in relation to the health and well-being of Limerick's residents. The expansion and improvement of GBI projects offer the potential to support the delivery of wide ranging physical and mental health benefits.

Community cycling event

The need to create places which cultivate physical and mental health is increasingly recognised. GBI can help to improve and maintain the health and well-being of local communities. Healthy Ireland – A Framework for Improved Health and Well-being (2013 – 2025)[33] details the close relationship between (physical and mental) health and the environment, physical activity and social interaction. In addition, Health Benefits from Biodiversity and Green Infrastructure[34] concludes that human health and well-being are largely influenced by a healthy environment and that the natural environment and resources significantly contribute to the Irish economy. This research investigated the health benefits arising from biodiversity and GBI and found that:

- People gain physical, mental, cognitive, physiological, emotional, tangible and aesthetic benefits from nature and green spaces;
- Parks and green space encourage social interaction and de-stressing through provision of opportunities for conversation or exercise; and
- Spending time in green spaces promotes social integration and cohesion.

Social prescribing is also now a recognised referral system and seeks to address people's health issues in a holistic manner through exploring social, economic and environmental factors. Visits to green space are associated with wide ranging health and well-being benefits. Most significantly, health impacts are demonstrable at low visit levels i.e. even those who visit just once a month can also experience significant benefits. Research has concluded that increasing the number of green space visits from zero to just once per month is associated with a 4% increase in the probability of experiencing good mental health and well-being, from 65% to 69%[35].

[33]Government of Ireland (2013) Healthy Ireland: A Framework for Improved Health and Well-being (2013-2025) (https://www.hse.ie/eng/services/publications/corporate/hienglish.pdf)

[34]EPA (2016) Health Benefits from Biodiversity and Green Infrastructure [online] (https://www.epa.ie/pubs/reports/research/health/EPA%20Research%20Report%20195_webFinal.pdf)

[35]Grilli, Mohan ad Curtis (2020) Public Park Attributes, Park Visits and Associated Health Status (Landscape and Urban Planning) (https://www.esri.ie/publications/public-park-attributes-park-visits-and-associated-health-status)

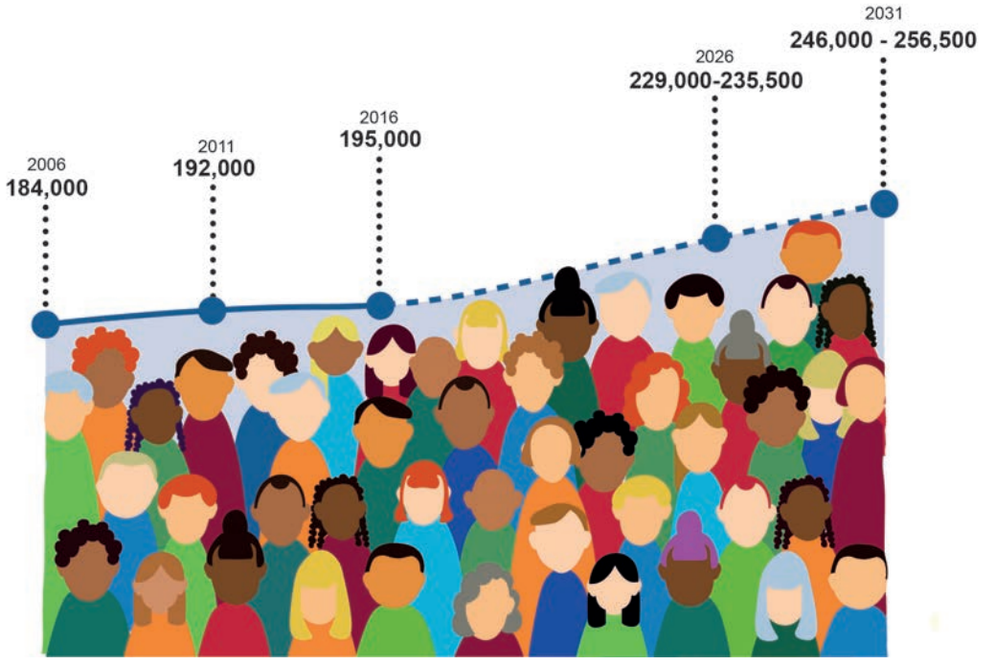


Figure 2.3: Projected population growth in Limerick City and County
Source: Limerick City and County Council (2021) LDP Background Paper People & Places
(https://www.limerick.ie/sites/default/files/media/documents/2020-08/background-paper-people-and-places.pdf)

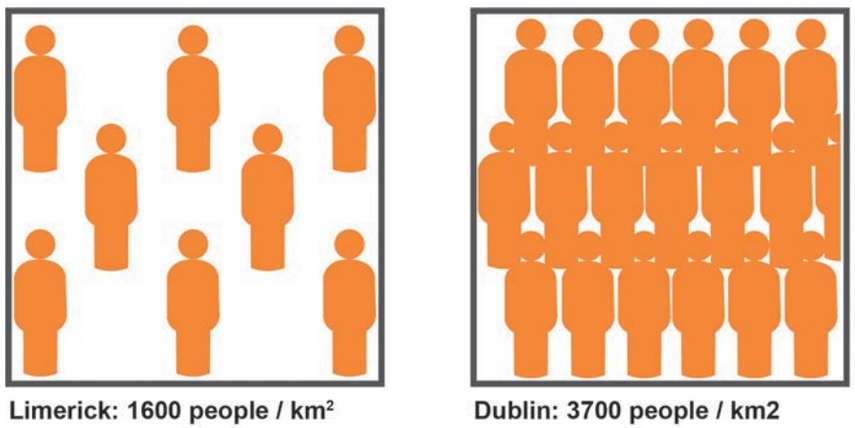


Figure 2.4: Population density in Limerick City and Dublin
Source: Limerick City and County Council (2021) LDP Background Paper People & Places
((https://www.limerick.ie/sites/default/files/media/documents/2020-08/background-paper-people-and-places.pdf))

[36]Forest Research (2010) Benefits of Green Infrastructure
(https://cdn.forestresearch.gov.uk/2010/10/urgp_benefits_of_green_infrastructure_main_report.pdf)

Drivers for GBI - Economy

GBI results in several economic benefits, including the creation of employment, promotion of economic activity and encouragement of inward investment. In the wake of the COVID-19 pandemic, public spaces have an important role to play in drawing people back to urban centres. Key destination spaces that are important for their landscape or heritage value can provide a draw and destination for visitors. A report published by Forest Research[36] highlighted the potential role GBI plays in supporting inward investment and job creation, land and property values, and local economic regeneration. Open space provision may result in increased levels of business revenue and green space in close proximity to residential areas can also have a positive effect on house prices . These benefits may be amplified through the adoption of modal shifts to sustainable transport modes and the promotion of 10-minute city neighbourhoods.

GBI enhances the aesthetic and perceptual experience of the environment, therefore acting as a catalyst for economic investment and encouraging employment. The network can also provide specific economic assets in the form of destination spaces, commonly in the form of heritage assets, which draw tourism and recreation.

Opportunity for GBI within Limerick?

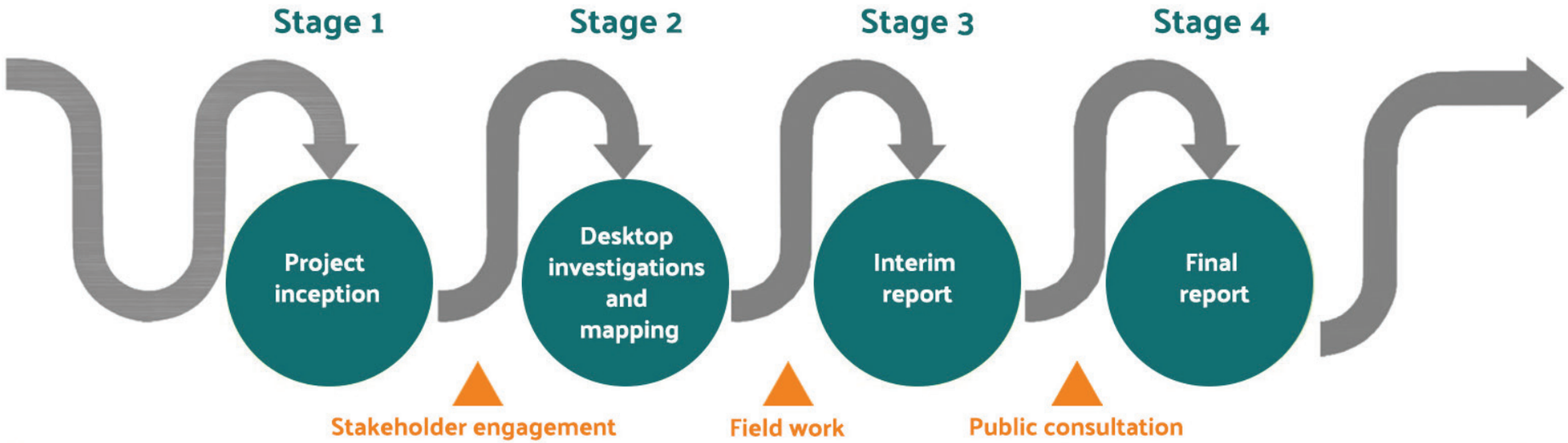
Population growth (see **Figures 2.3 and 2.4**), associated urbanisation and competing demands for land use result in increased threats to the provision of accessible green space. However, the expansion of GBI assets across the Strategy Area may reduce the pressure on the quality and quantity of existing GBI in the wake of projected population growth. The NPF recognises Limerick City as a key asset which will play a major role in accommodating proposed national population growth, acting as an effective complement to the economic strength of Dublin. Ambitious growth targets have therefore been established for Limerick City and County, equating to an increase of approximately 30% between 2016 and 2031. The Strategy Area forms an important focus for this projected growth. It is therefore crucial that this is accommodated in a sustainable manner, harnessing opportunities for GBI and affording a high quality of life for future residents.

Additionally, owing to Limerick's location on the Shannon River and the ambition set out in the Shannon Tourism Masterplan, opportunities that will enhance its waterways should incorporate GBI provision to assist in the creation of a premier tourism destination.

Approach and methodology

The methodology has been structured around four separate stages, as outlined below in **Figure 2.5**. The process has involved engagement with key stakeholders via a series of virtual workshops. Having identified and mapped GBI assets, fieldwork was undertaken in the form of site audits to help inform analysis of the character, quality and functionality of the GBI network.

Figure 2.5: Approach to the development of the Strategy



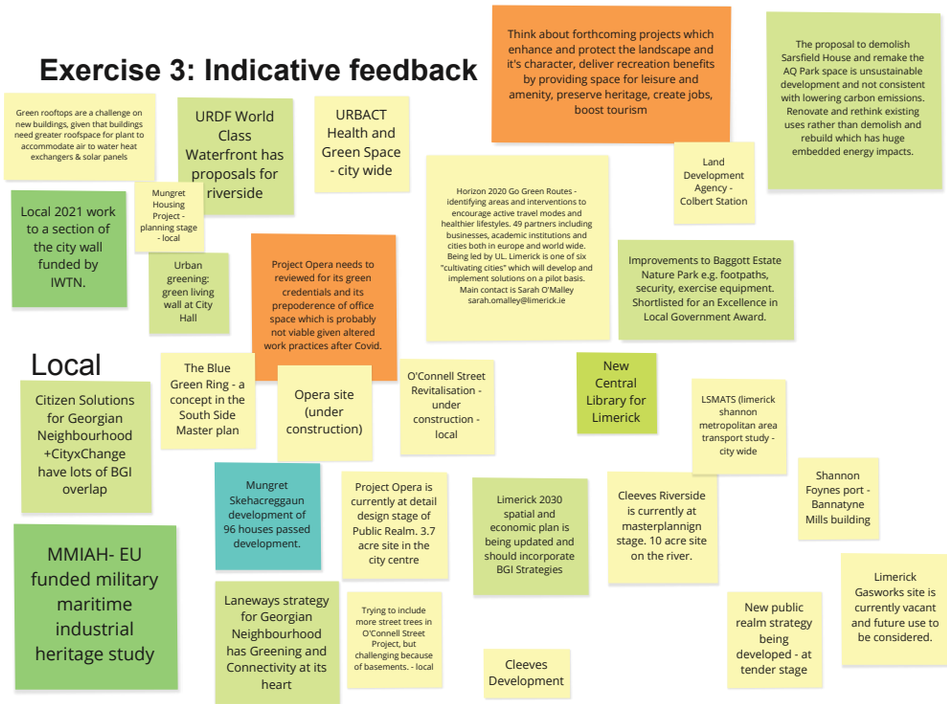
Baseline spatial data was gathered from a wide range of sources and collated using Geographical Information Systems (GIS). This allowed analysis of the spatial distribution of the existing GBI network, as well as the socio-economic context and other environmental factors which contribute to the 'need' for GBI within the Strategy Area.

The assembled data was evaluated in relation to physical resources, natural systems, ecological assets, landscape character, historical assets, access networks, recreational facilities, flooding and planning. A 'themed' approach was adopted to analyse the GBI assets, including an assessment of key assets and initial key opportunities.

The findings were used to inform the identification of GBI Priority Actions for the protection, enhancement, and expansion of the GBI network. Each of the GBI Priority Actions have been mapped, and the functions of each action / project highlighted.

Example outputs from the virtual stakeholder workshops

Consultation and engagement



GBI assets, issues and opportunities were identified as part of the development of the GBI Strategy, derived from desk-based research, field surveys and wider consultation. The approach to engagement and consultation included the provision of three stakeholder workshops (online) with internal stakeholders and partner organisations as outlined below:

- **Workshop 1** - Landscape & Recreation and Tourism, Culture and the Economy;
- **Workshop 2** – Access and Connectivity and People, Health and Well-being; and
- **Workshop 3** – Biodiversity and Blue Infrastructure.

The consultation and engagement exercises aimed to:

- Discuss and confirm the vision and objectives of the GBI Strategy;
- Obtain feedback on research and initial findings i.e. sense check the emerging evidence base;
- Identify main pressures and threats to GBI provision in the Strategy Area;
- Discuss and identify any key initiatives or projects which might be relevant for the GBI Strategy, e.g. green space creation / enhancement, access improvements, habitat creation or flood alleviation; and
- Discuss and identify the key opportunities for GBI and creation and enhancement in the city over the LDP period and beyond.

The Draft GBI Strategy and environmental reports were on public display between 17th September and 18th October 2022 at Corporate Headquarters, Merchant's Quay, Limerick, County Hall, Dooradoyle, Limerick and Dooradoyle Library and, online at https://mypoint.limerick.ie/. The Council held a drop-in public information day on 27th September 2022 at Corporate Headquarters, Merchant's Quay, an online workshop for the Councillors of the Limerick Metropolitan District on 7th October 2022 and an online workshop for the Limerick City and Environs Tidy Towns Groups on 12th October 2022. The Draft GBI Strategy and environmental reports were also publicised via the public drop-in day, local news media, the Council's social media account and the Metropolitan District Public Participation Network (PPN). Submissions were made via gbi@limerick.ie and https:// mypoint.limerick.ie/, by email or in writing.

The relevant environmental authorities were informed of the Draft GBI Strategy and environmental reports including the Environmental Protection Agency (EPA), Department of Housing, Local Government and Heritage (DHLGH), Department of Environment, Climate and Communications, Department of Agriculture, Food and the Marine and Clare County Council (adjoining planning authority to the Strategy Area).

Developing a vision and framework

The vision for GBI within the Strategy Area is underpinned by the Strategic Vision and Key Ambitions outlined within the LDP, intended to guide the sustainable growth of Limerick. The vision and framework is also driven by the core principles in the NPF for long-term environmental, economic and social progress.

GBI can improve the resilience of ecosystems, improve social cohesion, sustain clean air and provide essential water management functions. Many of Limerick's key green and blue assets cross-cut and surround the Strategy Area. This includes the River Shannon, some of the most important wetlands in Ireland (such as Bunlicky, Coonagh and Westfields Wetlands) as well as other important habitats for fauna and flora (such as King's Island, Shannon Fields, the Baggot Estate, Ballinacurra Creek and the Groody Valley). The preservation and enhancement of these assets and others will form Ireland's first city-scale strategic planning and environmental corridor, establishing the 'Limerick Blue Green Ring' (see **Figure 2.6**). This proposal will serve to deliver multi-functional benefits across the Strategy Area, protecting and enhancing key green and blue ecosystems, as well as local heritage, whilst also facilitating healthy modes of travel and forming the basis to provide a series of GBI Priority Actions within the Strategy Area.

GBI forms a widely accepted, economically viable and effective tool to tackle the adverse effects of climate change. It is therefore crucial that the GBI Strategy aligns with the Council's emerging Climate Action Plan to ensure a strong focus on the planning of GBI and adoption of measures that address the climate emergency.

A key feature within the Strategy Area is the need to facilitate access to amenity green space by healthy and sustainable modes of travel. Regional Policy Objective 176 in the RSES for the Southern Region seeks to achieve sustainable compact settlements through promotion of the '10-minute city' concept. The concept is based on ensuring the needs of residents and providing access to key amenities within a short walk or cycle from their home, within approximately 800 metres (e.g. **Figure 2.6**). The consideration of GBI, whilst being sensitive to existing ecosystems, will be essential in successfully implementing this principle within the Strategy Area.

The GBI Strategy will ensure sufficient detail to help enhance, protect and promote GBI assets during the LDP period and beyond.

Figure 2.6: The 'Limerick Blue Green Ring'

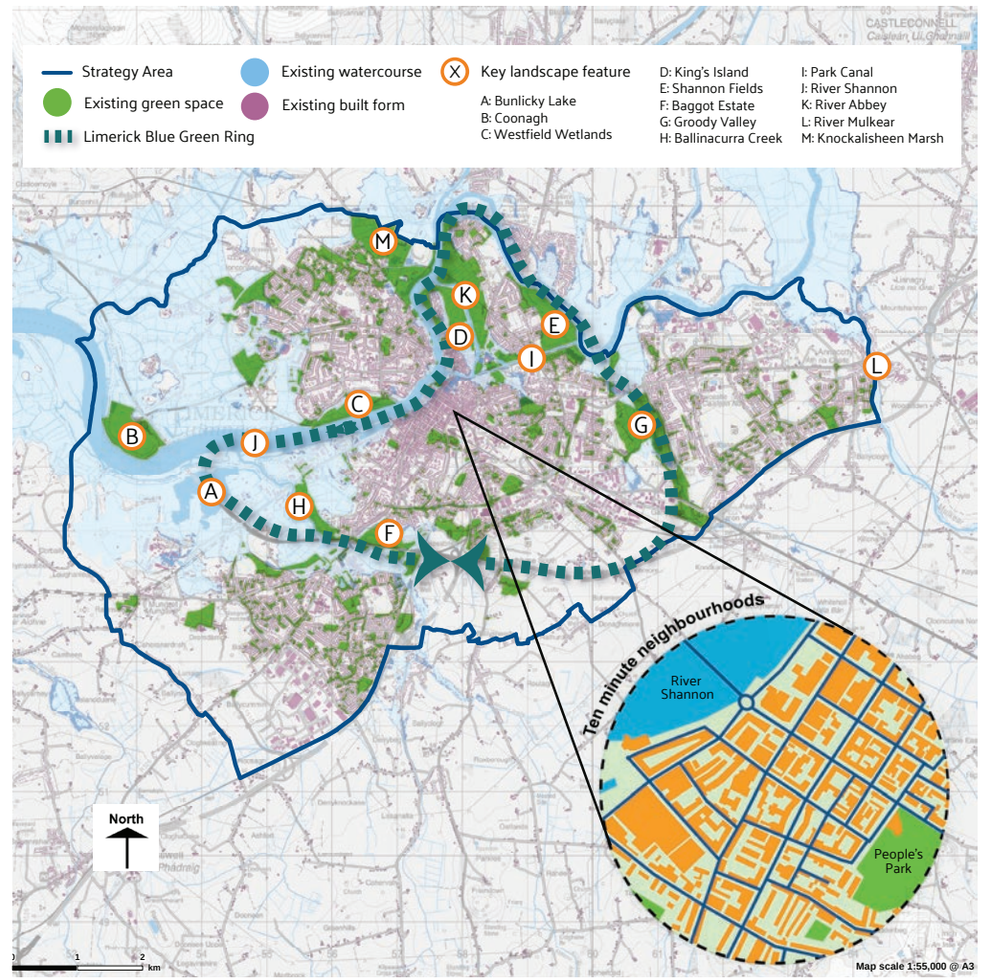


Figure 3.1: Summary of GBI Priority Actions

GBI Priority Action #1	Embed GBI in the implementation of Public and Private Projects
GBI Priority Action #2	Enhance existing open space provision within the Strategy Area
GBI Priority Action #3	Create new formal parks and natural & semi-natural parks to improve accessibility for a growing population
GBI Priority Action #4	Protect, value and enhance amenity green space by applying an appropriate management approach
GBI Priority Action #5	Enhance, protect and develop the network of blueways
GBI Priority Action #6	Integrate GBI in the delivery of the network of active travel routes
GBI Priority Action #7	Enhance recreational access to the River Shannon and tributaries
GBI Priority Action #8	Develop Tree and Biodiversity Strategies for the Strategy Area
GBI Priority Action #9	Promote community engagement and raise public awareness in the development of GBI
GBI Priority Action #10	Incorporate smart mechanisms of connecting GBI initiatives with the public

Chapter 3
Identification of GBI Priority Actions

This chapter identifies GBI Priority Actions, underpinned by the Strategic Vision and Key Ambitions outlined within the LDP. These aim to deliver a host of multi-functional benefits and improvements to the GBI network. Identified in conjunction with the Council, the interventions intend to guide the direction of GBI and set a framework for sustainable growth and future development. The 'Limerick Blue Green Ring' will form a strategic scale GBI corridor and will support the delivery of the GBI Priority Actions.

A breakdown of the GBI Priority Actions is listed in **Figure 3.1** and illustrated spatially in **Figure 3.2.** For each GBI Priority Action, information is provided on the following:

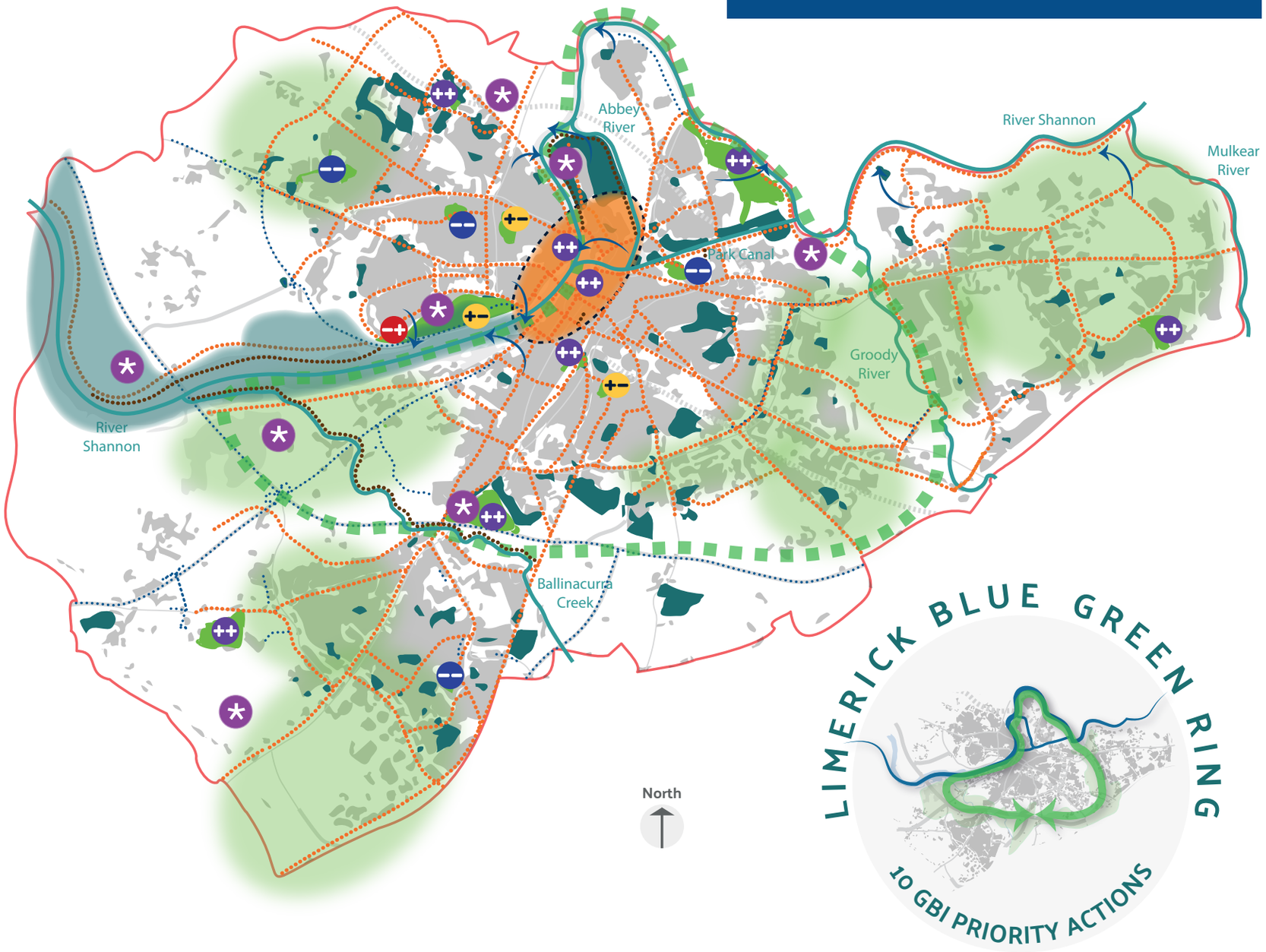
- Objectives and their contribution to the range of GBI functions;
- Links to the GBI evidence base;
- Details of the proposed intervention;
- Potential challenges and risks to delivery;
- Potential delivery partners, mechanisms and stakeholders; and
- Indicative timescales and potential costs.

