01 April 2022 Draft Plan Stage

Cork City Green and Blue Infrastructure Study

Comhairle Cathrach Chorcaí
Cork City Council

CORK CITY DEVELOPMENT PLAN 2022-2028

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Cork City Green and Blue Infrastructure Study

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1.	Stage 2 Report	E Hynes, K Kaczor, H Ward, S Swindlehurst, M McGinley, C Kelly, S Crewe	N James	N James	29.01.2021
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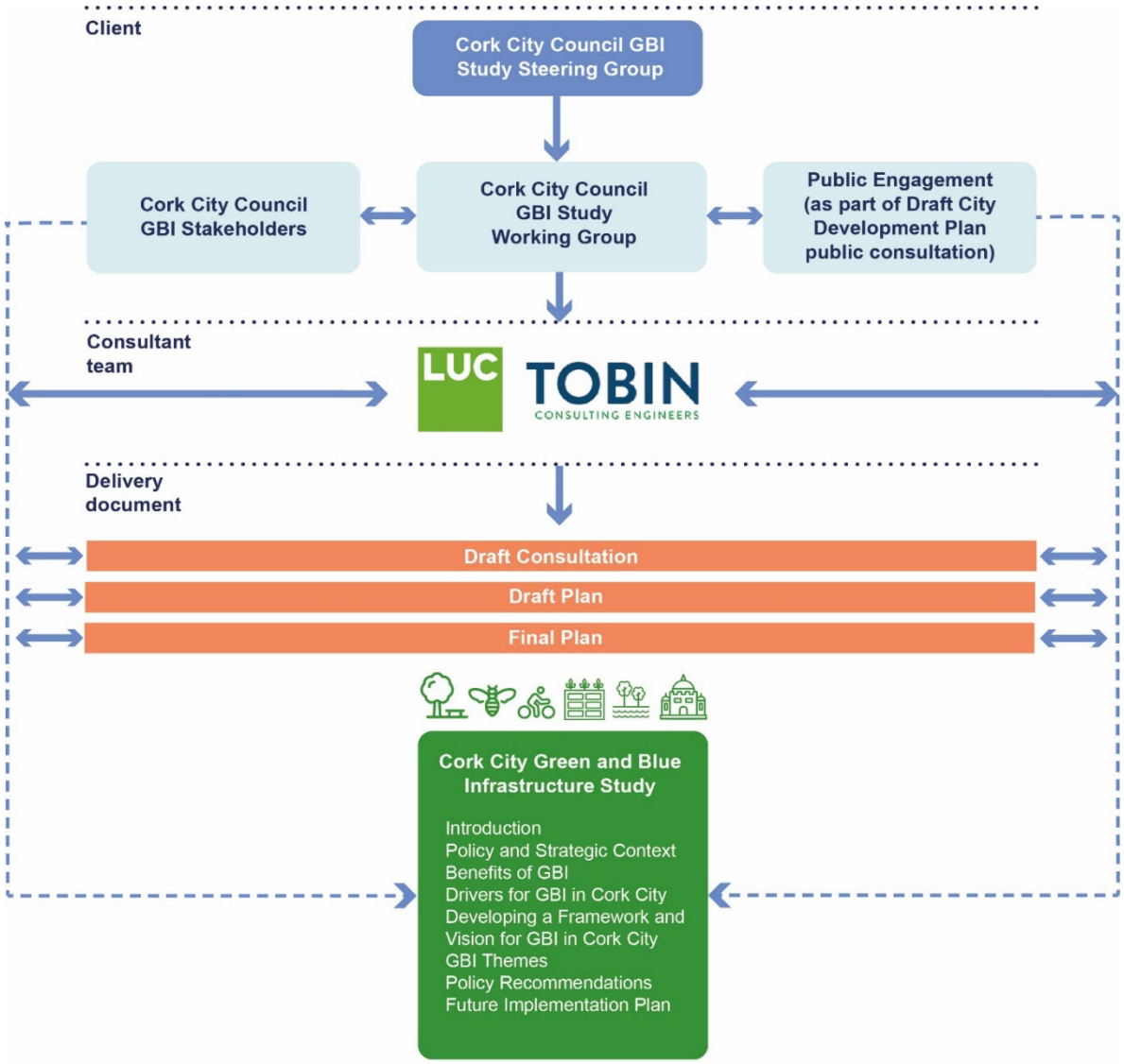
Introduction

Green and blue infrastructure (GBI) forms a cornerstone of sustainable development. Increasingly recognised as a 'must have' rather than a 'nice to have', it offers multiple economic, social and environmental benefits.

1.1 A unified GBI network is essential to the quality of life of residents and businesses, contributing towards the creation of places where people want to live and work. This document has been prepared to address the need to plan for GBI within Cork City as part of a strategic, coordinated approach.

1.2 Cork City Council (herein referred to as the 'Council') commissioned LUC and TOBIN Consulting Engineers to prepare a GBI Study for Cork City. The document (herein referred to as the 'Study') and supporting evidence base will inform land use planning and policy in Cork City, including the emerging Cork City Development Plan. The Study provides a vision and framework for GBI in the city, establishing GBI as of equal importance to 'grey' infrastructure and built environment in the city. **Figure 1.1** illustrates the coordinated approach to delivery of the Study. Individual members of the Council GBI Study Steering Group and Working Group are provided in **Appendix A.**

Figure 1.1: Delivery of the Study



What is GBI and why is it important to Cork City?

GBI is the term used to describe 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, playing fields, coastal habitats, footpaths, cycle routes and water courses.

Crucially, GBI provision is not limited to traditional green spaces such as parks and other open spaces but can involve various interventions to thread nature into streetscapes or provide corridors of connectivity between the GBI features described above, known as 'assets'.