All GBI Priority Actions outlined are indicative – the ability of each to deliver the number of functions highlighted is dependent on planning, siting, design and land use zoning under subsequent Development Plans. The detail provided is designed to maximise the delivery of GBI Actions as funding becomes available or as an initial reference point for further detailed feasibility and masterplanning work. The GBI Priority Actions may also be used in negotiations with developers to help best direct developer contributions coming forward. Feasibility assessments will be required to investigate the physical and visual impact of proposals on various constraints; including heritage, landscape and ecology.

Where possible, GBI opportunities, and NbS should extend into areas surrounding the Strategy Area (County Limerick and neighbouring County Clare) with actions particularly aligning with the transition to a climate resilient society. These include green corridors and ecosystems, surface water management and restoration works to enhance the network of blueways. The opportunity exists for Clare County Council to become a stakeholder and key delivery partner in the delivery of these GBI Priority Actions.

Figure 3.2:

GBI Priority Actions



Strategy Area boundary

Existing built form

Indicative GBI Priority Actions

GBI Priority Action #1
Embed GBI in the implementation of Public and Private Projects

Strategic Projects / capital projects zone

GBI Priority Action #2
Enhance existing open space provision within the Strategy Area

Existing formal parks / natural and semi-natural parks

Lower quality and lower value

Lower quality and higher value

Higher quality and lower value

Higher quality and higher value

GBI Priority Action #3
Create new formal parks and natural & semi-natural parks to improve accessibility for a growing population

Areas with gaps in the existing green space network

GBI Priority Action #4
Protect, value and enhance amenity green space by applying an appropriate management approach

Existing green space

GBI Priority Action #5
Enhance, protect and develop the network of blueways

Main blueways in Strategy Area

GBI Priority Action #6
Integrate GBI in the delivery of the network of active travel routes

Existing active travel routes

LSMATS Cycle Network (Green Route, Primary, Secondary, Inter-Urban, Feeder Routes and Greenway Routes)

Potential active travel routes

GBI Priority Action #7
Enhance recreational access to the River Shannon and tributaries

Proposed linkages to the River Shannon

Strategy Area wide Priority Actions

GBI Priority Action #8
Develop Tree and Biodiversity Strategies for the Strategy Area

Coastal wetland zone

Key wetlands

GBI Priority Action #9
Promote community engagement and raise public awareness in the development of GBI

GBI Priority Action #10
Incorporate smart mechanisms of connecting GBI initiatives with the public

Work in Progress – Sonny's Lands SSF/AHF Viability study, awaiting confirmation of funding prior to presentation and input from elected members and the public

[37]CIRIA (2015) The SuDS Manual (C753)
(https://www.susdrain.org/resources/SuDS_Manual.html)

GBI Priority Action #1

Embed GBI in the implementation of Public and Private Projects

Links to existing evidence base

- Urban greening seeks to integrate the principles of resilient GBI networks. These interventions typically contribute to the 'stepping stones' of a nature network. If implemented correctly, urban greening can promote a range of environmental benefits. These include increased climate change resilience, biodiversity enhancements, air quality improvements and surface water management.
- Project Ireland 2040 NPF and the NDP recognise the value of planning for GBI and NbS (e.g. SuDS) in the same way as other infrastructure, to provide long term benefits. Ciria C753[37] also recommends that new developments shall manage surface water runoff using SuDS.
- The LDP outlines the requirement to increase the use of NbS throughout the Strategy Area.

Objectives

- Consider creative solutions to integrate urban greening into proposed Strategic Projects;
- Incorporate NbS into the capital investment programme, including all Strategic Projects / Limerick 2030 Transformational Projects through the application of best practice principles outlined in the Nature-based Solutions to the Management of Rainwater and Surface Water Runoff in Urban Areas – Interim Guidance Document;
- Ensure consideration is given to the delivery of 'the right greening solution for the right place'. This should include outlining the importance of best practice design, implementation and maintenance;
- Develop a standalone GBI Design Guide for the Strategy Area which sets out the ambitions of the Council to deliver design quality in projects through the achievement of defined standards; and
- Implement a joined-up approach between the Council, businesses and new developers. This should include the provision of incentives to increase aesthetics, improve building climates and achieve biodiversity enhancements.

Key partners:

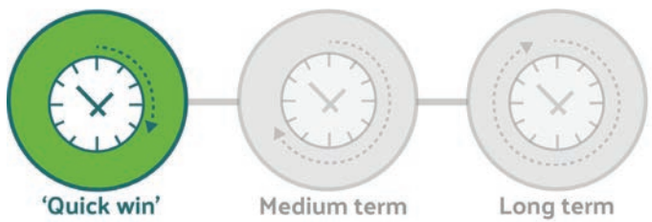
- The Council;
- Climate Action Regional Offices (CARO);
- Local businesses / commercial;
- Limerick Chamber;
- Private developers; and
- Educational establishments and community groups.

Potential delivery mechanisms:

- Funding of capital projects through the Urban Regeneration and Development Fund (URDF);
- EU funding mechanisms; including Interreg Europe delivered as part of Horizon 2020. Potential linkages to noise abatement initiatives identified as part of the EU Holistic and Sustainable Abatement of Noise by Optimised Combinations of Natural and Artificial Means (HOSANNA) project;
- Climate Action Fund;
- Heritage Council funding;
- Potential need for development of a standalone GBI Funding and Action Plan;
- Local businesses; and
- Developer contributions.

Detail of proposed intervention

This action aims to ensure that all new development, both public and private, including Strategic Projects, integrate urban greening as a fundamental element of site and building design. Potential interventions include high-quality landscaping, green roofs, green walls and NbS designed in accordance with best practice guidance available as part of the Nature- based Solutions to the Management of Rainwater and Surface Water Runoff in Urban Areas – Interim Guidance Document.



Retrofitting and the integration of new green walls and roofs into development should also be encouraged due to the delivery of multiple benefits. This includes, but is not limited to, improving air quality, enhancing biodiversity, managing surface water run-off, improving the visual amenity of a space and providing place-making benefits.

With climate change expected to bring an enhanced frequency and magnitude of extreme rainfall events, naturalistic rainwater attenuation should be encouraged where possible with new developments retrofitted into the existing urban fabric.

Potential opportunities and considerations are outlined below:

- Develop a standalone GBI Design Guide for the Strategy Area which sets out the ambitions of the Council in a clear manner. This would act as a mechanism to deliver design quality in projects through the achievement of defined standards. The document would provide robust guidance for new and existing developments and communities.
- Reclaim the streets using pockets of greenery, through the creation of parklets. Existing under-used street corners where hard paving dominates are prime examples of where this concept could make a significant difference to the street scene. Planting and seating would encourage the use of the green pockets, enhancing community interaction. Design cues should be taken from local habitats and species lists, ensuring species are both drought and pollutant tolerant to minimise future irrigation requirements. When greening streets, consideration should be also given to access requirements, particularly along bus routes.
- Requirement for well-designed SuDS in areas prone to flood risk, in order to reduce run-off into local water courses. These schemes should be delivered as a mosaic of multiple forms; including permeable paving, swales and wetland areas – rather than a single function 'hole in the ground'.

▲ Vertical greening / green walls

Potential challenges and risks to delivery

- Ensure best possible siting, design, implementation and maintenance is essential for schemes to be successful and provide inspiration / enthusiasm for the implementation of similar projects.
- Requirement to ensure steady flows of funding to allow Strategic Projects to be both implemented and effectively managed and maintained. Whenever funding is granted, the Council expects it to be spent in accordance with the principles of the GBI Strategy. The long-term stewardship and future maintenance of GBI interventions must also be robust and in place at an early stage.

Example of a rain garden in an urban context

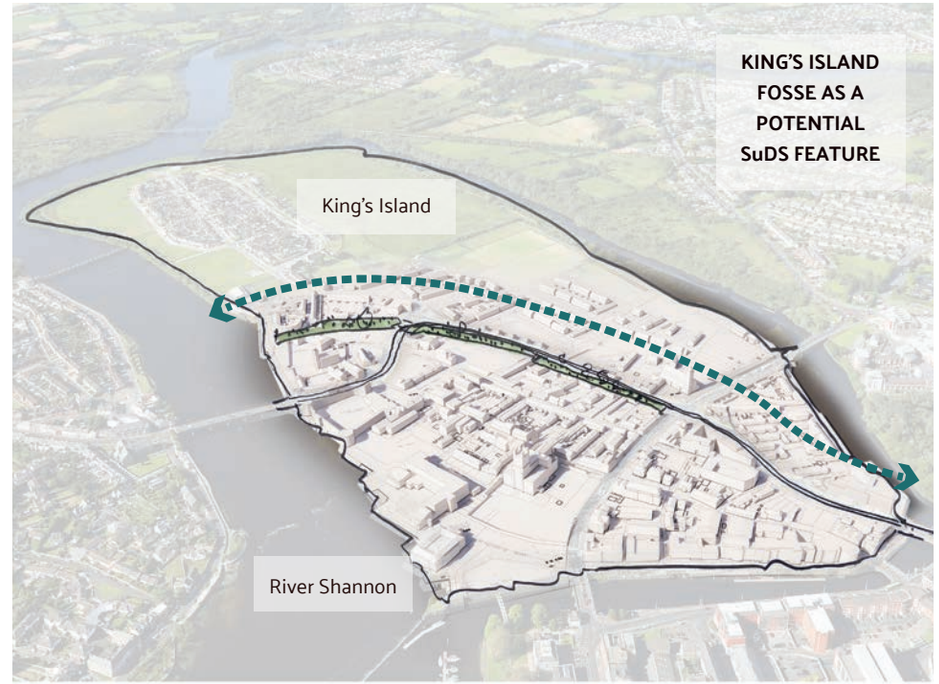
Green walls as a mechanism to improve air quality, enhance biodiversity and regulate urban temperatures

- Enhanced provision of street trees within the urban context would improve the interception of rainfall, therefore slowing the pathway for rain to reach the traditional sewer system.
- Roadside rain gardens, where space permits, should be installed as a measure to manage surface water, whilst also enhancing natural filtration.
- Specific emphasis should be placed on delivering the 'right greening solution for the right space'. Various types of green roof system exist including intensive (mixed planting including wildflowers) and extensive (low-maintenance plants typically sedum) which differ in aesthetics and the delivery of benefits for biodiversity. Other factors to consider include appropriate species, substrate, soil depth, weight restrictions, access for maintenance.
- Urban greening targets should be established for proposed developments, ensuring the proposals tie in with other emerging strategies within the Strategy Area. Proposals should also complement the wider GBI network e.g. Mungret Masterplan, Guinness SSF, Cleeves Riverside Masterplan.
- Archaeological monuments have the potential to integrate well with the development of GBI. The development of GBI should be sensitive to archaeological heritage and offers the potential to enhance archaeological sites. Archaeological assessments will need to be prepared for any actions involving ground disturbance and in the vicinity of standing monuments. Such assessments will need to investigate the physical and visual impact of the proposals. These will need to be undertaken on a case-by-case basis to establish the suitability or not of sites to support human interaction and the nature of the long-term maintenance that is required.
- A GBI Checklist has also been developed (see **Chapter 4**). This will act as a useful review tool during the design process to outline how the Council expects proposals for developments to integrate high quality GBI from the earliest stage. The checklist summarises the key principles developers should have regard to when developing GBI proposals within development masterplans. This includes the aim to 'raise the bar' and help to achieve environmental goals.

Case study: Fosse on King's Island as a potential SuDS feature

Subject to appropriate environmental assessments being undertaken, proposals may be developed which explore the opportunity to utilise the fosse on King's Island, the existing moat around the City Wall, as a SuDS feature. Working in conjunction with the King's Island Flood Relief Scheme, the potential exists to reinterpret the fosse as a modern civic feature which directs stormwater away from built development as part of an integrated surface water management scheme. Forming a new urban blue / green connector, the proposals would provide the opportunity to connect various urban / green spaces, forming a people focussed transport spine for King's Island. The scheme should be used to 're-stitch' the urban realm, whilst retaining and delivering enhancements to the existing habitat networks and preserving archaeology. Existing wet meadows and riparian woodland would be utilised to provide an attractive setting to the proposed public green space.

Planting proposals would form a key feature of future proposals, offering the delivery of landscape benefits whilst also aiding water infiltration. Potential interventions include the implementation of a network of rain gardens, street trees and green spaces. The scheme also provides the opportunity to integrate active travel and recreational routes, forming part of the river flood defences, as sections of a continuous riverside walking and cycling network. Identified as a noise hotspot, proposals for the fosse on King's Island offer the opportunity for the delivery of linkages to noise abatement initiatives identified as part of the EU Holistic and Sustainable Abatement of Noise by Optimised Combinations of Natural and Artificial Means (HOSANNA) project. Consideration should therefore be given to the establishment of low height green noise barriers and the implementation of vegetated surfaces on noisy façades.



Potential blue / green linkage by the fosse on King's Island to the River Shannon

Network of rain gardens - Sankt Kjeld's Square and Bryggervangen, Copenhagen (Image copyright: SLA (https://www.sla.dk/cases/sankt-kjelds-square-and-bryggervangen/))

Nature-based approach to the design of urban green spaces - Sankt Kjeld's Square and Bryggervangen, Copenhagen (Image copyright: SLA (https://www.sla.dk/cases/sankt-kjelds-square-and-bryggervangen/))

Recently installed perimeter paths within Mayorstone Park

Objectives:

- Prepare and deliver an annual work programme to enhance open space in accordance with best practice;
- Deliver high quality improvements to parks and green spaces to encourage local use and enhance community cohesion;
- Ensure parks and open spaces are inclusive for people of all abilities and provide facilities which enhance the visitor experience;
- Create spaces for quiet contemplation and relaxing (including 'hang-out' spaces); and
- Engage local communities, promote volunteering and local 'buy-in'.

GBI Priority Action #2

Enhance existing open space provision within the Strategy Area

Links to existing evidence base

- The EPA investigated the health benefits arising from biodiversity and green infrastructure[38] and found that parks play an important role in the provision of open space and nature in the urban environment. The Council currently identifies nine city parks within the Strategy Area. These green spaces cover an area of approximately 0.61km^2, which is equivalent to 6.7m^2 (0.0067ha) per person.
- The Council promotes the provision and management of high quality open space provision in accordance with the National Sports Policy 2018-2027, Limerick Sports Partnership Strategic Plan 2018-2021, the National Physical Activity Plan (under preparation) and the Limerick Sports and Recreation Facilities Strategy (under preparation).
- The LDP recognises that public open spaces and sports and recreational facilities form key elements to ensure a good quality of life is achieved for all members of the community. The LDP highlights the need for cooperation with sports clubs, schools, cultural groups and community organisations to provide high quality recreational facilities.
- The provision of access to green space within a short walk is fundamental in ensuring the successful implementation of the '10 minute city' concept, as described within Regional Policy Objective 176 in the RSES for the Southern Region.

[38]EPA (2016) Health Benefits from Biodiversity and Green Infrastructure (https://www.epa.ie/pubs/reports/research/health/EPA%20Research%20Report%20195_webFinal.pdf)

Key partners:

- The Council (inter-departmental, including Parks Department);
- Healthy Limerick;
- Sport Ireland;
- University of Limerick;
- National Parks and Wildlife Service (NPWS);
- Tidy Towns;
- Coillte;
- Failte Ireland;
- URBACT Health & Greenspace; and
- Private developers.

Potential delivery mechanisms:

- Developer contributions;
- Local community (at domestic scale, schools and community buildings);
- School and youth groups;
- University of Limerick.
- Active Cities Programme;
- Possible funding through the Outdoor Recreational Plan (ORP) funding from Coillte;
- Climate Action Fund;
- URBACT Health and Greenspace; and
- EU funding mechanisms; including EU LIFE and Interreg delivered as part of Horizon 2020.

The proposed intervention

The Strategy Area currently boasts a network of multi-functional green spaces which accommodate a range of uses and provide for the diverse needs of the wider community. These spaces comprise of a number of existing parks and open spaces that exist in most housing estates within the Strategy Area. All of these green spaces, including the parks, are represented in mapped format in **Figure 3.3.**

Parks have been categorised into four categories, local formal park, small formal park, pocket formal park and local natural and semi natural park. These parks and open spaces offer a number of facilities and activities for all members of society and vary in scale from small pocket parks with provision for informal recreation to larger scale sites which attract visitors from across the Strategy Area. This existing open space provision contributes towards the character and attractiveness of the area, providing opportunities for recreation and biodiversity enhancements.

Analysis of parks and open spaces

Out of the total area of open space in the Strategy Area, it has been established that the current provision comprises 82 areas larger than 0.8 hectares as well as numerous other smaller areas of amenity green space. The potential exists to create an integrated network of publicly accessible open space which is easily accessible from each residential property within the Strategy Area. Opportunities to ensure existing open spaces are of a high quality and provide a broad range of features and facilities to support the health and well-being of residents should also be considered.

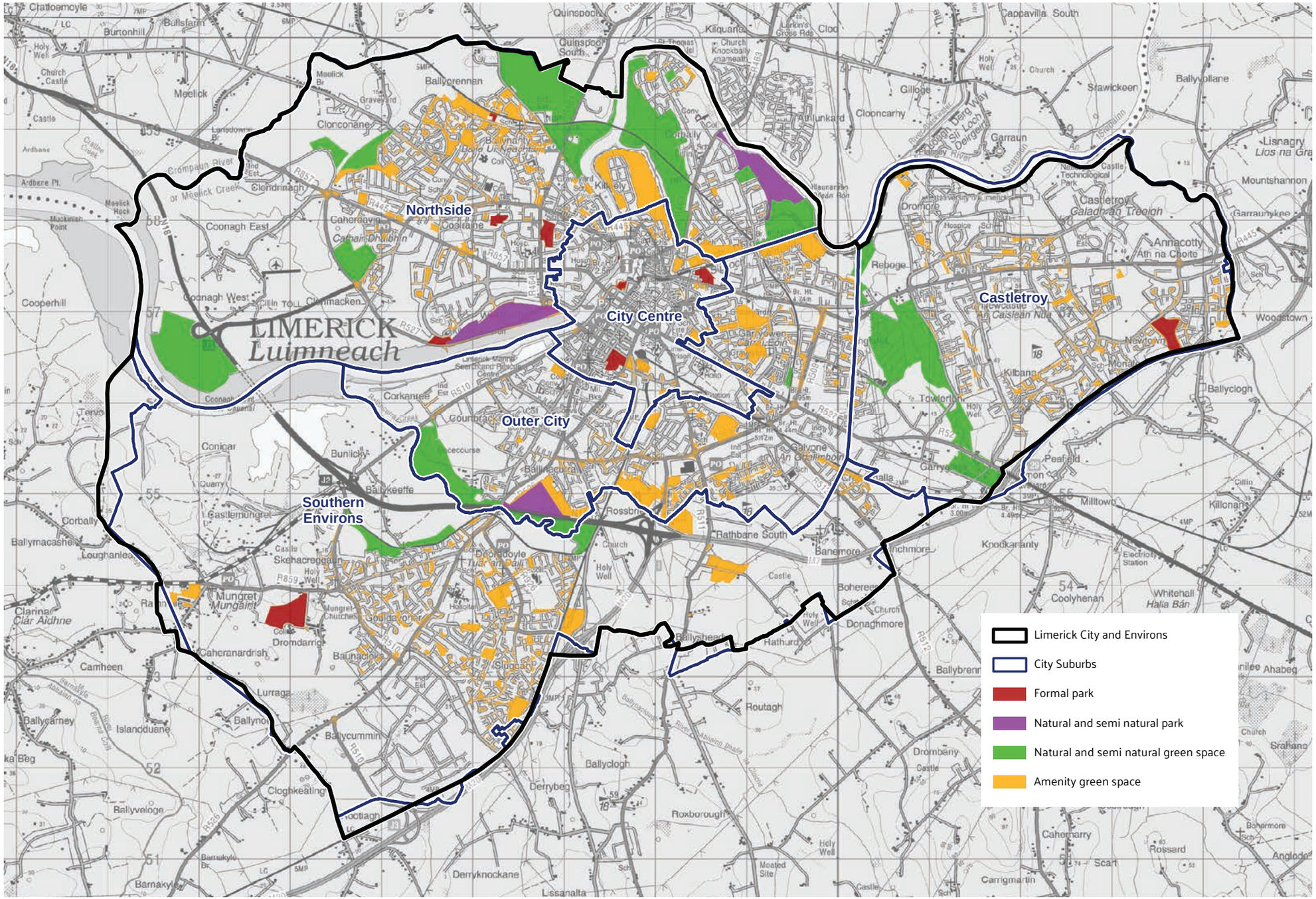
In order to develop a framework for analysis of existing open space provision to inform an annual works programme, a detailed hierarchy was developed. Sites have been categorised according to typology (based on the primary 'functions' of the open space) and hierarchy (based on the size of the open space) in order to identify potential site specific enhancement measures. Quality (condition) and value (functionality) scores were also calculated for each site and a mean value established for the sites for comparison purposes. This analysis of the quality and function of the various parks is captured in a graph format and represented in **Figure 3.3**. For the purpose of the assessment, a combination of the size of sites and open space typologies was used. The hierarchy recognises that open spaces of different sizes would be expected to provide a different 'offer' to users. For instance, users will be more likely to travel further to reach a larger site with more facilities than a small area of amenity green space with no facilities. The opportunity exists to ensure existing open spaces are of a high quality and provide a broad range of features and facilities to support the health and well-being of residents. Where gaps exist in the access to green space, then consideration should be given to:

◀ Timber-sculpted bench at the Baggot Estate which is undergoing changes to create a new space out of an under-utilised area

Potential challenges and risks to delivery

- Successful community consultation will form a key component in the delivery of this action. Effective engagement and securing community 'buy-in' will aim to ensure that public spaces meet the needs and interests of different genders, ethnic groups and age groups, as well as accessibility criteria.
- A system of prioritisation will need to be established to identify specific sites most in need of capital improvements due to factors such as localised deprivation or open space deficiencies.

Figure 3.3: Location of existing green spaces within the Strategy Area



- Ensuring existing open spaces meet quality and value standards;
- Addressing any potential barriers to existing open spaces;
- Re-thinking the contribution of amenity green space to the GBI network. The potential exists to introduce positive landscape and ecological features in such areas. In some locations, it may be appropriate to prioritise quality and function over quantity, sacrificing some amenity grassland if this helps bring underused green space into positive use; and
- Creating new open spaces to meet increased accessibility. The typology of proposed open space should be informed by gaps in the existing network of green spaces.

A detailed audit and analysis was undertaken at each of the parks. Each site was assessed for its strengths and weaknesses and recommendations made on the opportunities for each of the sites. The results of the open space analysis highlights some general trends. This includes the potential to develop opportunities for physical activity within parks throughout the Strategy Area; including running and walking trails as well as community led team sports. This could include initiatives which work in partnership with schools and educational establishments to encourage the use of parks and open spaces for recreational activities. The use of innovative technology and signage should also be explored, for example virtual fitness classes which can be incorporated into existing outdoor gyms.

In addition, many of the sites scored poorly in relation to community engagement and marketing. The opportunity exists to empower Limerick's active resident base to increase their interest and involvement in park management and improvement projects, including tree planting, wildflower / bulb planting events and scrub clearance to enhance sight lines. There are other existing green spaces in the Strategy Area, including the Regeneration Areas that have not been audited and analysed as part of the Strategy, but should be assessed in a similar manner as part of any feasibility studies going forward.

Figure 3.4: Results of quality and value auditing of existing formal parks and natural and semi-natural parks within the Strategy Area

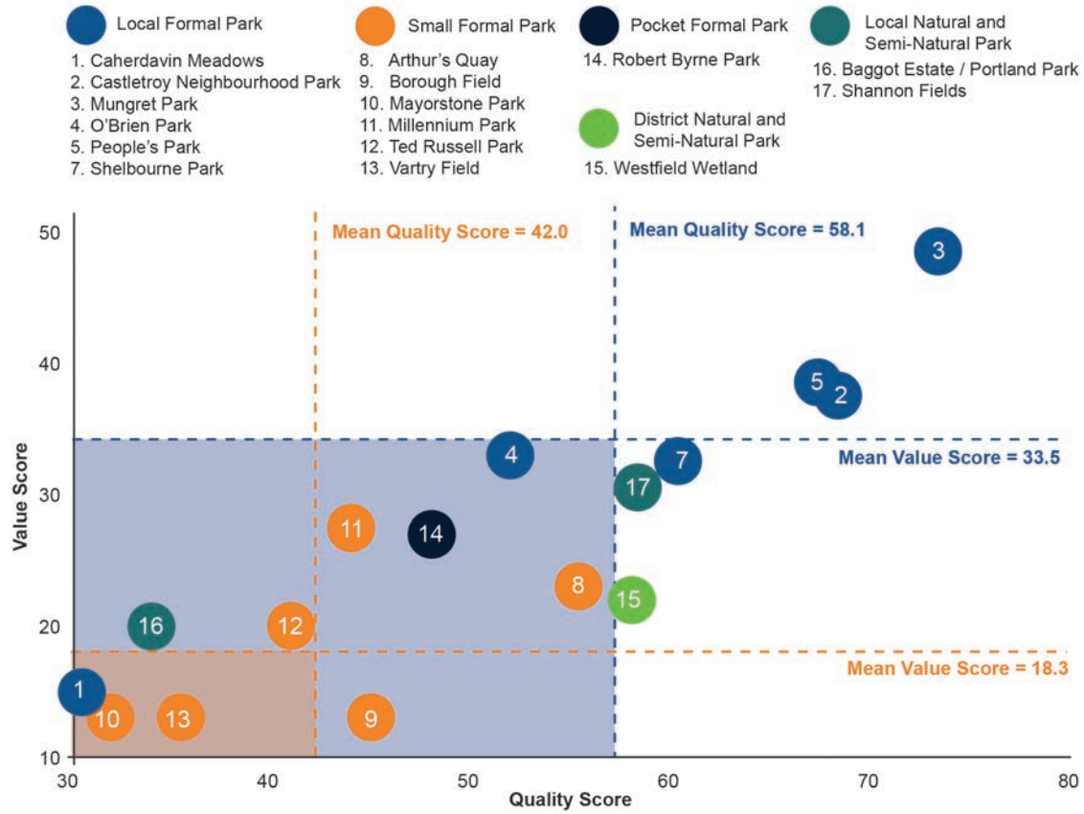


Figure 3.4 summarises the calculated quality (condition) and value (functionality) scores for each of the sites investigated. In general, sites falling below the mean quality and value scores should form targets for investment, as detailed below:

- **Good condition but poor functionality:** sites that are achieving a sufficient standard for quality, most likely with sufficient levels of maintenance. However, value for the site falls short through a lack of suitable features and facilities e.g. Shelbourne Park and Kennedy Park.
- **Poor condition but good functionality:** These sites include the features, facilities and attributes that are expected of this type of open space. However, their condition may be poor, and the site may be failing to achieve expected standards for maintenance and management e.g. Ted Russell Park.
- **Poor condition and functionality:** Enhancing both the quality and value of these sites should be considered a priority, particularly in areas which suffer from a gaps in access to or quantity of publicly accessible open space e.g. Caherdavin Meadows and Mayorstone Park.

This assessment has led to the formulation of high-level actions for the various parks that have scored poorly in the quality and function of the respective green space. These potential actions will contribute to the enhancement of these parks and open green spaces and can be found in **Chapter 4** of this document.

Specimen trees within amenity grassland within Mungret Park

GBI Priority Action #3

Create new formal parks and natural & semi-natural parks to improve accessibility for a growing population

Links to existing evidence base

- LSMASP recommends the identification of a location for a regional scale park within the Limerick-Shannon Metropolitan Area, as well as neighbourhood parks and open spaces.
- Regional Policy Objective 176 in the RSES for the Southern Region seeks to achieve sustainable compact settlements as part of the '10-minute city' concept. The vision is based on ensuring the provision of access to key amenities within a short walk or cycle from each residential property. The key benefits and considerations for GBI include ensuring access to green and play spaces within a short walk, protecting and enhancing key destination green / blue spaces and ensuring local open spaces are multi-functional and cater for a diverse range of needs.
- Ambitious growth targets have been projected for Limerick City and County, equating to a population increase of approximately 30% between 2016 and 2031. It is therefore crucial that this is accommodated in a sustainable manner, harnessing opportunities for GBI and affording a high quality of life for future residents.
- Access to GBI and green space may be influenced by a range of demographic variables; including age, gender, education level, employment status, ethnicity and disability. Whilst all demographic groups benefit from GBI, socioeconomic inequalities are lower in communities with a high provision of green space. Localised improvements to the network of GBI could therefore help to reduce health and socio-economic disparities.

Objectives

- To create new parks in response to gaps in the distribution of existing open space (in terms of quality, value, quantity and accessibility). Proposals should be developed as part of a comprehensive programme of community engagement;
- Supplement the network of open spaces across the various hierarchies to address any gaps in the distribution of green space across the Strategy Area;
- Prioritise park creation and enhancement schemes in areas where communities are exposed to high transport noise levels; and
- Ensure appropriate resources are allocated to the future maintenance and management of the network of publicly accessible open space.

Key partners:

- The Council;
- Healthy Limerick;
- Sport Ireland;
- University of Limerick;
- Tidy Towns;
- NPWS;
- Coillte;
- Failte Ireland;
- URBACT Health & Greenspace; and
- Private developers.

Potential delivery mechanisms:

- Developer contributions;
- Local community (at domestic scale, schools and community buildings);
- School and youth groups;
- University of Limerick.
- Active Cities Programme;
- Possible funding through the Outdoor Recreational Plan (ORP) funding from Coillte;
- URBACT Health and Greenspace;
- Climate Action Fund;
- EU funding mechanisms; including EU LIFE and Interreg delivered as part of Horizon 2020. Potential linkages to the EU HOSANNA project; and
- Southern Regional Assembly.

Existing path networks within Castletroy Neighbourhood Park

The proposed intervention

The Council maintains a number of green spaces throughout the Strategy Area, as identified in GBI Priority Action #2. These include Baggot Estate Nature Park, Millennium Park, People's Park, Shannon Fields, Ted Russell Park, Mungret Park, Castletroy Park and Shelbourne Park. However, existing provision of green space may not be spread evenly across the Strategy Area and the GBI Strategy offers the opportunity to assess the existing number of green spaces and make recommendations to readdress any imbalance.

A gap in access to high quality open space, alongside limited provisions in personal gardens, can have significant implications on community well-being and mental health. The opportunity therefore exists to support the improvement and creation of green space to address localised gaps in the accessibility of open space across the Strategy Area. In order to address these gaps, the existing parks and green spaces have been mapped to show the geographic spread of the green spaces across the Strategy Area. These individual green areas are mapped further by applying buffer areas of 100 metres, 400 metres and 800 metres, outside the extent of the green space. The associated buffer accords with the categorisation of the park and outlines the extent of the geographic area that this green space serves and is as shown on **Figure 3.5.**

Assessment of gaps in the distribution of green space

When the accessibility mapping for formal parks and natural and semi natural green spaces is combined (see **Figure 3.5**), the findings indicate a number of gaps exist in their distribution across the Strategy Area. It can be seen in **Figure 3.5** that the provision of formal parks within the small park hierarchy is limited, particularly in the eastern and southern areas of the Strategy Area within Castletroy,

People's Park

Shelbourne Park

Outer City and Southern Environs. Data analysis also highlights that access to nature within the Strategy Area is provided by two natural and semi natural parks within the local hierarchy. Provision of these sites is more limited and significant areas of the Strategy Area lie outside the buffer of these green spaces. Notable gaps exist within the western extent of Castletroy, land within the City Centre and areas to the west within the Northside and Southern Environs.

On the Northside, there is no park or play facility to serve the highly populated Caherdavin Community. There is a substantial green space adjacent to Caherdavin Community Centre that has recently received investment but could be considered for further upgrades and possible expansion into private lands. This site could be used to provide play facilities and parkland to serve the community. This site could also serve the Clonmacken area, where housing is currently under construction.

From an analysis of the areas of open green spaces in the Strategy Area, it is evident that the largest provision of open space is located on the Northside, where there is approximately 11.7m² of green space per capita. However, these green spaces, Caherdavin Green and Shannon fields in particular are under utilised. These two green spaces must be considered further for additional play and well-being value and provide additional recreational opportunities for both the Caherdavin and Corbally communities.

In contrast, Castletroy on the east side, has the lowest provision of green space, with 4.22m² per person. Castletroy has a large population and green space provision is served by Castletroy Park, which is located on the periphery of the Strategy Area. This results in large population areas west of the Golf Links Road with little or no green space, as is evident in **Figure 3.5.** There is a significant shortage of parkland and recreational green space in this area. However, the Groody Valley is located west of the Golf Links Road and warrants consideration for development as a natural and semi-natural park which could attract visitors across the Strategy Area. The site would offer a range of attractions and facilities, whilst also addressing the gap in recreational space in the immediate area. The Groody Valley provides a range of opportunities for biodiversity, recreation, wildlife and education.

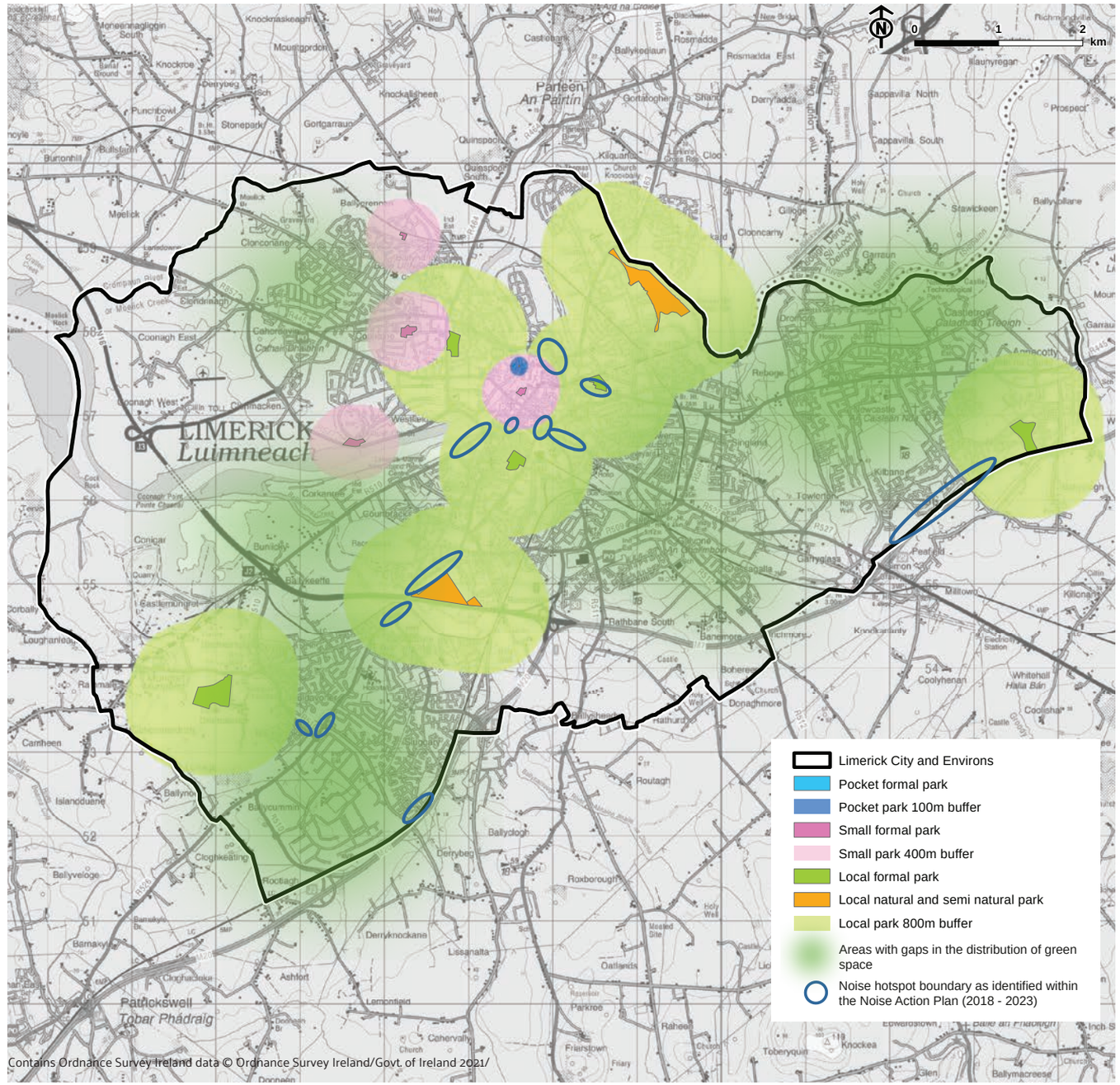


Figure 3.5: Location of existing green spaces within the Strategy Area

In addition to the Castletroy area, there are also gaps in recreational opportunities within residential areas on the Old Cork Road, Janesboro, Garryowen and Kennedy Park. There are existing green spaces that could be considered for upgrading to parks and provide much needed recreational and play opportunities for these communities.

In relation to green space on the west side of the Strategy Area, in the Southern Environs, it is evident from **Figure 3.5** that there is a gap in the distribution of recreational green space in the Dooradoyle Raheen area. Application of the 800m buffer, representing a ten minute walking distance, around Mungret Park, also highlights the shortage in Raheen / Dooradoyle. The densely populated areas of Dooradoyle in the Southern Environs lie outside the 800m buffer of the network of city parks. Similar to Castletroy, Mungret Park is located on the periphery of the residential area that it should serve. This gap highlights the need for enhancements in the distribution of publicly accessible open space across the Strategy Area. Existing open green spaces in the Dooradoyle / Raheen area should be assessed for recreational opportunities that could be considered to serve the communities in these areas. One such example is Vartry Field where footpaths were recently installed. There may be other areas in Raheen / Dooradoyle that could be considered for small scale opportunities.

The Baggot Estate Nature Reserve, or Portland Park offers great potential as a recreational amenity for health and well-being within the Strategy Area. It is a forest park with opportunities for natural play, biodiversity and community projects. Historically, this park was subject to anti-social behaviour but recent upgrades and the delivery of a number of projects has attracted users into the site, which has in turn reduced the anti-social activity.

To summarise, gaps in the distribution of green space across the Strategy Area can be broadly described as follows:

- Land at the western extent of Castletroy;
- Land to the south of the River Shannon within the Southern Environs;
- Urban areas within Dooradoyle in the Southern Environs;
- Sections of land bordering the corridor of the M7 and N18;
- Land forming the eastern extent of Outer City (bordering the carriageway of the R509);
- Land at Ballycummin at the southern extent of the Southern Environs; and
- Land in the Moyross area.

The delivery of new open spaces should aim to address gaps in accessibility. The typology of proposed open space should also be informed by gaps in the existing network.

An integrated network of green spaces also plays an important role in ameliorating the negative perception of noise in urban areas. Population exposure to various noise bands was estimated within the Noise Action Plan 2018-2023[39]. A total of fourteen noise hotspots were highlighted within the administrative boundary of Limerick City and County, of which twelve lie within the Strategy Area itself. The opportunity therefore exists to prioritise park creation and enhancement schemes in areas where communities are exposed to high transport noise levels. The establishment of 'green spaces as 'low noise tourist destinations' offers the potential to maximise benefits for the public. Potential linkages to the Holistic and Sustainable Abatement of Noise by Natural and Artificial means (HOSANNA) project should also be explored.

Potential challenges and risks to delivery

- In some locations, it may be appropriate to prioritise quality and function of green spaces over quantity due to funding pressures. This could potentially involve sacrificing amenity grassland in order to bring underused green space into positive use;
- The development of plans for open green space provision should ensure that activities such as anti-social behaviour and illegal disposal of waste are designed out as much as possible. Potential mechanisms to minimise illegal dumping activities include the provision of signage, installation of barriers and lighting (depending on appropriateness for habitats) as well as appropriate landscape maintenance;
- The need to ensure steady flows of funding to progress the creation of new parks, during both the implementation and management periods;
- Stewardship challenges associated with the management of green assets in the long term; and
- Ensuring management and maintenance is built into funding also beyond the initial planting or natural regeneration stages.

[39]Limerick City and County Council (2018) Noise Action Plan (2018-2023) (https://www.limerick.ie/sites/default/files/media/documents/2018-12/LCCC%20Noise%20Action%20Plan%202018-2023.pdf)

Case study: Create a District Park at Groody Valley

The Strategy Area is characterised by a shortage of amenity and recreational green space provision within the District Park hierarchy, with a need for sites that offer the potential to attract visitors. Subject to appropriate environmental assessments being undertaken, there may be a significant opportunity for the enhancement of the GBI network. The Southern RSES provides strong support for protecting, enhancing and managing GBI in an integrated and coherent manner and outlines how planning for GBI should inform the preparation of development plans. Section 7.2.5 identifies the need for regional sport and recreation facilities. This is also reflected in Regional Policy Objective 200, which requires Local Planning Authorities (LPAs) to identify locations for new regional parks.

Characterised by wet grassland floodplain, the site currently performs an important role as a wildlife corridor and flood risk management zone. The Groody River meanders broadly north-south through the area, joining the River Shannon to the east of Rhebogue. The site itself is comprised primarily of wet grassland, scrub, scattered trees and hedgerows and currently provides a key feeding ground in the late autumn and winter for wildfowl. In recognising biodiversity imperatives and vulnerabilities, proposals for the site should be designed to accommodate health, educational and recreational needs whilst also protecting and buffering sensitive ecological assets from damage or disturbance.

Proposals to create new habitat within areas accessible to the public would help to increase access to nature in some of the adjoining neighbourhoods, which currently have the poorest access to green space. Proposals should include attractions to encourage visitors from across the Strategy Area to experience nature and biodiversity. The potential to zone visitor facilities in order to offer space for wildlife should also be explored. A new District Park at Groody Valley should aim to deliver the following elements:

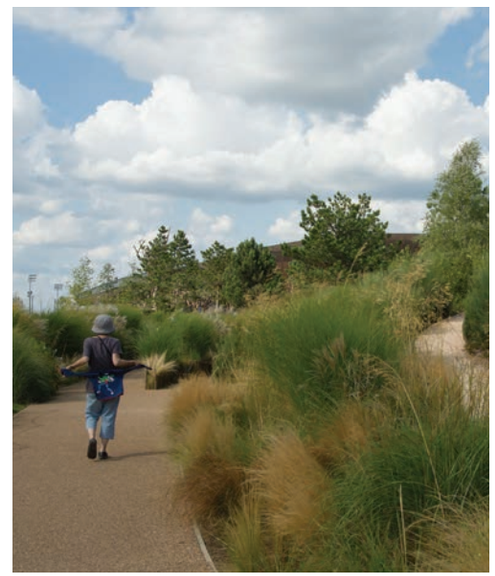
- **Promote nature conservation:** Proposals should enhance facility provisions which promote the highest levels of biodiversity conservation. This could be achieved through the implementation of nature trails, natural play facilities, basic amenities as well as provision for volunteering opportunities and skills development. The site would also benefit from proposals which facilitate restoration through the removal of scrub, implementation of controlled grazing and installation of a wader scrape with shallow ponds. Consideration should also be given to potentially restricting public access to some areas of the site to prioritise nature conservation. Proposals to supplement the vegetated margins of the River Groody to increase biodiversity and reduce the potential for erosion from riverbanks should be implemented. The site offers the potential to deliver high amenity value through visitor engagement. Potential linkages to the provision of GoGreen Routes as part of the EU-funded Horizon 2020 project should also be explored.

Scrub vegetation parallel the River Groody

Gellerup New Nature Park
(Image copyright: SLA (https://www.sla.dk/cases/sankt-kjelds-square-and-bryggervangen/))

- **Deliver recreational opportunities:** The introduction and improvement of facilities and activities available within the Groody Valley would form a key component in creating a 'pull' of visitors. The site offers opportunities for walking, hiking, water-based recreation and a variety of sporting activities. The riverside landscape, panoramic views and the natural habitats all contribute to the creation of an attractive setting in close proximity to densely populated areas. The opportunity also exists to deliver a new marketing campaign for the site which promotes the Groody Valley to both local residents and the surrounding region.
- **Enhance the educational offer of the site:** The green space should aim to attract individuals, families, school groups and the voluntary sector across the Strategy Area as well as deliver initiatives to promote environmental education awareness programmes. Furthermore, the introduction of an extensive programme of events which target a variety of demographics would provide additional income.
- **Incorporate facilities for natural play:** Integration of play features constructed from natural features and materials offer the potential for the creation of environments conducive to natural play and enhanced sense of place.
- **Delivery of active travel linkages:** The introduction of a proposals to encourage sustainable active travel and promote increased connectivity with the site should form integral components of the design proposals. The potential also exists to deliver community awareness initiatives to encourage a modal shift away from the private car to more sustainable means of travel.

Proximity of residential properties to the site, including Brookfield Hall student accommodation



Potential use of GBI to delineate the path network

Wildflower meadows offer feeding and nesting habitat for a variety of bird species

GBI Priority Action #4

Protect, value and enhance amenity green space by applying an appropriate management approach

Links to existing evidence base

- Wildflower meadows offer a diverse habitat as well as a changing palette of colour within an urban environment. The All-Ireland Pollinator Plan recognises the importance of pollinator friendly management of green spaces and greenway cycle routes, with the objective of creating a cohesive network of diverse habitats.
- These habitats may be vulnerable to the effects of climate change. The timing of plant and animal life-cycle events may change significantly, with flowering and seed setting occurring earlier in season. The potential exists to affect the synchrony with pollinator species who depend on these plants for their food.
- To celebrate Limerick's year as a European Green Leaf City in 2020, the Council launched the 'Let it Bee' campaign to increase the number of wildflower meadows in Limerick City. This was hugely popular at sites across the Strategy Area.

Objectives

- To enhance green space ecologically and visually by adopting a change in landscape management and maintenance practices;
- Ensure GBI proposals adhere to best practice environmental management;
- To provide opportunities for interaction with the landscape through the provision of natural play, bulb and wildflower planting and food growing;
- To deliver a programme of education to aid understanding of the proposed changes by the Council and local community; and
- To foster a sense of ownership in the local community whereby people care for and have an affinity with their local environment.

Key partners:

- The Council;
- NPWS;
- URBACT Health and Greenspace;
- CARO;
- Healthy Limerick;
- Tidy Towns;
- Grow it Forward;
- Limerick Food Partnership;
- Schools and other education providers; and
- Developers.

Potential delivery mechanisms:

- Development of the Biodiversity Strategy (see Priority Project / Action #8: Develop Tree and Biodiversity Strategies for the Strategy Area);
- Simple variations to "business as usual" landscape management practices for existing green spaces managed by the Council;
- Climate Action Fund;
- Opportunities in response to planning and development;
- Charitable and voluntary sector involvement (e.g. through community groups or initiatives);
- Sponsorship of GBI interventions e.g. roundabouts;
- School and youth groups; and
- University of Limerick.

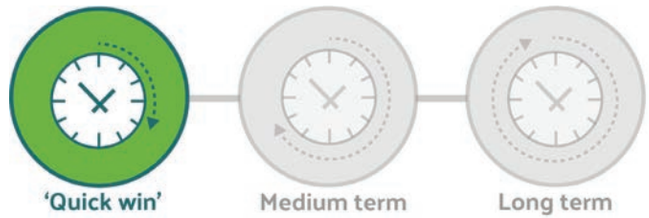
Existing amenity grass adjacent to Caherdavin Community Centre

The proposed intervention

The Strategy Area currently contains a large number of public parks and green spaces, comprising large swathes of amenity grassland which is typically of low ecological value and limited visual appeal (e.g. Ballynanty and Garryowen green spaces). The opportunity exists to direct a change in management and maintenance practices to encourage more diverse and visually interesting urban green spaces. Consideration should be given to the transformation of large areas of underutilised amenity grassland into areas for natural play, increased biodiversity, aesthetic interest and community involvement.

This change in approach of managing green spaces would be overseen by the Council who would guide the design, delivery, implementation and maintenance of the proposals. The Council would work in partnership with the community and seek to support local initiatives. The scheme would aim to deliver the following elements:

- **Facilitating a shift in cultural perception.** Consultation and engagement with the local community would be required from the outset to ensure that changes in landscape management are understood and adopted. Involving local people as much as possible would foster a sense of community ownership, resulting in a landscape that is locally valued.
- **Bulb planting to add seasonal interest.** Bulb planting is a relatively low cost and low input mechanism of adding seasonal interest and visual impact to large areas of amenity grassland. With bulbs appearing in the spring followed by wildflowers, there is great opportunity for a succession of colour and interest. Local communities and schools should be involved with guidance on locations and planting methods.



Species-rich wildflower meadow

- **Managing amenity grassland to support wildlife.** Urban green areas are currently subject to a regular mowing regime. However, wildflower meadows would provide a richer experience for the local community, delivering a splash of colour that would contribute to the sense of identity in the landscape and an enhanced connection with nature. Rather than requiring significant upfront capital investment, the potential exists for this GBI Priority Action to be 'cost neutral' or provide cost savings in the medium term, linked to relaxed mowing regimes. Institutions which manage land; such as charities, schools or large estates, should be engaged in a strategy to shape these potential pollinator corridors.

Potential challenges and risks to delivery

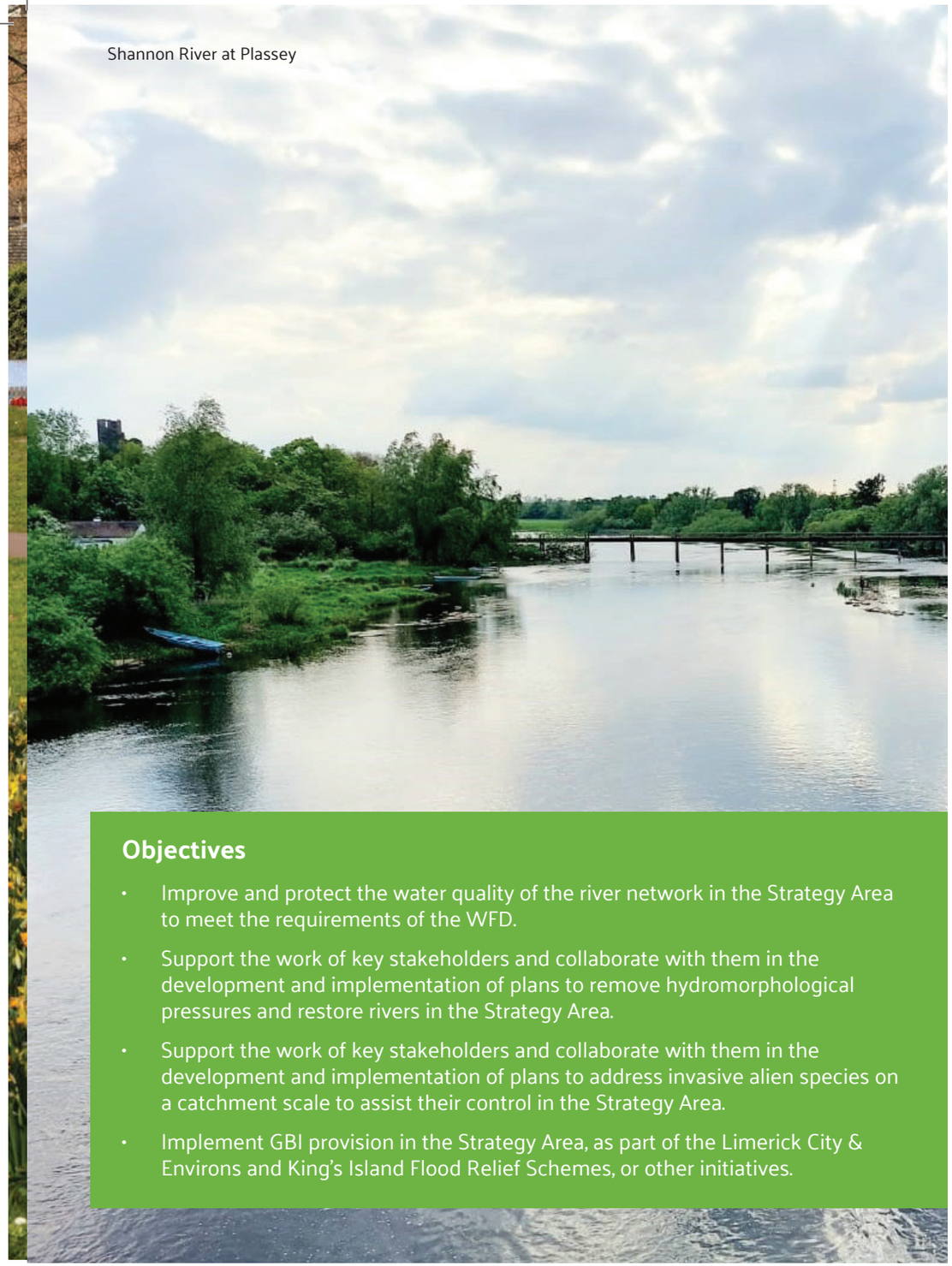
- Need to protect and preserve Natura 2000 habitats and Annex Species. This includes safeguarding the integrity of the qualifying interests and conservation objectives of the River Shannon and River Fergus Estuaries SPA and Lower River Shannon SAC.
- Delivery of pollinator corridors requires collaboration with the Council in order to understand the benefits of wildflower areas in parks and incidental green spaces.
- Appropriate ground preparation is a key challenge to delivery. As wildflower meadows require nutrient poor soil to avoid competition with vigorous grass species, stripping of the existing topsoil would be needed. It would then be necessary to identify an alternative location for the topsoil through a co-ordinated action plan. Although wildflower seeding yields lower annual management costs compared with amenity grass, the Council would need to develop an annual maintenance programme to allow the more desirable species to flourish.
- Seeding of wildflower meadows on road verges requires careful negotiation with the Council to ensure that safety and access standards are maintained. This could be achieved by ensuring 'visibility splays' are retained to provide appropriate sight lines.

- **Exploring options for natural play**
  The natural environment provides great opportunities for play and education; including tree climbing, jumping / balancing on logs, den building, climbing and water play.
- **Provision of seating / picnic benches**
  Providing places for people to sit and picnic would further activate the areas and deliver meeting places for local people.
- **Tree and shrub planting**
  In collaboration with the Tree Strategy, woodland planting within the Strategy Area offers opportunity for natural play and fruit growing. Unlike shrub planting, trees enable sight lines to be maintained across green spaces. Shrub planting should be avoided in areas prone to anti-social behaviour due to the potential for shrubs to obstruct opportunities for informal surveillance.


Opportunity to add natural play features within areas of existing amenity green space

- **Amenity grass for recreation**
  It may be appropriate to retain some large areas of amenity mown grass for sports pitches and team sports.
- **Provision of improved wayfinding and interpretative signage**
  Improvements to connectivity provides an opportunity to present and communicate the distinct identities of individual green spaces, with wayfinding acting as a series of branding touchpoints experienced by users. Engaging, effective and consistent signage that reflects and communicates the brand values and vision of a place would provide a sense of cohesion and community, delivering a 'voice' and narrative that builds a sense of arrival and place. Best practice design principles, such as designing for a human scale, use of gateways, focal points and landmarks to help people find their way, would all help to create a pedestrian friendly environment.
- **Creation of links and corridors between habitats**
  Green spaces within the Strategy Area have the potential to act as vital 'biodiversity corridors' for movement and dispersal once restored as grassland habitat or wildflower meadow. The restoration of wildlife function would help respond to the decline in biodiversity and habitat fragmentation which is identified within this GBI Strategy.
- **Retention of dead wood**
  Dead wood provides a valuable habitat for invertebrates. However, careful consideration to the location of log piles would be required to ensure appropriate integration into the landscape.
- **Community food growing initiatives**
  The potential exists to create a network of community food growing opportunities within existing amenity grassland throughout the Strategy Area. These sites would address the local sustainability challenge, contribute to increased climate resilience and provide wider health and well-being benefits. Links should be developed with established organisations such as Grow It Forward and the Limerick Food Partnership.
- **Establishment of friends groups**
  The development of a wide network of independent local voluntary groups would help to foster a common purpose in promoting more effective, beneficial usage of local green spaces.
- **Monitoring and review**
  Management and maintenance practices should be monitored and evaluated to provide a high-level performance overview of proposals to measure usage and impact at a local level.

Bulb planting adds seasonal interest



Shannon River at Plassey

GBI Priority Action #5

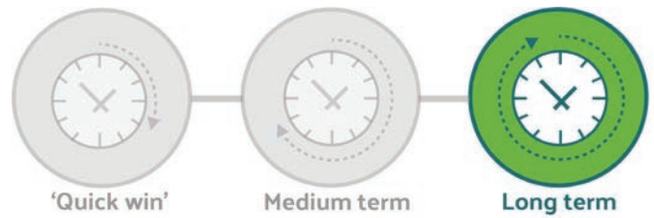
Enhance, protect and develop the network of blueways

Objectives

- Improve and protect the water quality of the river network in the Strategy Area to meet the requirements of the WFD.
- Support the work of key stakeholders and collaborate with them in the development and implementation of plans to remove hydromorphological pressures and restore rivers in the Strategy Area.
- Support the work of key stakeholders and collaborate with them in the development and implementation of plans to address invasive alien species on a catchment scale to assist their control in the Strategy Area.
- Implement GBI provision in the Strategy Area, as part of the Limerick City & Environs and King's Island Flood Relief Schemes, or other initiatives.

Links to existing evidence base

- The Draft RBMP 2022-2027 highlights that physical barriers on watercourses can impact negatively on the structure and function of habitats and species e.g. weirs that impede fish migration, channel drainage that effects sedimentation and physical habitat conditions.
- Project Ireland 2040 NPF recognises the need to enhance water quality and resource management by ensuring that RBMP objectives are fully considered through the planning process, that flood risk management informs place-making by avoiding inappropriate development and there is the integration of sustainable water management systems (e.g. SuDS) and green infrastructure in the creation of new places.
- The LDP outlines a commitment to achieve and maintain at least "Good Status" and not allow the deterioration of status in watercourses, except where more stringent obligations are required to achieve "High Status", as required under the EU Water Framework Directive (WFD).
- Invasive alien species have been identified as one of the significant water quality management issues in the Strategy Area e.g. Giant Hogweed which is listed in the Invasive Species of European Concern (EU Regulation 1143/2014). Non-native species are highly invasive and threaten ecosystems, habitats and native species. They are often impossible to eradicate because they are difficult to control and contain.



Potential challenges and risks to delivery

- Pressures on water quality in the Strategy Area are impacted by activities upstream of the river network as well as within the Strategy Area. Improvements require successful actions to be taken on a catchment scale in collaboration with key stakeholders and the public.
- Substantial changes in river flows are likely with climate change (low flows and flooding) which will increase pressure on water quality.
- Population growth will put pressure on the river network through increased water demand.
- Investment will be required where infrastructural deficiencies are identified as impacting water quality.
- The proposed funding ring-fenced to address invasive alien species is limited and will be extremely competitive to receive. Multi-annual funding for projects is required.
- Potential restoration and removal of barriers both in the Strategy Area and upstream should ensure that there is no increased risk of flooding.

Biological kick sampling in the Groody River near Ballysimon

The proposed intervention

The river network within the Strategy Area includes the River Shannon, which itself forms the northern boundary of the Limerick Blue Green Ring, as well as a number of tributaries (**Figure 2.3**). The tributaries include the Mulkear and Groody Rivers and the Ballinacurra Creek. The Abbey River and Park Canal also form distributary arms of the River Shannon. The water quality in the river network is currently 'at risk' of deteriorating and not achieving its WFD requirements of meeting at least "Good Status" by 2027.

The Draft RBMP highlights a need for an increased level of ambition for the third cycle of planning in response to water quality trends. It is intended that this will be delivered through the development of local catchment management plans and a greater focus on public participation and engagement of key stakeholders and sectors at a local and regional level. The Council will be required to prepare a County level Implementation Plan, which will include the Strategy Area, to give action to the objectives of national and catchment plans. The County level Implementation Plan will form the basis against which to assess the success of measures though annual reporting requirements.

The ecological status of the Strategy Area (established by biological, chemical and physical characteristics) is not only a result of local activities but also a consequence of activities impacting waters upstream of the river network, as well as adjacent to the Strategy Area, to the north of the River Shannon in County Clare. It will be important that during the implementation of a County Implementation Plan there is collaboration between the Council, neighbouring Local Authorities, key stakeholders and sectors to resolve issues identified in the Strategy Area. Many measures intended to improve and protect water quality will also provide benefits for biodiversity and climate change and the delivery of GBI.

In the improvement and protection of watercourses, the right measures should be identified for the right place and consideration of co-benefits should be achieved where possible through working in partnership with stakeholders and landowners. For example, where there is a risk of phosphorus and /or sediment loss from overland flow via critical source pathways, potential interception measures should be considered that also have benefits in terms of climate action and habitats, such as tree planting (planting appropriate tree species), filtration strips or riparian buffer zones.

Key partners:

- Relevant Local Authorities;
- EPA;
- Local Authority Waters Programme (LAWPRO);
- Irish Water;
- Community groups;
- Landowners;
- OPW;
- Inland Fisheries Ireland;
- NPWS;
- National Biodiversity Data Centre (NBDC) ('Be Plant Wise' and 'Check-Clean-Dry' campaigns);
- Local fishermen; and
- CARO.

Potential delivery mechanisms:

- EU funding mechanisms including EU LIFE and Interreg delivered as part of Horizon 2020. Consideration should be given to the transferability of the principles adopted as part of Natural Course, the UK's only EU funded LIFE Integrated Project.
- Limerick City & Environs and King's Island Flood Relief Schemes;
- Climate Action Fund;
- Developer contributions; and
- Local Authority Biodiversity Grant Scheme.

GBI within the Strategy Area will play an important role in climate change adaptation and mitigation through surface water and flood management. The Council assesses all proposed new developments in areas at risk of flooding in accordance with The Planning System and Flood Risk Management - Guidelines for Planning Authorities[40]. Run-off is a natural process and can flow into streams and rivers more quickly due to the presence of impermeable surfaces and where natural infiltration into soil is limited within urban areas. The potential for toxic pollutants within run-off in urban areas is also a risk to water quality. The Council's response to the higher frequency and magnitude of extreme weather events due to climate change should be to explore innovative water management projects to slow urban rainfall run-off to avoid flooding, as well as improve water quality. A sustainable approach to urban planning and new developments should implement best practice guidance such as the 'Nature-based Solutions to the Management of Rainwater and Surface Water Runoff in Urban Areas: Best Practice Interim Guidance.'

It is proposed in the Draft RBMP (2022-2027) to develop a restoration programme to remove and / or modify problem barriers on rivers. An action in the Strategy Area has been identified by Inland Fisheries Ireland to assist with the design and implementation of the national restoration programme by undertaking a pilot project for the Annacotty Weir, along the Mulkear River. Plans to remove or modify barriers in the waterways, to provide new points of access or to restore natural bankside habitat amongst other proposed actions, will require advance underwater archaeological assessments. The Council will collaborate with key stakeholders to implement measures that are outlined in the restoration programme for the Strategy Area.

Consideration must be given to controlling invasive alien species on a catchment scale over a long-term period (ten to fifteen years) with multi-annual funding. Addressing the issue in the Strategy Area alone without prior control of invasive alien species upstream in catchments will have little impact. It is proposed in the Draft RBMP that the NPWS will prepare draft management plans for priority invasive species, develop national guidelines for biosecurity for the prevention of their introduction and spread, and provide funding for projects under the Local Authority Biodiversity Grant Scheme. The management of invasive alien species in catchments that flow into the Strategy Area will deliver improvements to water quality and also biodiversity.

1. View eastwards of River Shannon from Mill Road, Corbally

2. View of the Ballinacurra Creek near the Baggot Estate

3. Abbey River from Matthew Bridge

[40]Environment, Heritage and Local Government (2009) The Planning System and Flood Risk Management - Guidelines for Planning Authorities (https://www.opr.ie/wp-content/uploads/2019/08/2009-Planning-System-Flood-Risk-Mgmt-1.pdf)

GBI Priority Action #6

Integrate GBI in the delivery of the network of active travel routes

Links to existing evidence base

- Project Ireland 2040 NPF and the NDP recognises the value of planning for GBI, including along dedicated active travel routes, providing an opportunity to strengthen the green and blue networks across the Strategy Area.
- The Landscape Strategy for Ireland 2015-2025 recognises the importance of greenways and blueways in providing a range of environmental services across the metropolitan area.
- The Climate Action and Low Carbon Development (Amendment) Act 2021 supports Ireland's transition to Net Zero and a climate neutral economy by no later than 2050. This will be delivered through actions identified in the Climate Action Plan 2021, including the continued improvement and expansion of the active travel and greenway network.
- The LSMASP under Objective 20 recognises the need to support and encourage sustainable recreation and tourism opportunities represented by the River Shannon and the riverside environment.
- The current limitations in public transport, walking and cycling infrastructure is reflected in low mode shares for these types of travel. The overall mode share for 24-hour demand is 23% for walking and 3% for cycling which need to increase.
- The provision of trees and hedgerows along existing and new transport routes creates a range of environmental benefits and provides shade and aesthetic interest.

Integration of GBI features into multi-user routes

Objectives

- Promote a greener and healthier Strategy Area by creating green corridors for accommodation of sustainable travel routes;
- Improve existing and provide better-connected, attractive, safe and green active travel corridors which promote walking and cycling, whilst discouraging the use of private vehicles;
- Provide green corridors which provide attractive travel routes for people and habitats for wildlife, including the creation of corridors across the Strategy Area, out into the countryside and across LPA boundaries; and
- Collaborate with the national, regional, and local transport stakeholders in developing a policy commitment to GBI and to seek implementation of best practice across public and private projects.

Key partners:

- The Council;
- Developers;
- Community groups and educational establishments;
- Transport Infrastructure Ireland;
- NTA (Active Travel);
- Healthy Limerick.
- Sport Ireland;
- Waterways Ireland;
- Heritage Council; and
- Fáilte Ireland.

Potential delivery mechanisms:

- National roads funding via Transport Infrastructure Ireland;
- Active travel funding via the NTA;
- Active Cities Programme;
- Link to wider European Projects e.g. GoGreen Routes;
- Possible funding through the Outdoor Recreational Plan (ORP) funding from Coillte; and
- URBACT Health and Greenspace; and
- EU funding mechanisms; including EU LIFE and Interreg delivered as part of Horizon 2020.
- School and higher education initiatives; and
- Developer contributions.

Existing cycle route within Shelbourne Park

The proposed intervention

Limerick City was awarded the title of Ireland's first Smarter Travel Demonstration City for the period 2012 to 2016, and building on this initiative, a host of infrastructural and behavioural change indicatives were rolled out across the Metropolitan Area. Building on this, the Council in partnership with the NTA and with the setup of a dedicated Active Travel Office, is now embarking on a comprehensive set of infrastructure projects to create a modal shift from the use of the car to walking and cycling.

The aim is to provide well-connected, attractive, safe and green active travel corridors which offer the opportunity to promote walking and cycling, whilst encouraging a modal shift away from the private car. If implemented at an early stage of the design process, urban greening features (including trees and green corridors) within active travel corridors can provide a range of benefits to users. These include air quality improvements as well as the creation of attractive environments which can help encourage the uptake of sustainable modes of transport.

This intervention should be co-ordinated by the Council to ensure a fully integrated approach to the delivery of GBI improvements. However, any site-specific initiative must demonstrate through Appropriate Assessment Screening that the proposal will not lead to Likely Significant Effects on the integrity of a European site, either alone or in-combination with other plans / projects. Where this cannot be ruled out, a full Appropriate Assessment will be required to be undertaken.

This action offers a number of key opportunities, as outlined below:

- Promote the greening of transport corridors and gateways into the Strategy Area as part of a comprehensive walking and cycling offer for communities. GBI interventions should be incorporated within active travel proposals as part of an overarching landscape masterplan, offering the potential for incorporation of belts of vegetation, formal belts of street trees, floodwater storage areas or wildflower seeding.
- Complement the existing and proposed network of Greenway Routes within the Strategy Area by sensitively integrating active travel routes within the existing environment.
- Ensure collaborative thinking / working with other GBI projects e.g. the proposed Tree and Biodiversity Strategy would provide guidance on appropriate plant species for framing / delineation / buffering of routes.
- Ensure the management and maintenance of routes is considered from the outset. Condition of routes should be checked periodically and repairs made promptly.

Existing multi-user route at Baggot Estate Nature Park

Potential challenges and risks to delivery

- Need to protect and preserve Natura 2000 habitats and Annex Species. This includes safeguarding the integrity of the qualifying interests and conservation objectives of the River Shannon and River Fergus Estuaries SPA and Lower River Shannon SAC.
- Any proposed vegetation clearance works to facilitate construction should be undertaken outside the nesting season and any major habitat management works assessed for potential impacts on protected species by a suitably experienced ecologist.
- It is important that during the preparation of lighting design proposals that bats are considered and the impact minimised as much as possible.
- Active travel routes located parallel to watercourses would potentially pose an additional challenge due to flooding, exacerbating safety issues and maintenance costs.
- Successful delivery is dependent on changing people's travel behaviour / habits. Delivering a cultural shift would require educational programmes and extensive consultation.

- Where active travel routes are proposed within an environmentally sensitive location, measures should be taken to enhance and protect the existing site where necessary.
- Activate the riverside (walking / cycling routes), including along flood defences / embankments and within the river itself (river travel). Parallel development of this project with Flood Relief Schemes within the Strategy Area offers the opportunity to tie in and deliver ambitious active travel proposals within attractive riverside settings.
- Ensure safety through best practice design, implementation and maintenance. Including consideration of permeability, crossing points, appropriate surfaces, delineation of uses, speed limits, clear markings, lighting and signage. Planting plans for active travel routes must take into account visibility and safety considerations.
- Consideration should be given to green bridges to overcome physical infrastructure barriers and promote wildlife movement e.g. the Mile End green bridge in East London.
- Implement tree planting proposals along active travel corridors as a mechanism to help frame views of townscape features. Sensitive soft landscape design offers the opportunity to open up vistas towards key landmarks within the Strategy Area.
- Involve children and young people within active travel schemes publicised by higher education establishments, schools and nurseries. Engaging with communities through information provision, public consultation and events such as community tree planting programmes should encourage local ownership.
- Provide attractive recreational walking / cycling routes and trails (with signage and interpretation) associated with destination areas for recreation.

Potential to create an attractive waterside setting for walking routes

Case study: Potential creation of the Shannon Blue Green Loop

Subject to appropriate environmental assessments being undertaken, the potential may exist to integrate proposals for a Shannon Blue Green Loop. The proposal would provide a continuous, 7km long accessible riverside multi-user trail within the Strategy Area (see **Figure 3.6**). This route would offer both recreational and active travel opportunities, connecting spaces such as Shannon Fields, Corbally Baths, Mill Road Fairy Garden and O'Brien Park. The riverside nature of the Shannon Blue Green Loop would enhance visual permeability with the river, celebrating the Strategy Area's connection to this major watercourse.

Although sections of a pedestrian route exist along the proposed alignment, investment would be required in places, particularly along the western edge, to ensure the path is accessible for all weathers. As large sections of the proposed site fall within a SAC, works should ensure the protection of habitat provision and not affect the integrity of this European designated site. However, selective vegetation clearance would be required to increase the perception of safety along the route by opening up sight lines. In addition, resurfacing and path widening works offer the potential to introduce multiple access points onto the route from a variety of communities, including King's Island, Lower Park and Rhebogue.

Interpretative signage and wayfinding would form a key element of the proposals, helping to improve navigation of the route by users. Signage would also link the route to wider routes and facilities. In particular, this would include connections to the riverside walk at Castletroy and the University of Limerick. Regular benches and seating opportunities along the route would also facilitate informal surveillance, helping to tackle the perception of anti-social behaviour. The implementation of the route would aim to deliver the following elements:

- Promote further use of Shannon Fields, including introducing areas of natural play and informal sports pitches.
- Explore opportunities for boat or kayak hire to promote access to the river.
- Improve the facilities at Abbey Lock. This would include the introduction of additional seating, litter bins and potentially public toilets.
- Improve sign-posting to O'Brien Park. This would open up access to the route from communities located to the south.
- Explore any potential to redevelop Corbally Baths as a 'swimming pool destination', albeit requiring significant investigation and water quality improvements. The location would provide connectivity to the blue environment, and reflect the historic use of the site. This is a long term aspiration which would require significant input from other partners, such as OPW.

Upon completion of the King's Island Flood Relief Scheme and subject to appropriate environmental assessments, the provision of a walkway circumnavigating King's Island, along the River Shannon and Abbey River, inclusive of St. Mary's Park, also has the potential to be an additional accessible riverside route for consideration.

Figure 3.6 The Shannon Blue Green Loop

GBI Priority Action #7

Enhance recreational access to the River Shannon and adjacent riverside routes

Links to existing evidence base

- Recreational usage of the River Shannon and adjacent riverside routes provide opportunities for urban based outdoor sports. This GBI Priority Action aims to supplement and enhance existing provision to the water environment as well as introduce additional access / egress points to the River Shannon which addresses the increased demand for water-based recreation within the Strategy Area. Furthermore, Sport Ireland recognises a growing interest in outdoor sports and recreation, with scope to increase participation in physical activity in the outdoors.
- The findings of the BOSS Project 2019[41] demonstrate that positive influences on physical and mental health, environmental awareness and active citizenship, from outdoor sports and recreation can have beneficial effects that surpass those of physical activity alone. Physical activity in natural outdoor settings particularly has additional benefits in the areas of mental health and well-being, as well as providing accessible, low-cost opportunities for recreation and sport.

Objectives

- Promote river access as the principal driver of new urban forms in the Strategy Area;
- Improve existing access / egress points and associated facilities to / from the River Shannon in the Strategy Area, as part of the Limerick City & Environs and King's Island Flood Relief Scheme, or other initiatives;
- Enhance and promote connectivity to existing and proposed riverside walking and cycle networks; and
- Promote interconnectivity with GBI features and initiatives.

View across the River Shannon looking towards Longpavement

[41] European Commission (2019) BOSS: Benefits of Outdoor Sports for Society (https://outdoorsportsbenefits.eu/wp-content/uploads/2019/03/BOSS-Stage1-Medium-Report.pdf)

Key partners:

- The Council;
- Shannon Tourism Steering Group; South Shannon Discovery Zone Implementation Group (The Shannon Tourism Masterplan);
- Waterways Ireland;
- RPS (integration within Limerick City & Environs Flood Relief Scheme);
- Arup JBA (integration within King's Island Flood Relief Scheme);
- Sport Ireland / Urban Outdoor Initiative Project;
- University of Limerick;
- Local recreational clubs and water activity providers (including swimming clubs);
  - Limerick Kayak & Canoe Club
  - Shannon Rowing Club
  - Limerick Boat Club
  - St Michael's Rowing Club
  - Athlunkard Boat Club
  - Barrack Lane Boatman's Club
  - Curragower Boat Club
  - Get West Kayaking
  - Nevsail Watersports
- Shannon Foynes Port Company;
- Electricity Supply Board (ESB) (in relation to operation of Parteen Weir and impact on flows); and
- Local fishermen.

Potential delivery mechanisms:

- The Shannon Tourism Masterplan;
- Limerick City & Environs Flood Relief Scheme;
- Climate Action Fund;
- King's Island Flood Relief Scheme;
- Waterways Ireland;
- Fáilte Ireland;
- Sport Ireland;
- LPAs; and
- Department of Transport, Tourism and Sport.

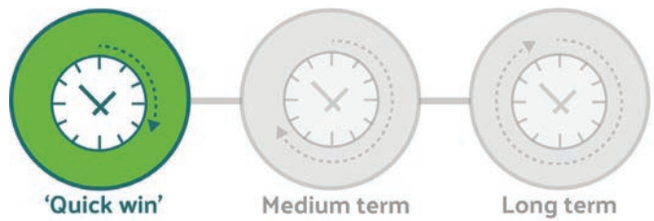
The proposed intervention

The River Shannon and its tributaries form integral features of the Strategy Area. The historical importance of the river for culture / trade, combined with its recreational usage and the development of its waterfront, provides the Strategy Area with, arguably its most important asset.

The Strategy Area boasts a wide variety of established water sports clubs and providers (rowing, kayaking, canoeing, fishing, boating), highlighting the recreational value of the River Shannon to residents and visitors. However, availability of access to the water forms a significant issue within the Strategy Area. There are a limited number of public access points to the river for recreational users (see **Figure 3.7**). In many areas with access (for example at Curragower), there are no dedicated facilities / parking for recreational users.

Through engagement with the Tourism Section in the preparation of a Waterways Accessibility Study, there may be scope to develop GBI in the improvement of localised access points (in conjunction with local stakeholders) and improvement and enhancement of the Strategy Area and the River Shannon as a centre for water-based and water-front recreation. However, any site-specific initiative must demonstrate through Appropriate Assessment Screening that the proposal will not lead to Likely Significant Effects on the integrity of a European site, either alone or in-combination with other plans / projects. Where this cannot be ruled out, a full Appropriate Assessment will be required to be undertaken.

Sport Ireland states that 'inexperienced water-sports participants and visiting tourists often lack the knowledge, experience and confidence to sample new activities or new locations in the absence of support. Similarly, commercial and community water-sports interests



View looking south east from Barrington's Pier across the River Shannon

Former outdoor public swimming facility at Corbally Baths

seeking to provide water-sports services may be hampered by a lack of infrastructure at suitable venues' highlighting the importance of providing a suitable environment to promote water-based activities. Within the Strategy Area, there is scope to enhance water-based and water-front recreation by providing access / egress points, parking and slipways, within advantageous areas featuring local activities, dining, and accommodation. Provision of these facilities and enhanced wayfinding have the potential to promote recreational access to the River Shannon, and appreciation and promotion of the Strategy Area's waterfront. Initiatives may include liaising with Sport Ireland / the Outdoor Urban Initiative Project to develop events, building capacity for users along the river.

Opportunities for water-based and water-front recreation should be developed in tandem with GBI and interconnectivity with walking and cycle networks.

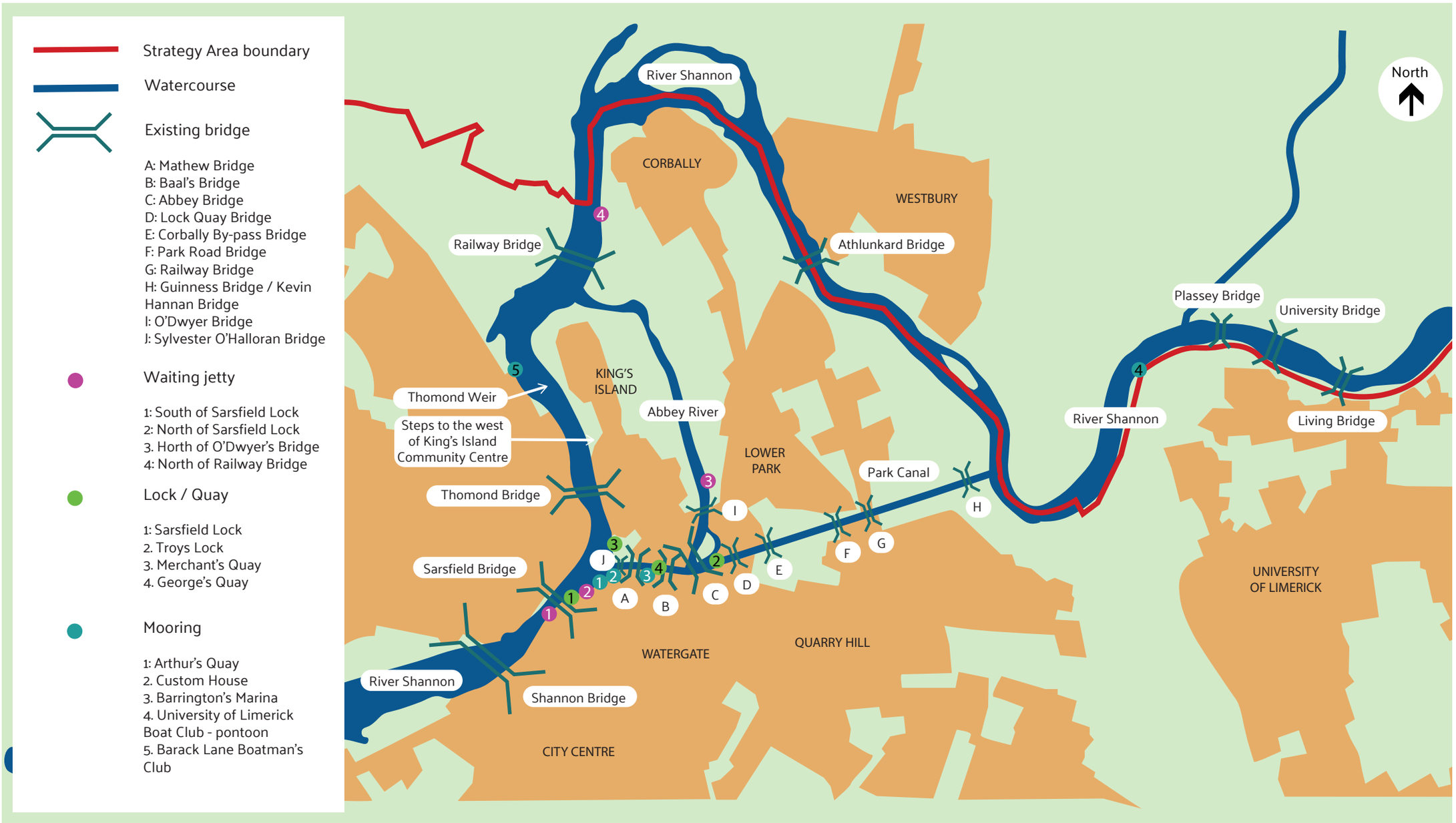


Figure 3.7: Recreational access points across the Strategy Area

Potential challenges and risks to delivery

- Safeguarding the integrity of the qualifying interests and conservation objectives of the River Shannon and River Fergus Estuaries SPA and Lower River Shannon SAC.
- Improvement of access and facilities may be limited by available space, landowner agreement, and planning permissions.
- Engagement with landowners and the wider community is crucial to the effective delivery of the project and to ensure connectivity between waterways and GBI.
- Enhancement and promotion of water-based and water-front recreation should place safety of users and the public at the forefront.
- Signage promoting recreational use of the River Shannon, including identification of key structures and potential hazards (bridges, weirs, locks, navigable waterways) should be installed to enhance safety and simplicity of use.
- Dissemination of changes in flow conditions to users (storm and tide conditions, ESB control of flows to Ardnacrusha hydroelectric station) would aid in preparedness and safety.
- Plans to remove or modify barriers in the waterways, to provide new points of access or to restore natural bankside habitat amongst other proposed actions will require advance underwater archaeological assessments.
- Ensure access does not threaten habitats, archaeology or biodiversity. Appropriate riparian zones are protected and invasive species management is highlighted.

Where possible within the existing cityscape and proposed Flood Relief Schemes, linkages with GBI assets along river corridors should be provided, promoting connectivity and active travel, whilst waterfront public realm should be safeguarded for riverside recreation and to allow for watercourse access. Incorporation within the Limerick City & Environs and King's Island Flood Relief Schemes would be vital to optimise river access and appreciation in tandem with mitigation measures and proposed defences. These works provide additional opportunities for nature and design based water management, such as the potential for water-compatible parking facilities to be utilised as a form of flood and / or surface water storage. The opportunity also exists to adopt a holistic approach to flood prevention which embeds design led solutions into coastal resilience infrastructure to ensure contact with the river in urban areas.

The proposed intervention should include delivery in coordination with the Shannon Tourism Masterplan. The Masterplan sets out a framework for sustainable tourism development along the River Shannon, with hopes of harnessing the economic and social potential of the river's natural and cultural assets in an environmentally sustainable manner. GBI projects in the Strategy Area should coincide with the Strategic Initiatives outlined within the Masterplan, including enhancing the on-water / waterside visitor experience and improving connectivity.

The Council is currently preparing a Draft Waterways Accessibility Study as an action arising from the Shannon Tourism Masterplan. The Study will establish the accessibility, recreational and tourism potential of various waterways in Limerick City and eastwards to Ardnacrusha. Any opportunities for water or nature-based waterfront recreation should be developed in tandem with GBI, along with interconnectivity with walking and cycling routes. This includes the potential integration of 'restorative tourism' initiatives and the development of Tranquility Zones in the Masterplan.

Example of existing seating 'turning its back' on the River Shannon

Shannon Railway Bridge, north of King's Island

Existing slipway on the River Abbey, adjacent Athlunkard Boat Club

GBI Priority Action #8

Develop Tree and Biodiversity Strategies for the Strategy Area

Existing habitat within Westfields Wetlands (image courtesy of Sean Ryan)

Links to existing evidence base

- Regional Policy Objective 176 in the RSES for the Southern Region highlights the requirement to "provide safe, attractive streets and a high-quality environment through increased tree cover and planting in urban areas".
- Trees form an essential element of the environment and are crucial to sustainable growth and development. A healthy, well managed network of trees has the potential to perform a range of environmental functions and provide multiple benefits for people and nature.
- Trees can also offer economic benefits with the amenity value quantified by methods such as the Capital Asset Value for Amenity Trees (CAVAT).
- Following its award as a European Green Leaf City in 2020, the Council has committed to delivering environmentally positive projects. This includes delivering additional habitat for biodiversity to thrive.
- The All-Ireland Pollinator Plan recognises the importance of pollinator friendly management of green spaces and greenway cycle routes, with an objective of creating a cohesive network of diverse habitats.

Objectives

- Ensure a phased delivery of the Tree and Biodiversity Strategies to address the hierarchy of need / identified gaps;
- Increase canopy coverage and diversify the tree stock to promote future resilience. Deliver habitat enhancements which contribute to carbon sequestration and storage;
- Work towards a commitment for 'no net loss' of biodiversity, in accordance with the principles of the Limerick City and County Council Corporate Plan (2019-2024);
- Set a vision for biodiversity in order to protect and create connections in support of nature recovery. This should explore the potential integration of biodiversity enhancements on sites not currently open to the public;
- Incorporate nature based flood management measures within the coastal environment and consider enhancement solutions which prioritise biodiversity;
- Strike the correct balance between biodiversity and access at coastal sites;
- Involve community and school groups to increase the awareness of the importance of trees and biodiversity to ensure future generations have the understanding to perpetuate this work; and
- Complement other small-scale interventions e.g. initiatives currently being delivered under URBACT at seven green spaces in Limerick City.

Key partners:

- The Council;
- Private developers;
- Local Businesses / small and medium-sized enterprises (SMEs);
- Wildlife Trusts;
- Local wildlife groups;
- Community groups and schools; and
- NBDC ('Be Plant Wise' and 'Check-Clean-Dry' campaigns).

Potential delivery mechanisms:

- Potential need for development of a standalone GBI Funding and Action Plan;
- Business contributions / sponsorship e.g. for National Tree Week (To mark National Tree Week in 2021, the Council planted 470 saplings across Limerick City);
- The involvement of community groups in planting, irrigating etc.;
- Grants from central government - Irish Government have set planting target of 440 million trees by 2040;
- Developer contributions; and
- EU funding mechanisms; including EU LIFE and Interreg delivered as part of Horizon 2020.

Wetland habitat at Knockalisheen Marsh

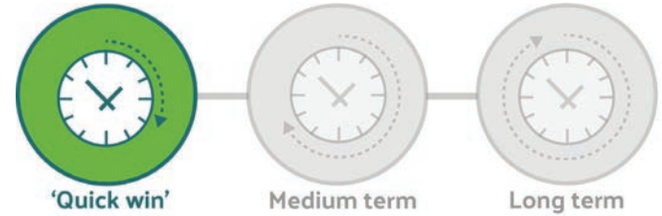
The proposed intervention

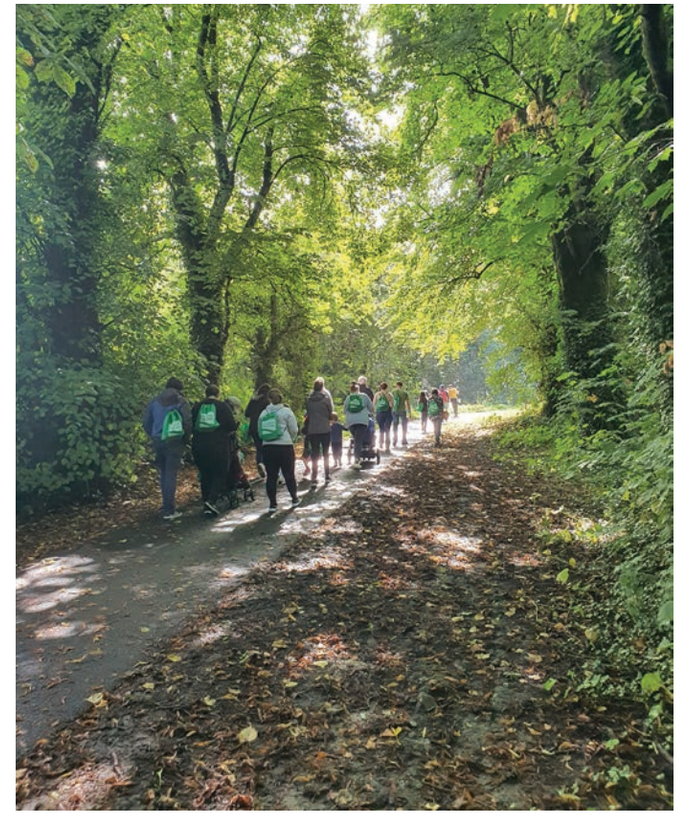
Tree Strategy

This initiative would develop a deliverable, Strategy Area-wide Tree Strategy to encompass all trees on publicly-owned land. Through stakeholder consultation, the document would define an overarching aim for tree planting and management in the Strategy Area and set guiding principles and targets. The Tree Strategy would outline how the Council manages their responsibilities and legal obligations in relation to health and safety, risk management and resident concerns whilst maintaining a healthy, diverse and extensive tree stock. Whilst the Tree Strategy will be focused on the management of publicly owned trees, the benefits of planting trees in private areas should be encouraged by the Council wherever possible.

To provide a baseline, the existing tree survey for the Strategy Area (obtained from commercially available tree management systems) would be analysed and any gaps in information supplemented by additional survey. This information should be collated into a comprehensive tree database that's easily accessible by Council staff. To direct future tree planting, strategic opportunity mapping should be conducted to guide planting to where there is the greatest need for the benefits from trees. Some key considerations and potential locations for tree planting are highlighted below:

- Tree planting proposals should target areas where trees have been previously felled or where there is a recognised need to increase canopy cover;
- The Council recommends the retention of existing tree cover and proposals for appropriate tree planting within the design of new public and private developments (see **Chapter 5**).
- The opportunity exists to increase tree cover in all residential areas within the Strategy Area. Consideration would be given to requests from Council members and local residents for tree planting proposals in their area. The current tree survey data indicates that the lowest coverage exists in the Outer City and North Side. Underused land within housing estates and wide residential streets therefore provide opportunity for tree planting. Appropriate tree selection would also provide seasonal interest and help promote well-being. This is particularly valuable in high density areas were there may be less access to private gardens. Where properties do have private gardens, schemes to encourage residents to plant their own trees should be promoted.





Nature walk at Baggot Estate Nature Park

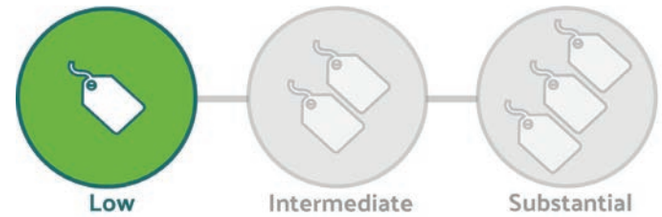
- Introduce tree cover adjacent to major road corridors, to frame gateways to the Strategy Area. Tree planting along major roads into the Strategy Area would help improve air quality and delineate gateway routes - increasing legibility and the sense of arrival. Tree selection would take into consideration species that allow for upward movement of air which are particularly efficient in reducing air pollution.
- Introduce trees along active travel routes centred on schools and open spaces. Tree planting along walking / cycling routes provides the opportunity to define routes for different users (separate cars from pedestrians / cyclists), provide green connections and wildlife corridors between open spaces and improve air quality e.g. Castletroy Greenway (almost complete) links schools and residential areas in Castletroy and is likely to be a good model for other similar routes.
- Support the establishment of trees along river locations. Increased riverside tree planting should ensure views to the watercourses are maintained and, where appropriate, framed.
- Increase the network of trees within schools and play areas. Tree planting in school grounds and play areas would provide beneficial shading, improve air quality and offer opportunities for play and nature education. The potential exists to enhance linkages with the Forest School in Baggot Estate. Structural safety checks should be a priority in these locations.
- Introduce woodland and hedgerow improvements. The opportunities to extend woodland coverage at strategic sites should also be explored.
- Within new developments, guidelines on tree planting for proposed developments would be outlined within the Tree Strategy with expectations defined.
- Protecting and caring for existing trees. Existing trees would be protected and cared for appropriately by guidelines set out by the Tree Strategy.

Woodland habitat at Baggot Estate Nature Park

Consideration should be given to species selection, tree pit installation, soils, planting and after-care (including irrigation) when designing and planning tree planting proposals. Programmes of tree planting will have to consider the potential for roots to cause damage. Potential modifications of plans may be required in archaeological areas, such as using shallow rooted planting instead of larger trees

The 'right tree for the right place' approach should also be followed, ensuring sufficient consideration is given to enhance resilience to the predicted impacts of climate change. Selection of 'locally appropriate' tree species that are capable of thriving in future environments should therefore be the overarching aim.

Trees within urban environments can provide a range of multi-functional benefits. With appropriate siting and species choice, trees can reduce ground water run-off and intercept pollution. This can in turn reduce the severity of flooding and help to protect river and marine water quality and aquatic life. Urban trees can also help to intercept and remove a number of pollutants from the atmosphere – including nitrogen oxide, ozone and particulates. Particulate levels can be up to 60% lower on tree lined streets than those without trees. Tree planting in hard landscaping areas should be based on best practice and guidance, ensuring tree pits provide sufficient root space and soil volume. Awareness of underground services would need to be integrated. Ongoing care, irrigation and management of the trees must be adopted, and sufficient resources allocated. It is vital to the successful establishment and growth of the trees to form a healthy and resilient network. Structural safety checks are essential as trees mature. The Tree Strategy and database would be reviewed and updated as a working document.



Potential challenges and risks to delivery

- The need for steady flows of funding to allow strategic projects to be both implemented and effectively managed and maintained. Whenever funding is granted, the Council expects it to be spent in accordance with the principles of the GBI Strategy;
- The 'right tree in the right place' is vitally important, in order to ensure that other valuable habitats such as species-rich grassland are not lost;
- Management and maintenance must be built into funding also beyond the initial planting or natural regeneration stages;
- Land ownership issues;
- Challenges in stewardship of new green assets in the long term; and
- Public perceptions of 'unkempt' spaces that have been re-wilded must be mitigated by a strong communications strategy delivered by the Council.

Riverside habitat at Shannon Fields

Biodiversity Strategy

This intervention would review and update the former 2012 Limerick Biodiversity Strategy to set a vision and priorities for biodiversity with the Strategy Area for the next 10-20 years. The update would extend the area covered in the 2012 report to encompass Limerick City and Environs (including agricultural hinterland) and seek to embed biodiversity across all the Council's different areas of work – planning, housing, transport. This GBI Strategy would complement the proposed Tree Strategy.

Survey and mapping would be carried out to fill gaps in existing data and fully understand the local pressures and threats; including habitat loss, fragmentation and degradation. Priorities include a Strategy Area-wide hedgerow survey and condition assessment of designated sites and priority wetland areas. Information should be collated into an accessible database alongside data gathered as part of the Tree Strategy. Key areas for protection, creation, enhancement and increased connections would be established. Some priorities, based on objectives in the former 2012 Strategy and in tandem with the Tree Strategy would include:

- Expanding, linking and perpetuating green wildlife corridors through tree and hedgerow planting and maintenance - within urban areas, parks and connecting to farmland. Hedgerows also offer great potential for establishing wildlife corridors which connect from the urban environment out to the wider City and County.
- Developing a list of priority plant species. Ensuring appropriate species selection and safeguarding / reintroducing native species, particularly those of national and local significance.
- Integrating proposals to increase biodiversity on sites not currently open to the public. This should include the creation of wildflower meadows at locations such as Longpavement Landfill Site to enhance wider green corridors within the Strategy Area.
- Involving communities, local businesses, schools and local residents to enhance biodiversity – community gardens, native planting, seed saving and swapping, winter bird feeders.
- Developing biodiversity targets for new development areas. Providing habitats for bats, birds and insects by installing roosting platforms, bat and bird nest boxes and insect hotels. Maintaining winter feeding scheme and also expanding the network of pollinator action areas. Seeking opportunities to involve local schools and community to educate and increase awareness.
- Tackling invasive species through implementation of a Strategy Area wide invasive species management plan. This would include survey and eradication strategies, as well as establishing invasive species control volunteer groups.
- Identifying appropriate areas for wildflower meadow creation and relaxing mowing regimes to allow species-rich grassland to develop. Recognising and promoting the wildlife value in cemeteries and graveyards. This should include drawing upon expertise in local wildlife groups (e.g. Vincent Wildlife Trust, Limerick Bat Group), local universities, science and community groups to assist with surveys and build up a comprehensive biodiversity data set.
- Delivering enhanced management of wetland sites, including the provision of management plans for all sites (e.g. Lower River Shannon SAC, Fergus Estuary and Inner Shannon). This includes achieving increased protection and enhancement of coastal wetland areas through the implementation of improved maintenance regimes to limit natural succession to scrub and woodland. Appropriate zoning and restriction of development or works which would encroach upon the wetland areas should also be considered, as well as supporting the connectivity of wetlands and tidal water sources.
- Implementation of nature and design-based flood management measures that create areas that are more resilient to climate change and promote biodiversity.

The Biodiversity Strategy would set measurable targets for the next 10-20 years and beyond to be overseen by the Council. Key to the successful delivery of the document would be educating local people, children, businesses, park and maintenance staff to aid understanding and encourage community involvement.

GBI Priority Action #9

Promote community engagement and raise public awareness in the development of GBI

Links to existing evidence base

- Project Ireland 2040 NPF recognises the value of planning for GBI and identifies the need for community building, including the development and strengthening of relationships. The GBI Strategy offers the opportunity to listen and engage with local people for community development and the enhancement of areas, in both urban and rural settings.
- The RSES for the Southern Region further promotes the development of GBI and the enabling of local people to create sustainable communities.
- The LDP outlines the cross-cutting nature of GBI and its importance in enhancing local areas to help deliver environmental, economic and societal benefits. The Development Plan recognises the importance of supporting local residents and developing behavioural change to promote community development.
- Limerick Corporate Plan 2019 -2024 sets out how the Council will lead and support an integrated approach in the development of community across Limerick for the purpose of education and learning, health and well-being, ageing well, supporting families and youth at risk, community participation and empowerment. The document seeks to enhance quality of life in local neighbourhoods through collaborative, pro-active and supportive estate management as well as through working with partners to promote the work of residents associations. Support is also outlined for community engagement via existing associations / networks; including the Limerick PPN, Tidy Towns groups and local non-governmental organisations.

Objectives

- Support and encourage greater awareness and community engagement in the development of GBI solutions, including the promotion of co-design of projects where feasible, with local stakeholders;
- To listen and engage with the public, relevant groups and agencies to support communities in the delivery of GBI programmes, promoting greening of the Strategy Area;
- Develop synergies throughout the Strategy Area, to facilitate shared learning to promote community participation and empowerment of community groups;
- Promote education and training opportunities for local communities, schools and relevant stakeholders in relation to the benefits of GBI; and
- Support local communities and residents groups in recognising the opportunities that exist, within their local area, to utilise NbS and GBI to enhance their local area.

Example of successful community involvement (image courtesy of Sean Ryan)

Key partners:

- Community groups;
- Schools and other educational establishments;
- Residents' groups;
- Healthy Limerick;
- Tidy Towns;
- LAWPRO;
- Team Limerick Clean-Up;
- Limerick's PPN;
- Heritage Council; and
- Relevant Expert Non Government Organisations e.g. Leave No Trace.

Potential delivery mechanisms:

- Schools and education initiatives – Green Schools Programmes; Green Campus;
- European Projects such as Go Green Routes, Health and Green Space;
- All Ireland Pollinator Funding;
- Community Climate Action Programme;
- Coillte Urban Woodland Initiative;
- CLÁR Grant Funding e.g. Outdoor Recreation Infrastructure Scheme and other similar programmes;
- The Council Environment Awareness Programmes;
- Tidy Town's initiatives; and
- Local Development Companies.

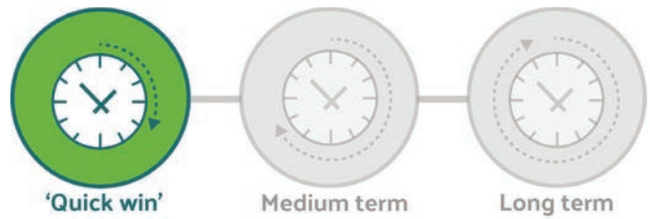
The proposed intervention

Limerick boasts a strong network of community organisations and it is essential to ensure a comprehensive programme of early engagement is implemented to ensure community buy-in of GBI proposals. Participatory activities and education programmes with local communities will form an important method for the delivery and successful implementation of the GBI Strategy.

Community engagement is critical to the implementation of GBI and producing more sustainable solutions, whilst also recognising that different approaches may be taken, having regard to the unique conditions that exists in the local environment.

The aim of this GBI Priority Action is to build capacity with community groups (including Limerick's Tidy Town's network, Limerick's PPN and educational institutions etc.) to empower individuals to implement GBI and NbS in their local communities.

The GBI Strategy offers a real opportunity to support communities to understand and to develop GBI interventions, whilst also promoting a partnership approach to facilitating the successful delivery of NbS, throughout the Strategy Area. GBI has the potential to address many challenges that exist throughout the Strategy Area, including, climate change impacts, biodiversity loss, and surface water and flood risk management. Main streaming NbS/GBI is critical in the development of sustainable communities.



◀▶ Examples of successful community involvement within Westfields Wetlands (images courtesy of Sean Ryan)

Potential challenges and risks to delivery

- Availability of resources within the Council and other stakeholders to promote and support community engagement and awareness at a local level;
- Commitment of volunteers at local level to engage and promote green blue innovations.
- Ownership and maintenance of infrastructure by local communities, once installed.

Case Study: Interventions developed in partnership in Limerick

The Baggot Estate Nature Park is a forested area located in Ballinacurra, in the southern suburbs of Limerick City. The area is currently under-utilised and is surrounded by a number of housing developments, with huge potential for greater use by local communities, schools and community groups. Healthy Ireland, in conjunction with the Council and the local communities, have developed a Biodiversity Garden Project. The project aims to create a pollinator-friendly demonstration garden as a health and well-being initiative. The overall project was multi-faceted in terms of providing a number of benefits for the local community in terms of health and well-being, a safer environment and a pollinator friendly area. A partnership approach was taken, including local stakeholders, in the development of a green solution for the park, which seeks to promote ownership of the project within the local community.

Community Garden in the Baggot Estate Nature Park

Potential route of a 'Hush City Soundwalk' along Park Canal

GBI Priority Action #10

Incorporate smart mechanisms of connecting GBI initiatives with the public

Links to existing evidence base

- The overarching vision of the Limerick 2030 Economic and Spatial Plan aims to deliver a green city region on the Shannon Estuary. This will be achieved through innovation and engagement, including the use of digital channels, to facilitate the creation of a 'Sustainable Smart Limerick City Region and Communities' by 2030.
- The Limerick Digital Strategy[42] provides a framework which supports and enables the use of digital technologies across the economic, social and physical domains of Limerick City and County. The document demonstrates how the use of digital technologies may be used to empower communities, create better services, accelerate social and economic growth and improve the quality of life for citizens.
- Healthy Ireland – A Framework for Improved Health and Well-being 2013 – 2025 details the close relationship between health and the environment, physical activity and social interaction.

Objectives

- Enhance the understanding of the natural environment through the use of web-based solutions and smart technology;
- Raise awareness and appreciation of GBI within the local community by providing citizens with information via mobile apps and QR codes describing recreational / active travel routes, green spaces and points of interest;
- Promote the use of digital technologies within the Strategy Area as mechanisms to enhance engagement, improve the health of communities and aid scientific research (e.g. collection of air and noise quality data); and
- Work in conjunction with the Digital Strategy team at the Council to create an interactive map to promote the wider network of GBI within the Strategy Area.

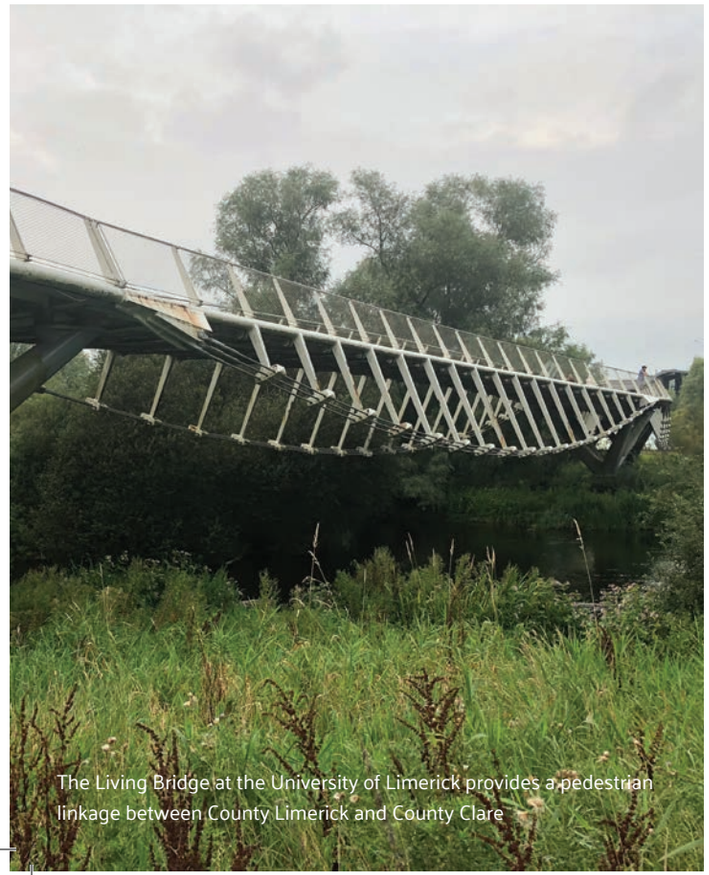
[42]Limerick City and County Council (2017) Building Ireland's First Digital City - Limerick Digital Strategy (https://www.limerick.ie/sites/default/files/media/documents/2018-08/Limerick%20Digital%20Strategy.pdf)

Key partners:

- The Council;
- Technological University of the Shannon;
- University of Limerick;
- Urban Outdoor Initiative Project;
- Healthy Limerick;
- Community groups and schools; and
- Local businesses / SMEs.

Potential delivery mechanisms:

- Possible funding through Technical University of the Shannon, Midlands, Midwest;
- Research and development grant; and
- Funding and partnership work with private technological companies based in Limerick.



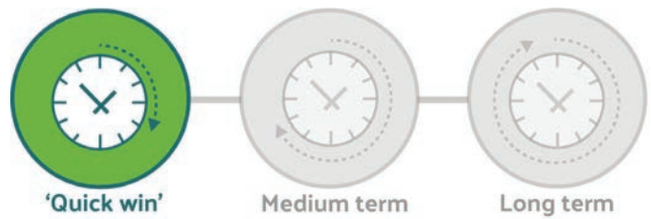
The Living Bridge at the University of Limerick provides a pedestrian linkage between County Limerick and County Clare

The proposed intervention

The opportunity exists to utilise web-based solutions and digital technologies to promote GBI and enhance the public's engagement with their natural environment. In addition to encouraging a more active connection with GBI, digital placemaking tools may be used to aid scientific research through citizen science as well as reward environmentally friendly behaviours. The promotion and development of a number of apps for data collection can also form effective solutions when measuring visitors to existing green spaces and estimating future usage.

Data collected within these apps could be combined into an interactive map of the Strategy Area, offering a web-based output to highlight key natural assets and provide linkages to community resources. This digital resource, combined with QR codes and mobile data, could also be used to publicise events and activities within parks and green spaces within the Strategy Area. The aim would be to provide a collaborative tool to enhance engagement and further connect communities with their local environment. The potential also exists to explore a social dimension to the map, offering individuals the chance to log in with a profile and share their favourite walks or open spaces to visit across the Strategy Area. Examples of apps and successful web-based smart technology include:

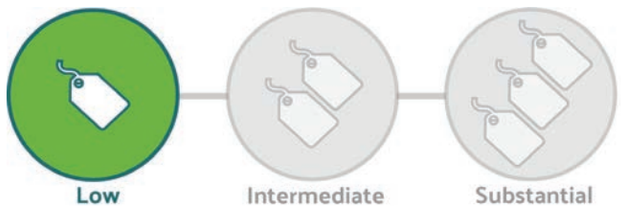
- **Hush City App**: Developed by Dr. Antonella Radicchi in 2017, the Hush City App encourages users to capture noise data through the use of a citizen science mobile app. The technology is currently utilised by the Council to evaluate the soundscape and map quiet areas within Limerick City through the generation of open data. The overarching aim of the technology is to facilitate the protection of valuable tranquil areas. The opportunity exists to expand the use of this app through the establishment of a series of 'Hush City Soundwalks' to introduce people to the app and promote the importance of quiet spaces within the urban environment. Potential routes include wider linkages from Park Canal and the River Shannon corridor towards the University of Limerick. The creation of monthly events could also provide wider connections with local health and well-being initiatives and promote the accessibility of 'everyday quiet areas'.



Potential to promote existing routes parallel blueways as health walks

Potential challenges and risks to delivery

- The successful delivery of this project is dependent on ensuring data collection methods are accessible and inclusive to all communities across the Strategy Area. Investment in training will be required to increase awareness and promote engagement with 'hard to reach' groups. Where possible, it may also be necessary to explore the opportunity for 'offline' alternatives to ensure all sectors of the population are represented.
- The project will require complex data management skills in order to produce a usable interactive map and ensure long-term delivery. This is likely to include support from the Digital Strategy team at the Council to ensure its successful implementation.



- **Ireland's Citizen Science Portal**: This project allows the public to record species sightings across the Republic of Ireland. Promotion of this app within the Strategy Area offers the opportunity to increase engagement with the local environment and promote educational opportunities.
- **Bristol Park Hive:** The Bristol Park Hive app has been used to map 202 green spaces across the city with the aim of encouraging use and appreciation of parks and green spaces to help safeguard these spaces for the future.
- **Limerick 'Report Invasive Plants':** Developed to inform the management of invasive species, the mobile app facilitates easy reporting through photography and Global Positioning System (GPS) coordinates. The data is used to address the issue at a local scale as well as feed into a central national biodiversity database.
- **Smart D8:** Forming part of the Smart Dublin 8 Project, this initiative aims to improve well-being through technological solutions and collaboration. Its largest pilot project includes a scheme where visits to local parks for fitness and exercise by the local community are rewarded with 'Civic Dollars'. The project aims to improve health outcomes whilst facilitating analysis of park usage to allow for future planning and infrastructure improvements.
- **Citizen Science Stream Index:** Hosted by LAWPRO, this project offers a mechanism for community groups to monitor and report water quality through localised monitoring of invertebrates. The wider project is still under development.
- **Limerick's Citizen Innovation Lab:** Developed in 2021, this initiative provides a digital platform to promote citizen engagement, data gathering and participation. The aim of the Citizen Innovation Lab is to help empower the residents of Limerick to work together to explore local responses to global challenges such as climate change. The space includes an Engagement Hub, digital platform and annual programme of events to help drive Limerick's transition to a climate-neutral city by 2050.
- **Litterati:** Acting as an online citizen science tool, this app allows users to document litter within their local area through geo-tagged photos. The project rewards users for litter collection and helps to engage and encourage citizens to keep communities clean.

Use of these digital platforms, such as the examples detailed above, offer the opportunity to generate survey data which enhances the understanding of the natural environment whilst also informing spatial planning and future GBI investment priorities.

Promotion of 'quiet areas' along the River Shannon

Chapter 4
Achieving the vision of the GBI Actions

In order to establish GBI principles to achieve the framework and vision, a 'themed' approach has been adopted in the development of the GBI Strategy. The evidence base has been divided into six 'themes', which provide a useful framework to organise the baseline and understand and plan for GBI within the Strategy Area (see **Figure 4.1**). The themes are listed below:

- **Landscape and Recreation;** Provision of easily accessible high quality, well designed multi-functional green spaces.
- **Biodiversity:** Connected and conserved, resilient networks of habitats across the Strategy Area.
- **Access and Connectivity:** Permeable landscapes for sustainable travel, access to areas for recreation and wildlife.
- **Blue infrastructure:** Rivers and water bodies considered at a landscape scale.
- **People, Health and Well-being:** Consideration of the health and societal benefits of GBI within the Strategy Area.
- **Tourism, Culture and the Economy:** Recognising the cultural assets of the Strategy Area.

An indication of the multi-functionality of the objectives comprising each GBI Action and their relevance to each theme is provided in the tables below.

It is anticipated that a degree of training will be required for both internal staff at the Council and wider stakeholders to promote the successful delivery of the GBI Priority Actions and associated GBI Opportunities listed in this chapter.

Figure 4.1: GBI themes

GBI Priority Action #1

Embed GBI in the implementation of Public and Private Projects

List of Potential GBI Proposals and Existing Interventions

Objective	Scale: Site	Scale: Local	Scale: Landscape	Proposal	Delivery partners	Life stage: In concept	Life stage: In progress	Life stage: Complete	Key cross-compatible themes
Integrate GBI into new developments	✓	✓		Collaborate with Local Authorities at a regional level through the Southern Regional Assembly to identify and implement common opportunities around work areas such as: • Awareness raising among private developers and communities; • Urban greening of commercial and public developments; • NbS for stormwater management in the public realm; • Restoration and conservation of ecological habitats; and • Monitoring/evaluation of GBI measures as part of the emerging Climate Action Plan. Prepare GBI Strategies as part of the preparation of local area plans and to provide policies to guide the development of NbS for all new developments. Prepare guidance for developers to promote best practice in the implementation of GBI. Develop an awareness and training programme for planning agents and developers. Develop a 'Greening' Matrix to assist designers in enhancing site biodiversity in new developments.	The Council; Southern Regional Assembly; South Regional Local Authorities; Land Development Agency; Landowners; Private developers; Local businesses; Local communities; LAWPRO; and DHLGH.	✓			
Embedding GBI as part of public developments	✓	✓	✓	Examine partnership opportunities for greening and climate adaptation / mitigation initiatives on public owned underutilised open green space e.g. carbon sequestration / biodiversity enhancement; Implement actions within the Biodiversity Strategy (once prepared) and recommendations from the "How Local Authorities can address the Biodiversity Emergency Conference" held in Limerick, September 2022; Prepare a GBI Implementation Plan as part of all capital projects in accordance with best practice guidance; Develop and raise awareness of best practice case studies; Develop a monitoring programme for urban greening to measure sustainable urban management in the Strategy Area; Align actions of the Climate Action Plan with the GBI Strategy (e.g. urban greening initiatives, proposals for surface water management, NbS and retrofit programmes for homes and buildings); and Ensure that all local authority strategies and work programmes include measures, where appropriate, for urban greening.	The Council; CARO; LAWPRO; NPWS; NBDC; EPA; Local businesses; and Public authorities	✓			

GBI Priority Action #1

Embed GBI in the implementation of Public and Private Projects

List of Potential GBI Proposals and Existing Interventions

Objective	Scale: Site	Scale: Local	Scale: Landscape	Proposal	Delivery partners	Life stage: In concept	Life stage: In progress	Life stage: Complete	Key cross-compatible themes
Ensure GBI plays a role in the adaptation and mitigation of climate change	✓	✓	✓	Seek opportunities to adapt to and mitigate against the predicted effects of climate change. This could include: • Use of riverside flood zones for alternative uses such as renewable energy, amenity or biodiversity, e.g. Long Pavement Landfill Site and Thomond Weir site; • Enhancements to the active travel network to minimise the need to travel via private transport; • Integration of surface water management solutions into the landscape, including SuDS, wetlands, swales, dry river channels and rain gardens. • Potential utilisation of public open space/ car parking as flood attenuation / water storage during flood events as part of a wider urban water management strategy; • Identification and management of habitats under threat from climate change; and • Enhance the potential for carbon sequestration opportunities through planting.	The Council; CARO; Waterways Ireland; NTA; Transport Infrastructure Ireland; NPWS; Healthy Limerick; Local businesses; The Forest Service; and Failte Ireland.	✓	✓		
Utilise GBI to minimise air and noise pollution		✓	✓	Create areas of GBI, including linear corridors to provide buffers to minimise noise and air pollution for local residents. Examples include: • Along major roads; • Along railway lines; • Between industrial areas and residential areas; and • Between roads and areas of green space.	The Council; Private developers; Landowners; NPWS; EPA.; Irish Rail; and Healthy Limerick.	✓			
Integrate urban greening initiatives	✓			Retrofit or integrate urban greening interventions into new or old buildings, civic buildings, transport hubs and streets or squares. The opportunity also exists to improve the setting of laneways within the City Centre as part of the Limerick Laneways Project. Potential urban greening initiatives include green walls / roofs, ecological enhancements in urban areas and on roof space, nature-based SuDS, rain gardens, pocket parks / micro parks and street trees. The opportunity also exists to install nesting and roosting boxes within development proposals.	The Council; Local businesses; and Private developers.	✓	✓		

GBI Priority Action #1

Embed GBI in the implementation of Public and Private Projects

List of Potential GBI Proposals and Existing Interventions

Objective	Scale: Site	Scale: Local	Scale: Landscape	Proposal	Delivery partners	Life stage: In concept	Life stage: In progress	Life stage: Complete	Key cross-compatible themes
Increase support for the introduction of urban greening initiatives	✓	✓		Encourage the implementation of urban greening initiatives within the Strategy Area to enhance the local landscape and streetscape, including: • Encouraging and promoting best practice to apply NbS for public and private developments; and • Increase awareness of urban greening initiatives among the private sector and private developers.	The Council; CARO; Local businesses; Private Developers; LAWPRO; and Educational establishments and community groups.	✓			
Utilise urban greening initiatives to enhance the water environment and riverside	✓	✓	✓	Seek opportunities to introduce urban greening initiatives to improve the quality of the water environment, including the banks of the River Shannon. Opportunities include: • Integration of GBI initiatives within the World-Class Waterfront Projects; • Improvements to accessibility along the River Shannon with the aim of creating a pedestrian-friendly environment as a catalyst for further development and driver of new urban form; • Redevelopment of riverside sites, including Arthur's Quay and the Dunne's and Roche's Stores to the south, and the Golden Vale site north of the river; • Explore provision for GBI in the development of water-based activities in line with the Draft River Shannon Accessibility Study; and • Promotion of development of river projects and events.	Waterways Ireland; OPW; Waterways Ireland; Shannon Foynes Port Company; Local businesses; Inland Fisheries Ireland; and Sli na Slainte.	✓	✓		
Incorporate / retrofit nature-based SuDS in new /existing developments	✓			The potential exists to raise awareness of the importance of NbS and SuDS amongst planners and developers, including through shared best practice.	The Council.	✓			

GBI Priority Action #2

Enhance existing open space provision within the Strategy Area

List of Potential GBI Proposals and Existing Interventions

Objective	Scale: Site	Scale: Local	Scale: Landscape	Proposal	Delivery partners	Life stage: In concept	Life stage: In progress	Life stage: Complete	Key cross-compatible themes
Maintain and enhance existing open space	✓	✓	✓	Ensure all residents have local access to a high quality, multi-functional open space. Opportunities to improve existing green space include: • Providing community food growing space, including in the Baggot Estate Nature Park; • Incorporating quiet space and therapy gardens into parks and green space; • Enhancing opportunities for social prescribing through biodiversity and soundscape enhancements; • Maximising safety through natural surveillance, wardens and lighting; • Improving signage and distance markers to define recreational routes; • Expanding wildflower areas and other opportunities to benefit biodiversity; • Upgrading and providing play areas and natural play features; and • Wetland enhancement at Coonagh. Underutilised areas of green space which could be a focus for enhancements include Garryowen green space, Moyross, Ballynanty, Mayorstone Park, Johnsgate, Mount St. Lawrence, Baggot Estate Nature Park and Caherdavin Meadows.	The Council; URBACT Health and Greenspace; University of Limerick; NPWS; Healthy Limerick; Tidy Towns; Coillte; Failte Ireland; Grow it Forward; Private developers; and Sláintecare.	✓	✓		
Protect and enhance heritage features	✓			Protect and enhance heritage features within green spaces through the introduction of the following mechanisms: • Retention of views towards and from heritage features as part of future development proposals; • Introduction of interpretative signage and enhancement of educational opportunities (similar to the outdoor classroom facilities at Griston Bog, Ballyhoura); • Work with local communities on the maintenance of burial grounds based on best principles set out in the Care and Conservation of Graveyards to enhance biodiversity in these areas; and • Protect archaeological monuments and sites in Special Development Control areas of the LDP, including the ringfort in Monaleen and monastic complex in Mungret, from human disturbance while maintaining and enhancing biodiversity. •	The Council; Heritage Council; Historical societies; and Local communities.	✓	✓		

GBI Priority Action #2

Enhance existing open space provision within the Strategy Area

List of Potential GBI Proposals and Existing Interventions

Objective	Scale: Site	Scale: Local	Scale: Landscape	Proposal	Delivery partners	Life stage: In concept	Life stage: In progress	Life stage: Complete	Key cross-compatible themes
Improve public facilities and amenities	✓			Encourage use of public open space through improvements to the condition of facilities, including: • Providing outdoor seating areas/ picnic areas which are accessible for all, including the elderly and those with disabilities; • Increasing the provision for outdoor learning and forest schools to build on the positive experience of similar initiatives at the Baggot Estate Nature Park; • Encouraging the establishment of 'friends of' groups as a mechanism for promoting increased community ownership of open spaces; and • Audit and analyse existing green spaces in Regeneration Areas for their condition and functionality to form targets for investment in feasibility studies going forward.	The Council; Age Friendly Limerick; Sport Ireland; Failte Ireland; and NPWS.	✓	✓		

GBI Priority Action #3

Create new formal parks and natural & semi-natural parks to improve accessibility for a growing population

List of Potential GBI Proposals and Existing Interventions

Objective	Scale: Site	Scale: Local	Scale: Landscape	Proposal	Delivery partners	Life stage: In concept	Life stage: In progress	Life stage: Complete	Key cross-compatible themes
Identify needs of a growing population in the network of publicly accessible green space within the Strategy Area			✓	Utilise the hierarchy of existing open space provision within the Strategy Area to address gaps in the network. Opportunities include: • Undertake a feasibility study for the upgrade and enhancement of amenity green space provision in the creation of additional green space provision within the Strategy Area. This should include land at the western extent of Castletroy, land to the south of the River Shannon within the Southern Environs, urban areas within Dooradoyle in the Southern Environs, land forming the eastern extent of Outer City and land at Ballycummin at the southern extent of the Southern Environs; • Develop the hierarchy of open space provision and promote the development of parks that encourage physical activity and attract visitors from across the Strategy Area, offering a range of attractions and facilities; and • Expand the network of formal parks / natural and semi natural parks to address gaps in the existing network.	The Council.	✓	✓		
Create new and more accessible green space	✓	✓	✓	Support the improvement and creation of accessible green space within the Strategy Area. Opportunities include: • Prepare a multi-annual capital programme for parks to align with recommendations of the GBI Strategy; • Work with private developers in the delivery of quality and innovative green open spaces as part of mixed use and residential developments; • Develop a feasibility study for the creation of the 'Limerick Blue Green Ring' around Limerick; • Opening up of green spaces in the Raheen / Dooradoyle area (which also requires additional active travel routes and play space); • Greater utilisation of Vartry Field and areas along the railway and riverside; • Creation of allotments, community food growing areas and urban farming; • Development of land in Knockalisheen for green space for biodiversity value (e.g. wetland habitat), with the opportunity to become a large-scale destination park; • Woodland creation on Public Lands Scheme to provide opportunities for amenity; and • Utilise the NeighbourWood scheme to enhance the Millennium Forest (Shannon Field) by thinning existing trees to create an understorey and accessibility improvements. The opportunity also exists to incorporate paths and other facilities.	Waterways Ireland; Sli na Slainte; NTA (Active Travel); Transport Infrastructure Ireland; CARO; The Council; Private developers; NPWS; Healthy Limerick; University of Limerick; Sport Ireland; The Forest Service; Failte Ireland; URBACT Health and Greenspace; Tidy Towns; and Landowners.	✓			

GBI Priority Action #3

Create new formal parks and natural & semi-natural parks to improve accessibility for a growing population

List of Potential GBI Proposals and Existing Interventions

Objective	Scale: Site	Scale: Local	Scale: Landscape	Proposal	Delivery partners	Life stage: In concept	Life stage: In progress	Life stage: Complete	Key cross-compatible themes
Explore provision of a district level park at the Groody Valley	✓	✓	✓	Develop a landscape led masterplan for the Groody Valley which supports the delivery of a District Park offering economic, social, cultural and environmental benefits including: • Utilise the hierarchy of existing open space provision within the Strategy Area to upgrade and enhance and provide additional areas of amenity green space, providing also for multi-functional green spaces; • Restore the natural bankside to protect and enhance riparian areas and areas prone to flooding, such as the development of wetlands and other natural flood management techniques that provide flood prevention measures and which could be promoted within educational programmes; • Provide access to the river for recreational routes which would provide accessibility enhancements across the Strategy Area; and • Encourage use of the area by the public to promote community ownership.	The Council; LAWPRO; Community groups; Landowners; OPW; Inland Fisheries Ireland; and NPWS.	✓			

GBI Priority Action #4

Protect, value and enhance amenity green space by applying an appropriate management approach

List of Potential GBI Proposals and Existing Interventions

Objective	Scale: Site	Scale: Local	Scale: Landscape	Proposal	Delivery partners	Life stage: In concept	Life stage: In progress	Life stage: Complete	Key cross-compatible themes
Ensure GBI proposals adhere to best practice environmental management	✓	✓	✓	Identify and implement local nature recovery measures through the proposed Biodiversity Strategy as a way of reversing habitat loss in the Strategy Area. Measures might include identifying wetlands suitable for restoration, identifying areas for planting of native trees and woodland, positive biodiversity management of grassland and other amenity areas, building of biodiversity infrastructure (e.g. wildlife tunnels, bridges and corridors) to address landscape fragmentation. Carry out a baseline survey of wetlands for the Strategy Area to establish the type, number and ecological value of wetlands in order to inform planning decisions and support climate actions with regard to carbon sequestration. Carry out a hedgerow and field boundary survey to establish their condition and assist in their conservation. Seek to safeguard riparian zones in the Strategy Area from inappropriate development to protect habitats, provide flood protection and protect water quality. The benefits of flood prevention by wetlands and other natural flood management techniques should be promoted within the Strategy Area.	The Council; NPWS; Heritage Council; NBDC; OPW; and Private developers.	✓			
Provide multi-functional green spaces	✓	✓		Utilise green spaces for a number of uses to promote multi-functionality.	The Council; Tidy Towns; Healthy Limerick; and CARO.	✓			
Delineate recreational access	✓	✓	✓	Balance the competing demands of people and the environment by ensuring a differentiation is sought between green space for formal and informal recreation and provision of biodiversity enhancements.	The Council; Healthy Limerick; Transport Infrastructure Ireland; NTA; and Limerick Cycling Campaign.	✓	✓		

GBI Priority Action #4

Protect, value and enhance amenity green space by applying an appropriate management approach

List of Potential GBI Proposals and Existing Interventions

Objective	Scale: Site	Scale: Local	Scale: Landscape	Proposal	Delivery partners	Life stage: In concept	Life stage: In progress	Life stage: Complete	Key cross-compatible themes
Integrate agricultural hinterland	✓	✓	✓	Work with landowners to support the delivery of wildlife enhancements across agricultural land within the Strategy Area.	The Council; and Private developers.	✓			
Create additional opportunities for community food growing	✓	✓		Create new opportunities for community gardens and community growing as part of new development / green space and enhancement of existing areas of green space. The Baggot Estate Nature Park and St John's Hospital are well placed to provide a food growing area for the community, with the latter having existing infrastructure for growing food. The potential also exists to promote opportunities for edible planting as part of the summer bedding plants programme.	Limerick Civic Trust; The Council; Schools and other educational providers; URBACT Health and Greenspace; Limerick Food Partnership; Grow it Forward; and Healthy Limerick.	✓			

GBI Priority Action #5

Enhance, protect and develop the network of blueways

List of Potential GBI Proposals and Existing Interventions

Objective	Scale: Site	Scale: Local	Scale: Landscape	Proposal	Delivery partners	Life stage: In concept	Life stage: In progress	Life stage: Complete	Key cross-compatible themes
Enhance, protect and develop the network of blueways	✓	✓		• Prepare and implement a County level Implementation Plan based on catchment management plans that addresses issues that impact the Strategy Area; • Undertake scientific assessments of waterbodies within and upstream of the Strategy Area by collecting and reviewing desktop and monitoring data (chemistry and biology). Implement local measures to restore Good ecological status, and where Good or High ecological status already exists provide protection; • Provide surveillance and strategic assessment of urban stormwater discharges into the River Shannon, including the potential identification and introduction of measures to mitigate contamination; • Identify and implement measures to offset stormwater flows through the development of NbS and delayed flow initiatives. SuDS interventions should also be incorporated to limit runoff from existing and new development in accordance with best practice (The Nature-based Solutions to the Management of Rainwater and Surface Water Runoff in Urban Areas: Best Practice Interim Guidance); and • Ensure that environmental consequences of individual projects are assessed with any adverse effects avoided prior to authorisation.	The Council; Local Authorities; EPA; LAWPRO; Irish Water; Community groups; Landowners; Climate Action Fund; OPW; Inland Fisheries Ireland; NPWS; and Local fishermen.	✓			
Address flood risk in the Strategy Area	✓	✓		• Incorporate GBI initiatives in the development of the Limerick City & Environs, and King's Island Flood Relief Schemes e.g. swales for storage of surface water runoff / floodwater, wetland creation / extension, living walls as nesting banks or the protection of existing nesting habitats such as the quay walls along the Abbey River. • Avoid inappropriate development in areas of flood risk through the assessment of all proposed developments in accordance with 'The Planning System and Flood Risk Management Guidelines for Planning Authorities'.	The Council; OPW; CARO; Irish Water; Waterways Ireland; Birdwatch Ireland; NPWS; and Private developers.		✓		

GBI Priority Action #5

Enhance, protect and develop the network of blueways

List of Potential GBI Proposals and Existing Interventions

Objective	Scale: Site	Scale: Local	Scale: Landscape	Proposal	Delivery partners	Life stage: In concept	Life stage: In progress	Life stage: Complete	Key cross-compatible themes
Protect and enhance riparian areas and flood zones		✓	✓	Restore natural bankside habitat where possible, potentially integrating with the Limerick City & Environs and King's Island Flood Relief Schemes currently at planning / design Stage 1. It is recommended that riparian buffer zones are defined and protected from future development.	The Council; OPW; and Inland Fisheries Ireland.	✓			
Restoration works to enhance the network of blueways	✓			Collaborate with key stakeholders to assist river restoration works. This could include the removal / modification of physical barriers on rivers in the Strategy Area under the proposed Restoration Programme in the Draft RBMP (2022-2027) (e.g. the pilot restoration project for the Annacotty Weir). Improvement works should result in associated benefits to local ecosystems and also for potential recreational users.	Inland Fisheries Ireland; The Council; ESB; OPW; DHLGH; Community groups; and Local fishermen.	✓			
Control and contain invasive alien species along the river	✓	✓		Prepare and implement catchment scale plans for the control of invasive alien species for the river network flowing into and through the Strategy Area. Funding will need to be sought for long-term, multi-annual, projects, potentially through the Local Authority Biodiversity Grant Scheme as recommended in the Draft RBMP 2022-2027.	NPWS; The Council; OPW; NBDC; Community groups; and Landowners.	✓			

GBI Priority Action #6

Integrate GBI in the delivery of the network of active travel routes

List of Potential GBI Proposals and Existing Interventions

	Scale					Life stage			
Objective	Site	Local	Landscape	Proposal	Delivery partners	In concept	In progress	Complete	Key cross-compatible themes
Improve existing and deliver new active travel routes across the Strategy Area		✓	✓	Engage with the Active Travel Section to deliver GBI across Active Travel proposals including the following: • The River Shannon flood embankments provide a good opportunity to integrate active travel corridors. These should be extended past University of Limerick out to Castleconnell, creating further links along the Mulkear and Groody River; • Existing riverside embankments in the Dooradoyle area could be used to facilitate walking links through this green area; • Introduction of greenway networks across the City (e.g. Shannon Fields extension, links with Great Southern Greenway, Limerick Docks, City to Bunratty); • Integration of the network of walking, cycling, water-based and other outdoor activity trails in the Shannon Region; • Ballinacurra Creek – explore the potential to create cycle paths and walkways wide enough to permit dual usage; • Development of a riverside walk from Corbally to Mill Road and Coonagh; and • Implement active travel corridors and greenways.	The Council; Healthy Limerick; Transport Infrastructure Ireland; NTA (Active Travel); Limerick Cycling Campaign; OPW; Failte Ireland; Irish Rail; and Private developers.	✓	✓		
Integrate with Limerick City Environs & King's Island Flood Relief Schemes	✓	✓	✓	Based on initial recommendations from the CFRAM study, the emerging Limerick City & Environs and King's Island Flood Relief Shemes may involve an assortment of measures including flood defences (walls/embankments), flow diversions, bridge/culvert upgrades etc. The opportunity exists to incorporate GBI as part of the scheme. This could potentially involve the establishment of new walking routes / trails along proposed embankments, or new access points for recreational users. The expansion of the habitat mosaic within attenuation ponds should also be explored. Consultation is recommended with the design team leading on the development of the Limerick City & Environs Flood Relief Scheme and key stakeholders to discuss potential GBI which could be incorporated as part of design development.	The Council; OPW; Heritage Council; Inland Fisheries Ireland; and Flood Relief Scheme design team.	✓	✓		

GBI Priority Action #6

Integrate GBI in the delivery of the network of active travel routes

List of Potential GBI Proposals and Existing Interventions

Objective	Scale: Site	Scale: Local	Scale: Landscape	Proposal	Delivery partners	Life stage: In concept	Life stage: In progress	Life stage: Complete	Key cross-compatible themes
Improve connectivity and encourage active lifestyles		✓	✓	Enhance existing recreational routes and improve connectivity to existing routes. Opportunities for enhancement include: • Three Bridges Walk; and • Providing better GBI linkages and greenways between existing routes and parks / green space, including at Westfields Wetlands and the Baggot Estate Nature Park.. Development of new routes, potentially including: • In Coonagh, as identified in the Coonagh Recreational Framework; • Creation of laneways in Limerick's Georgian Neighbourhood (Limerick Laneways Project). The scheme aims to rejuvenate and improve the setting of the laneways in the City Centre as part of the wider Living Georgian City Programme; • Creation of a 'Blue Green Ring' around the Strategy Area; • Introduction of a cycle route from the University of Limerick to Castleconnell; • Linking the main higher education institutes (University of Limerick, Mary Immaculate College and Technical University of the Shannon, Midlands, Midwest) with green routes; • Link Thomond Park to the River Shannon via a green route; and • Re-establish pedestrian bridges from Mill Road to St. Thomas Island and Parteen.	The Council; +CityxChange; GoGreen Routes; Age Friendly Limerick; Limerick Cycling Campaign; NTA (Active Travel); Healthy Limerick; Transport Infrastructure Ireland; Limerick Sports Partnership; Sport Ireland; Waterways Ireland; Heritage Council; CARO; and Community groups and educational establishments.	✓	✓		

GBI Priority Action #7

Enhance recreational access to the River Shannon and tributaries

List of Potential GBI Proposals and Existing Interventions

Objective	Scale: Site	Scale: Local	Scale: Landscape	Proposal	Delivery partners	Life stage: In concept	Life stage: In progress	Life stage: Complete	Key cross-compatible themes
Enhance recreational access to the River Shannon	✓	✓	✓	There are limited points along the River Shannon and the wider river network that currently enable access for recreational users. The opportunity exists to expand the network of recreational routes along watercourses, whilst allowing sufficient space for long-term natural processes such as erosion / deposition. Engage with the Tourism Section in the preparation of a Waterways Accessibility Study any opportunities to expand the network of recreational routes along watercourses, whilst allowing sufficient space for long-term natural processes such as erosion / deposition. Include Regeneration Areas when reviewing feasibility studies for access to the River Shannon.	The Council; Shannon Tourism Steering Group; Waterways Ireland; University of Limerick; Transport Infrastructure Ireland; Limerick Sports Partnership; Sport Ireland; Shannon Foynes Port Company; ESB Local recreational clubs and water activity providers; and Limerick Cycling Campaign.	✓			
Provide new tourist attractions		✓	✓	The Limerick Tourism Development Strategy 2019-2023 recognises the opportunity for Limerick to develop blueways and provide greater accessibility to the water to drive forward the tourism sector and deliver widespread benefits to the local economy and communities. Explore the opportunity to implement GBI provision in the delivery of the strategy proposals.	The Council; Fáilte Ireland; and Tourism Industry.	✓			

GBI Priority Action #8

Develop Tree and Biodiversity Strategies for the Strategy Area

List of Potential GBI Proposals and Existing Interventions

Objective	Scale			Proposal	Delivery partners	Life stage			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Complete	
Develop a Biodiversity Strategy for the City and County	✓	✓	✓	Prepare a City and County Biodiversity Strategy to establish a vision and priorities within the Strategy Area for the next 10-20 years. Key areas for protection, creation, enhancement and increased connections should be established. The document should set deliverable and measurable targets to be overseen by the Council.	The Council.	✓			
Develop a Tree Strategy for the City and County	✓	✓		Prepare and Implement a Tree Strategy for the City and County including actions to increase tree numbers and canopy cover, diversify the existing stock, protect existing specimens and ensure future resilience.	The Council.	✓	✓		
Promote locally appropriate habitat enhancement or restoration	✓	✓	✓	Carefully consider underlying soil geology, topography, climate and historic landscape character when designing habitat enhancement and restoration schemes. Habitat creation and management plans should consider species tolerant of the effects of climate change such as intermittent drought, etc. The opportunity exists to develop a tree species index to aid with future planting proposals in the Strategy Area. Planting of trees should be avoided on peat rich soils. Plans to increase the biodiversity and recreational value of Shannon Fields should consider the enhancement of species-rich wet grassland and the thinning of woodland to create rides and glades. A Barn Owl survey has commenced, part of which will advise on simple measures that will inform conservation measures for species in both City and County areas. It will also help with providing additional foraging and nesting habitats for the species. Also, continue to work with the Vincent Wildlife Trust and the NPWS in facilitating the construction of bat houses and other measures to enable the spread of the Lesser Horseshoe Bat in the wider countryside.	The Council; NPWS; Landowners; Private developers; Local businesses / SMEs; Climate Regulation Offices Ireland; Vincent Wildlife Trust; Community groups and schools; NBDC; and Birdwatch Ireland.	✓			

GBI Priority Action #8

Develop Tree and Biodiversity Strategies for the Strategy Area

List of Potential GBI Proposals and Existing Interventions

Objective	Scale			Proposal	Delivery partners	Life stage			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Complete	
Identify ecological corridors		✓	✓	Optimise both continuous linear connectivity and the richness of habitat structure therein - aquatic, marginal and bank side habitats. Dispersal corridors should be targeted for protected species e.g. birds, bats, otters, invertebrates. Corridors should also be created to link the northern populations of lesser horseshoe bats in south Mayo, Galway and Clare with the southern population in south Kerry and west Cork. This could be achieved by maintaining deciduous woodland and riparian vegetation for foraging, as well as creating stepping stones across arable land and urban settings. Other opportunities for the creation of wildlife corridors include enhancements to the islands along the River Shannon, improvements to the biodiversity value along linear infrastructure and the promotion of cemeteries as corridors for ecological connectivity. Where possible, actions should align with cross-boundary opportunities identified with neighbouring authorities.	The Council; NPWS; The Irish Wildlife Trust; Vincent Wildlife Trust; Birdwatch Ireland; and Waterways Ireland.	✓			
Enhance the biodiversity value of green spaces	✓			Urban green spaces can be diversified to optimise the habitat structure and species-richness able to support thriving wildlife. This could be achieved by reducing the use of pesticides and herbicides, promoting relaxed mowing regimes, within green spaces, retaining dead wood and planting of native species.	The Council; NPWS; The Irish Wildlife Trust; and Private developers	✓	✓		
Protect, enhance and map the local hedgerow network	✓	✓		Hedgerows should also be maintained as buffers around agricultural areas. Undertake city-wide mapping and assessment of the hedgerow network to understand strengths, weakness and opportunities for greater connectivity.	The Council; Landowners; Private developers; and NBDC.	✓			
Expand the network of pollinator action areas	✓	✓		Plant and manage additional areas through the Strategy Area as wildflower meadows (including road verges) and implement the objectives of All Ireland Pollinator Plan. This has been successfully achieved at Castletroy Park. The opportunity exists to improve the habitat for ground nesting solitary bees at sites such as Corbally Meadow through the introduction of bee scrapes.	The Council; and NPWS.	✓	✓		

GBI Priority Action #8

Develop Tree and Biodiversity Strategies for the Strategy Area

List of Potential GBI Proposals and Existing Interventions

Objective	Scale: Site	Scale: Local	Scale: Landscape	Proposal	Delivery partners	Life stage: In concept	Life stage: In progress	Life stage: Complete	Key cross-compatible themes
Protect flood plains from inappropriate development			✓	The OPW's Planning System and Flood Risk Management Guidelines define types of developments (highly vulnerable, less vulnerable, water compatible) which are appropriate in Flood Zones. Areas currently liable to flooding, which do not accrue economic/ environmental damage should be allowed to remain as floodplain. There may be scope (potentially as part of the emerging Flood Relief Schemes) to create additional wetland habitat, parks and green spaces which may offset volumes of floodplain removed as part of historical development. Analysis of the stormwater network offers the potential to introduce engineered wetlands to improve the quality of water run-off.	The Council; OPW; and Inland Fisheries Ireland.	✓	✓		
Enhance wetland sites	✓			Promote biodiversity at key wetland sites such as Coonagh, Westfields Wetlands, King's Island, Knockalisheen, Baggot Estate Nature Park and Shannon Fields. Examine the feasibility to create additional wetland areas in the Strategy Area. The integration of interpretative signage should be considered as an educational opportunity. Prepare a Westfields Wetland Management Plan and implement recommendations. Undertake a wetland survey for the functional area of the City and County to establish their importance from an ecological perspective and to assist in planning for flood control measures.	The Council; NPWS; The Irish Wildlife Trust; Vincent Wildlife Trust; Birdwatch Ireland; and Waterways Ireland	✓	✓		
Improve connectivity of coastal wetland sites with the wider GBI network			✓	The opportunity exists to support the connectivity of coastal wetlands through appropriate zoning, maintenance of natural regimes, community involvement in wetland management and the restriction of development or works which would encroach upon the wetland areas.	The Council; and NPWS.	✓			
Control invasive species		✓		Promote awareness and reporting of invasive species through the Limerick 'Report Invasive Plants' app, using photography and GPS coordinates. Consideration will also be given to measures to address control and eradication of invasive species under an environmental water County Implementation Plan, a proposed under the Draft RBMP (2022-2027).	The Council; Waterways Ireland; NBDC; NPWS; and OPW.	✓	✓		

GBI Priority Action #9

Promote community engagement and raise public awareness in the development of GBI

List of Potential GBI Proposals and Existing Interventions

Objective	Scale: Site	Scale: Local	Scale: Landscape	Proposal	Delivery partners	Life stage: In concept	Life stage: In progress	Life stage: Complete	Key cross-compatible themes
Promote community engagement and raise public awareness	✓	✓		Support environmental awareness and resource efficiency practices to ensure a healthy living environment for all citizens and effective resource use for future generations: • Build capacity within communities, stakeholders and educational establishments to implement GBI and NbS in local communities; • Engage with stakeholders on Health and Greenspace Project ; • Implement Integrated Action Plan for URBACT Health and Greenspace; and • Progress Horizon Go Green Routes project.	Community groups; Educational establishments; Residents' groups; Healthy Limerick; Tidy Towns; LAWPRO; Heritage Council; NPWS; Limerick's PPN; Relevant Expert NGOs; The Council; and Corporate Social Responsibility business partners.	✓	✓		
Create / promote forest schools as a learner centred educational process with close links to regular curriculum objectives	✓	✓		Create a network of outdoor learning areas across the city. This network will include areas for schools to use but also 'pop – up' nature classrooms for all ages and abilities: • Create a policy document on outdoor learning and play. Deliver a pilot programme with the forest school in Baggot Estate in 2022. The programme can be replicated across Limerick; • Install additional natural play features such as living willow, Trim Trails, enhanced signage and additional pathways.	The Council; Limerick Sports Partnership; Active Cities; and Educational establishments - local primary / secondary and third level schools.	✓	✓		
Build low carbon communities	✓	✓	✓	Support communities through the Community Climate Action Programme to build low carbon communities as part of a considered and structured approach. This should incorporate communities of varied scale in both rural and urban contexts.	The Council; and Local communities.	✓			

GBI Priority Action #10

Incorporate smart mechanisms of connecting GBI initiatives with the public

List of Potential GBI Proposals and Existing Interventions

	Scale					Life stage			
Objective	**Site**	**Local**	**Landscape**	**Proposal**	**Delivery partners**	**In concept**	**In progress**	**Complete**	**Key cross-compatible themes**
Promotion and awareness of the environment	✓	✓	✓	GBI can be used to promote an appreciation of the environment and adoption of sustainable principles. Opportunities to improve environmental awareness within the Strategy Area should be introduced. This could also involve methods such as social media campaigns, as well as community engagement to promote 'buy-in'.	The Council; Technological University of the Shannon; University of Limerick; Urban Outdoor Initiative Project; Community groups and schools; Local businesses / SMEs.; and Healthy Limerick.	✓			

Chapter 5
Guidance recommendations

This chapter presents an overview of the Council's expectations for GBI delivery, and the key principles developers should have regard to when integrating GBI in new developments. The guidance in this chapter is applicable to a range of development types, including residential, commercial, institutional and industrial settings.

Part 4 of the Planning and Development Regulations 2001 (as amended), sets out the statutory requirements with regard to submitting a planning application. Under the provisions of Article 22A, the Council may require an applicant to submit further information with any application to ensure that an informed decision can be made. Therefore, a statement demonstrating how GBI has been considered and incorporated in the design of a development may be requested at the discretion of the Council. Furthermore, whenever funding is granted, the Council expects it to be spent in accordance with the principles of the GBI Strategy.

This chapter should be read in conjunction with the LDP as well as other guidance documents referred to throughout the chapter.

A GBI Checklist is presented in this chapter to assist applicants with the preparation of their GBI Statements. The GBI Checklist aims to 'raise the bar' for new development in Limerick, not only to make attractive new places but also resilient spaces that play a central part in achieving environmental goals. It will act as a mechanism to deliver design quality in projects through the achievement of defined standards.

View looking north west along Upper Mallow Street

Green urban spaces - Sankt Kjeld's Square and Bryggervangen, Copenhagen (Image copyright: SLA (https://www.sla.dk/cases/sankt-kjelds-square-and-bryggervangen/))

Installation of multi-user routes

GBI and Design / Placemaking

Planning for GBI should be based on an understanding of place, character, local assets, need and opportunities, informed by site context appraisal and spatial analysis. The process forms an integral element of placemaking and should be designed into all new developments, as well as extensions / refurbishments / retrofitting of existing developments, at an early stage alongside grey infrastructure (e.g., utilities, transport networks, etc.). It is essential that development proposals integrate new GBI effectively and coherently with the GBI network immediately surrounding the site and also create linkages with the wider network, where possible. Development proposals should avoid the loss or fragmentation of the GBI network and should not prejudice the retention, use, enhancement or further development of the network.

Proposals should incorporate NbS into the design of new developments and their layouts from the outset as they would provide many benefits including the regulation of rainfall, reduction in storm flows and provides clean water and air. Developments should also be designed to provide high levels of natural surveillance and overlooking by as many properties as possible, particularly for walking and cycling routes and open spaces.

New developments should demonstrate that climate risk has been considered in the site layout and ensure that the location, layout and design of new development can accommodate predicted future climate change impacts, e.g., using trees for cooling and the reduction of wind tunnel effect etc.

GBI and the Water Environment

Development proposals should seek to create or improve access to water resources for amenity and recreational purposes through the creation of greenways and blueways. Where a proposed development adjoins a river or canal bank, a linear walkway/cycleway access for the public may be required, whilst ensuring a 20m Riparian Buffer Zone is maintained on greenfield sites (see Open Space Requirements in Section 11.3.6 of Chapter 11: Development Management Standards and Objective EH 018, LDP).

Potential to integrate a network of urban greening features such as green roofs

The management of rainwater and flood risk as part of climate adaptive and resilient urban greening should be considered at the outset of the design process. Proposals should adhere to the rainwater management mechanisms outlined within the national guidance for water sensitive urban design (Nature-Based Solutions to the Management of Rainwater and Surface Water Runoff in Urban Areas: Water Sensitive Urban Design: Best Practice Interim Guidance Document). All new development is required to manage and minimise surface water runoff through the use of NbS / Sustainable Drainage Systems (SuDS), unless otherwise agreed with the Council. Previously developed sites which are being redeveloped should aim to achieve greenfield run off rates.

A comprehensive Storm Water Management Plan should be submitted as part of a proposal to provide an understanding of the mechanisms of surface water flooding and to propose mitigation measures both at a local and strategic level (see Chapter 11: Development Management Standards, LDP). Green roofs are recognised as a mechanism to attenuate storm water run-off from sites. The Council will encourage green roofs for the following types of development: apartment developments; employment developments; retail developments; leisure facilities and education facilities (see Objective IN O12, LDP).

The NbS / SuDS schemes should replicate natural drainage from the site prior to its development as closely as possible, maximising the benefits for water quality, water quantity, biodiversity and amenity. Different SuDS components should be integrated at every scale of development, from green walls on buildings to large areas of open space. SuDS features should also be designed to provide safe access, enhance landscape character and biodiversity, and improve the aesthetic and amenity value of the development. Planted areas must be designed in such a way as to allow runoff from the nearby impermeable area to infiltrate into it.

Typical SuDS features to be considered on a site include, but are not limited to:

- Rainwater harvesting;
- Green roofs;
- Infiltration systems;
- Proprietary treatment systems;
- Filter strips and drains;
- Swales / bioretention systems;
- Tree root systems;
- Permeable pavements;
- Ponds and wetlands; and
- Detention basins.

Developments must be designed to ensure there is a 20m riparian buffer zone between development and waterbodies to maintain natural fluvial processes, restore tracts of riparian vegetation and protect the water environment (see Objective EHO 18, LDP).

Development proposals should enhance the GBI network by de-culverting, re-meandering, removing redundant structures or barriers to fish passage, and enhancing bankside habitat, where appropriate.

Example of integration of SuDS into the public realm

For further guidance please refer to:

- Government of Ireland (2022) Nature-Based Solutions to the Management of Rainwater and Surface Water Runoff in Urban Areas: Water Sensitive Urban Design: Best Practice Interim Guidance Document (https://www.gov.ie/en/publication/10d7c-nature-based-solutions-to-the-management-of-rainwater-and-surface-water-runoff-in-urban-areas-best-practice-interim-guidance-document/);
- Department of the Environment, Heritage and Local Government (2009) The Planning System and Flood Risk Management: Guidelines for Planning Authorities (https://www.opr.ie/wp-content/uploads/2019/08/2009-Planning-System-Flood-Risk-Mgmt-1.pdf); and
- CIRIA (2015) 'The SuDS Manual C753' (https://www.susdrain.org/resources/SuDS_Manual.html).

GBI and Biodiversity

Development proposals should be designed to conserve and enhance the existing GBI network including European designated sites, as well as create biodiversity rich GBI as part of new developments, including wildlife corridors, buffer zones, 'stepping stones' or green bridges. This will allow routes for people and species movement and migration through the GBI network.

Proposals for new GBI should be pollinator friendly, providing sufficient year-round diverse flowering plants to address the decline of pollinators. Developers should refer to the planting and maintenance approach set out in the Pollinator Friendly Planting Code of the All-Ireland Pollinator Plan. Development proposals should incorporate roosting facilities for species, such as bird or bat boxes, swift boxes, or other artificially created habitats, where considered appropriate.

Development proposals should prioritise the retention of existing tree cover, not just for the amenity and ecological value but also because of the carbon storage capacity of older trees. The Council requires the planting of native trees, hedgerows and vegetation and the creation of new habitats in all new developments.

For further guidance please refer to:

- National Biodiversity Data Centre (2021) All-Ireland Pollinator Plan 2021-2025 (https://pollinators.ie/wp-content/uploads/2021/03/All-Ireland-Pollinator-Plan-2021-2025-WEB.pdf).

GBI and Access / Connectivity

Proposals for new developments should promote healthy environments that support and encourage active travel which maximise connections to the network of GBI within the Strategy Area. Active travel provision should be fully integrated into the design process for developments from the outset rather than retrofitted at a late stage. Development proposals should provide safe, convenient and direct links to the existing GBI network and to schools, community facilities, local amenities, and public transport. GBI routes should cater for different types of users (such as walkers, cyclists and those with limited mobility or sensory impairments), as required. Where appropriate, development proposals should provide additional infrastructure such as seating, signage, cycle parking, showers etc. Severance or impediments to GBI routes by development must be avoided or overcome with appropriately designed schemes. Where an access route is to be temporarily disrupted by development, an alternative route should be provided for the duration of construction works with satisfactory reinstatement on completion.

Development proposals should be accompanied by an Access Plan showing existing and proposed routes and specification. The specification of new and upgraded routes should be appropriate to the location, the type of users and the level of anticipated use. Entrances to the GBI network in developments should be welcoming, designed to allow access for all, have clear sight lines

while also being overlooked and well-lit. They should be positioned to maximise accessibility of the development, and wider area, to the GBI network. The creation of GBI assets, links and greenways must be appropriately designed to avoid habitat loss and disturbance due to increased movement of people.

Where a proposed development adjoins a river or canal bank, a linear walkway/cycleway access for the public may be required (see Open Space Requirements in Chapter 11: Development Management Standards, LDP).

For further guidance please refer to:

- Government of Ireland (2019) Design manual for Urban Roads and Streets (https://www.gov.ie/en/publication/c808c-design-manual-for-urban-roads-and-streets-2019-low-res/); and
- Department of the Environment, Housing and Local Government (1998) 'Recommendation for Site Development Works for Housing Areas'.

GBI and Landscape & the Historic Environment

Development proposals should be designed to use GBI to positively maintain or enhance the landscape character of an area, including historic landscape character, as well as to conserve or enhance heritage assets and their settings. Where appropriate, proposals should seek to provide linkages to natural habitats and historic resources which may help facilitate restoration generated by these connections. GBI should thread through and surround the built environment, connecting to its wider rural hinterland.

Archaeological monuments are protected under the National Monuments Act (1930 to 2014). The broad principles for their protection are laid out in the Framework & Principles for the Protection of the Archaeological Heritage (1999) and since 2008 specific protection for the City defences is outlined in the National Policy for Town Defences. Minimum buffers are required in the planning process from the outer known edges of monuments based on the type and condition, previous land use and the nature and scale of the proposed development. Archaeological assessments will need to be prepared for any proposed actions involving ground disturbance in the vicinity of standing monuments. Each monument will need a case-by-case assessment on the potential for human disturbance and the nature of the required long-term maintenance.


Green walls within the urban fabric

The Council will seek the protection of existing trees when granting planning permission and the continued preservation and management of important trees, groups of trees and hedges as part of planning applications. Therefore, existing GBI (e.g., mature trees and hedgerows) should be retained and should guide the design of an appropriate site layout as these are established biodiversity corridors and in some cases of local historical value, defining local townlands. New tree planting should be planned, designed, sourced, planted and managed in accordance with British Standard 8545:2014 'Trees: from nursery to independence in the landscape – Recommendations'. New planting proposals should take account of the context within which a tree is to be planted and appropriate tree species used for the location. A useful guide in this regard is the publication Conserving and Enhancing Wildlife in Towns and Villages: A Guide for Local Community Groups[43], which contains a list of trees together with important information, such as eventual size and suitability to particular locations. It will be a requirement of a planning permission that all planting takes place in the first planting seasons following occupation of the building or completion of the development, whichever is the sooner.

Any proposals to remove mature trees shall be submitted as part of the planning application process. This is required in order to prevent mature trees being removed on lands zoned for development, in advance of a planning application being submitted or where there is an intention to develop the land. For applications where trees might be affected, the application should be prepared by a suitably qualified Arboriculturalist, in accordance with British Standard 5837:2012 'Trees in relation to design, demolition and construction – Recommendations'.

The quality and function of GBI and how it will be sustained and maintained in the long term should be considered from the outset. Without careful consideration being given not only to the design, but equally important the future management and maintenance of GBI at

[43]The Heritage Council (2005) Conserving and Enhancing Wildlife in Towns and Villages: A Guide for Local Community Groups(https://www.limerick.ie/sites/default/files/media/documents/2018-08/Limerick%20Digital%20Strategy.pdf)

the outset, the range of benefits associated with GBI will reduce quickly over time. The Council will consider maintenance issues during the assessment of planning applications and should, if necessary, incorporate long term management and maintenance requirements in the planning permission or associated planning obligation. The Council requires a Landscape Design and Maintenance Plan to be prepared to support planning applications. The design rationale in the Landscape Design and Maintenance Plan should identify how the overall design is ecologically resilient; provides a varied landscape that reflects the character of the area; incorporates existing and proposed GBI including biodiversity (pollinator friendly) open spaces and including SuDS and any natural flood alleviation, and GBI on or off site. Landscape Design and Maintenance Plans are required for:

- Residential developments;
- High/tech, manufacturing, warehousing, business parks, enterprise and employment centres;
- Caravan / camping / glamping developments;
- Petrol stations / service stations; and
- Intensive farm, poultry and piggery developments.

For certain developments which exceed the defined thresholds outlined in the Planning and Development Regulations 2001 (as amended), an Environmental Impact Assessment Report would be required.

For further guidance please refer to:

- British Standard 8545:2014 Trees: from nursery to independence in the landscape – Recommendations;
- British Standard 5837:2012 Trees in relation to design, demolition and construction – Recommendations;
- British Standard 3998:2010 Tree work – Recommendations;
- Heritage Council (2005) Conserving and Enhancing Wildlife in Towns and Villages;
- Department of Environment, Heritage and Local Government (2008) National Policy on Town Defences; and
- Department of Arts, Heritage, Gaeltacht and the Islands (1999) Framework and Principles for the Protection of the Archaeological Heritage.

GBI and People, Communities and Health and Well-being

Although all types of GBI assets are multi-functional, some features are more closely aligned with the provision of benefits for people, communities, health and well-being. This includes active travel corridors, allotments, and public open spaces, including parks, outdoor sports facilities and children's play areas. Such green spaces offer resources for people to socialise, exercise and interact with nature. Development proposals should be designed to incorporate these types of multi-functional GBI, where appropriate. Open space provision should be proportional to the number of residential units proposed, consider access to existing open space and have regard to the principles of national guidance including accessibility, personal and child safety, linkage, place-making and permeability and the hierarchy of open space. Development proposals should be designed to encourage the use of nature-based play with respect to the provision of play opportunities.

Open space should be integrated into the development and wider GBI network at the outset through a design led approach which uses the site's context and assets sensitively and creatively. Where appropriate, proposals for residential development should be designed to integrate formal sports and play areas to maximise opportunities for informal recreation and active travel.

Open spaces for different age groups should be designed and sited to minimise disturbance and protect residential amenity as well as ensuring ease of accessibility to those with disabilities, including visual or mobility impairments. Developments should be designed to ensure the properties overlook proposed pedestrian and cycle routes.

Where appropriate, development proposals should provide additional infrastructure such as seating, signage, and accessible toilet facilities for those with mobility issues, etc. Where a large site adjoins a green corridor, public open space or area of high ecological value, any new public open space on the site should be contiguous to same to encourage visual continuity and expansion of the GBI network.

Development proposals for large scale development on land zoned Enterprise and Employment should incorporate active and passive recreational opportunities for employees. In accordance with the 2009 Sustainable Residential Guidelines, at a minimum, 15% of gross greenfield sites should be provided as multi-functional open space in new residential developments easily accessible to all, encouraging active and passive use for

Allotments, community gardens and urban farms contribute to the wider GBI network

persons of all abilities regardless of mobility and/or age (see also Section 11.3.6 of Chapter 11: Development Management Standards, LDP). In brownfield sites or infill sites, a minimum of 10% may be provided as public open space. Residential developments of 5 units or less may be exempt from the 15% open space provision on greenfield sites. The Council will determine on a case-by-case basis where it is demonstrated that the function of the space is not viable. A reduction in open space may be considered for residential units in new housing estates located within 100m walking distance of a pocket park, small park, local park, urban neighbourhood park or regional park. Proposals for nursing homes / assisted living accommodation should provide at least 20% open space of the overall site area.

Allotments, community gardens and urban farms form important GBI assets and contribute to the health and well-being of society through increased physical activity and social interactions. Development proposals should consider incorporating community food growing spaces and areas for pollination. For further guidance please refer to:

- Department of Housing, Local Government and Heritage Government of Ireland (2009) Sustainable Residential Developments in Urban Areas: Guidelines for Planning Authorities (https://www.gov.ie/en/publication/a9965-sustainable-residential-developments-in-urban-areas-guidelines-for-planning-authorities/)
- Government of Ireland (2018) Design Standards for New Apartments – Guidelines for Planning Authorities (https://www.gov.ie/en/publication/15f0b-design-standards-for-new-apartments-dsfna-2018/);
- Global Centre for Clean Air Research (2019) Implementing Green Infrastructure for Air Pollution Abatement: General Recommendations for Management and Plant Species Selection 2019; and
- European Commission (2013) HOSANNA (Holistic and sustainable abatement of noise by optimised combinations of natural and artificial means) Final Report (European Commission (2013) HOSANNA (Holistic and sustainable abatement of noise by optimised combinations of natural and artificial means) Final Report).

View looking west following the alignment of the R527 parallel to the River Shannon

GBI Checklist

The following process sets out the key steps to ensure integration of GBI in the design of developments.

Step	Yes / No / Not Applicable	Justification (please provide justification for your comments)
Step 1: Review relevant planning policies		
(1) Has the Limerick City & Environs GBI Strategy been reviewed to identify any specific opportunities in the vicinity of the development?		
(2) Does the application accord with the objectives of the Limerick Development Plan 2022-28 (in particular the policies and objectives highlighted throughout this chapter)?		
(3) Does the proposed development meet the requirements set out in the Local Area Plan, where relevant?		
Step 2: Understanding site and wider context		
(4) Does the design of the development integrate new GBI effectively and coherently with the GBI network immediately surrounding the site and also create linkages with the wider network, where possible?		
(5) Does the development result in the loss or fragmentation of the GBI network?		
(6) Does the development prejudice the retention, use, enhancement or further development of the GBI network?		
(7) Has the development been designed to incorporate multi-functional GBI assets including active travel corridors, open spaces, children's' play areas, allotments, etc.?		
(8) Has the development been designed to accommodate predicted future climate change impacts?		

(9) Has a plan showing the existing GBI assets and proposed GBI assets on site and in the vicinity of the site been prepared for submission as part of the planning application?		
Step 3: Incorporating GBI into design		
Water Environment		
(10) Does the development create or improve access to water resources for amenity and recreational purposes?		
(11) Does the development manage and minimise surface water runoff through the use of NbS / Sustainable Drainage Systems (SuDS)? **Required for all new developments under Objectives IN O10 (Surface Water and SuDS) and EH O14 (Nature Based Solutions)*		
(12) Has a Storm Water Management Plan been prepared as part of the proposal to provide an understanding of the mechanisms of surface water flooding and to propose mitigation measures both at a local and strategic level?		
(13) Have different NbS / SuDS components been integrated at different scales within the development? For example, from living walls on buildings to large areas of open space?		
(14) Has the proposal incorporated green roofs into the surface water management system?		
(15) Have the NbS / SuDS been designed to be multi-functional taking into account opportunities to provide safe access, enhance landscape character and biodiversity, and improve the aesthetic and amenity value of the development?		
(16) Has the required 20m riparian buffer zone* been applied between new development and watercourses to manage flood risk, geomorphology, water quality and biodiversity, where appropriate? **Objective EH O18 (Riparian Buffers)*		

(17) Does the development proposal enhance the GBI network by de-culverting, re-meandering, removing redundant structures or barriers to fish passage, or enhancing bankside habitat, where appropriate?* **Objective EH O12 (Blue Green Infrastructure)*		
Biodiversity		
(18) Has the development been designed to protect, enhance and create biodiversity rich GBI allowing for species movement and migration through the GBI network?* For example, wildlife corridors, buffer zones, 'stepping stones', or green bridges. **Objectives EH O4 (Creation of New Habitats), EH 05 (New Infrastructure Projects), EH O12 (Blue Green Infrastructure)*		
(19) Does the proposal incorporate the planting of pollinator friendly plants?* **Objective EH 07 (All-Ireland Pollinator Plan)*		
(20) Does the proposal prioritise the retention of existing tree cover?* **Objective EH O10 (Trees and Hedgerows)*		
(21) Does the proposal incorporate the planting of native trees, hedgerows and vegetation?* **Objective EH O10 (Trees and Hedgerows)*		
(22) Does the proposal incorporate roosting facilities for species, such as bird or bat boxes, swift boxes, or other artificially created habitats?* **Objective EH O8 (Roosting Habitats).*		
Access / Connectivity		
(23) Does the development provide safe, convenient and direct links to the GBI network and to schools, community facilities, local amenities, and public transport?		

(24) Do the existing and proposed GBI routes within the development cater for different types of users such as walkers, cyclists and those with limited mobility or sensory impairment)?* **Objective SCSI O2 (Accessibility for All).*		
(25) Does the development temporarily or permanently sever or impede any GBI routes/assets?		
(26) Has an Access Plan been prepared showing existing and proposed routes and specifications?		
Landscape and Historic Environment		
(27) Has the development been designed to use GBI to positively maintain or enhance the landscape character of an area, including historic landscape character, as well as to conserve or enhance heritage assets and their settings? **Objective EH P01 (Protection of Natural Heritage and Biodiversity);* **Objective EH P08 (Landscape Character Areas);* **Objective EH O36 (Preservation of Archaeological Heritage);* **Objective EH O37 (Preservation of Unrecorded/Newly Discovered Archaeological Heritage);* **Objective EH O38 (Preservation of the Underwater Archaeological Heritage);* **Objective EH O39 (Protection of the Setting of Archaeological Monuments); and* **Objective EH O42 (Town Defences & Layout).*		
(28) Has a Landscape Design and Maintenance Plan been prepared identifying how the overall design is ecologically resilient; provides a varied landscape that reflects the character of the area; incorporates existing and proposed GBI including biodiversity (pollinator friendly) open spaces and Sustainable Drainage Systems; provides details of hard and soft landscaping; and outlines the management and maintenance requirements for GBI on site?		
People, Communities and Health and Wellbeing		

(29) Has the development been designed to incorporate open space that is proportional to the scale of development, considering access to existing open space, accessibility, personal and child safety, linkages, place-making, and permeability?		
(30) Has the development incorporated the use of nature-based play?		
(31) Has the development been designed and sited to minimise disturbance and protect residential amenity; and to provide high levels of natural surveillance and overlooking particularly for walking and cycling routes and open spaces?		
(32) Does the proposal provide additional infrastructure such as seating, signage, and accessible toilet facilities for those with mobility issues, etc.?		
(33) Does the development meet the open space requirements of the *2009 Sustainable Residential Guidelines*?* **Minimum 15% of gross greenfield sites should be multi-functional open space; Minimum 10% of brownfield or infill sites should be public open space.*		
(34) Does the development incorporate community food growing spaces or areas for pollination?		
(35) Has the development been designed to minimise disturbance and protect residential amenity against environmental noise and air quality, considering GBI opportunities to reduce them?		
Step 4: Seek pre-application advice		
(36) Has the applicant sought pre-application advice from Limerick City & County Council relating to the design, scale and layout of the development?		
Step 5: Prepare supporting documents		
(37) Has an Appropriate Assessment and / or Environmental Impact Assessment been completed, where appropriate?		

(38) Has a statement detailing the way in which GBI has been incorporated into the proposed development layout, drawing on the site's constraints and opportunities, been prepared?		
(39) Has a final development layout showing the proposed GBI to be incorporated into the development proposal been prepared?		
(40) Has a final Landscape Design and Maintenance Plan been prepared?		
(41) Has a final Design Statement been prepared?		
(42) Has a final Access Plan been prepared?		
Step 6: Submit the planning application and supporting documents		

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CONSULTING ENGINEERS

Comhairle Cathrach & Contae Luimnigh
Limerick City & County Council

ATLANTIC EDGE
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