1.3 Above all, GBI is defined by its multifunctionality. A single GBI asset can deliver a range of benefits to people (linked to both physical and mental wellbeing), biodiversity and the landscape itself. 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 reducing local temperatures, climate change adaptation and mitigation as well as alleviation of flood risk. Vegetation and soil also promote the absorption and storage of carbon.

1.4 As well as offering the aforementioned environmental benefits, GBI offers the potential to provide economic and social benefits through:

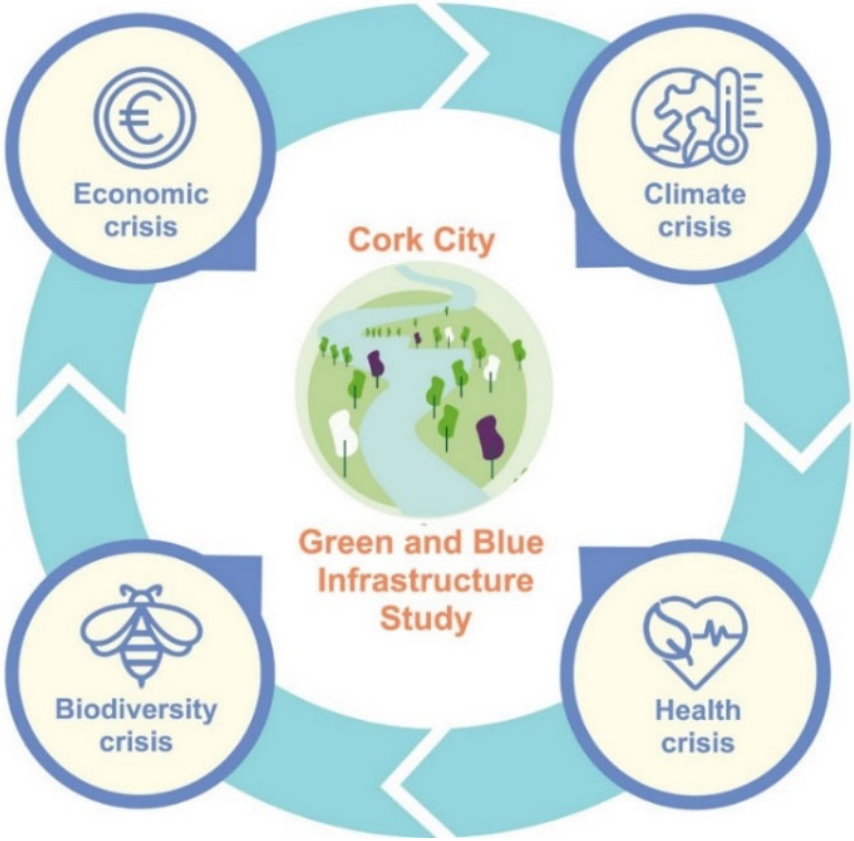
- supporting healthy lifestyles;
- improving physical and mental wellbeing, thereby reducing healthcare costs;
- connecting people to places by linking residents and visitors to leisure and work destinations along a network of safe and clearly defined routes;
- increasing the attractiveness of a local area as a place to live, work or visit;
- promoting tourism and recreation; and
- promoting pride of place, thus creating an enhanced sense of ownership amongst the local community and reducing issues such as illegal dumping and anti-social behaviour etc.

1.5 The focus for future delivery of GBI in Cork City will be to ensure benefits are provided where they are most needed and global challenges addressed at the local scale (see **Figure 1.2**). This includes identifying priority locations for:

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

1.6 Further discussion of these principles and the benefits of GBI are provided in **Chapter 3.**

Figure 1.2: Global challenges



Why is a GBI Study needed?

1.7 Project Ireland 2040 forms the Government's overarching policy initiative to improve Ireland as a country for all of its citizens over the next 20 years. Project Ireland 2040 National Planning Framework (NPF) 2018-2027 is based on 10 strategic outcomes to deliver wellbeing, equality, and opportunity for all. "Transition to a Low Carbon and Climate Resilient Society" and "Compact Growth" form two of these outcomes, detailing the need for green infrastructure planning and ecosystems services to be fully integrated into statutory land use plans. The NPF recognises the value of planning for GBI, such as greenways and blueways, in the same way as other infrastructure, to provide long term benefits. The NPF provides the overarching rationale for the study, guiding what the study should comprise, and how the network of existing and new GBI assets should be strategically planned.

1.8 The Southern Regional Spatial and Economic Study (RSES) seeks to set out the strategic regional development framework for the Southern Region. The policies in the RSES are structured under Regional Policy Objectives (RPOs) and Metropolitan Area Strategic Plan (MASP) Policy Objectives. The primary aim of the RSES is to implement the NPF at the regional tier by supporting the delivery of balanced regional development. The RSES makes specific provision for securing GBI, including the following:

> *"RPO124 Green Infrastructure: All Development Plans and Local Area Plans shall protect, enhance, provide and manage Green infrastructure in an integrated and*

coherent manner addressing the themes of biodiversity protection, water management, and climate action; and should also have regard to the required targets in relation to the conservation of European sites, other nature conservation sites, ecological networks, and protected species".

1.9 The Council is in the process of preparing the Cork City Development Plan 2022-2028 which will outline future objectives, policies, and land use zoning in order to meet future growth objectives. An underlying theme throughout this document is the need to reduce the human impact on the environment and transition to a low carbon city. This Study forms one of a suite of evidence base documents (see **Figure 1.3**) aimed at achieving low impact, low carbon growth. The emerging City Development Plan provides an excellent opportunity to review GBI assets in Cork City and consider how these can be protected and enhanced. Locations where new high quality GBI is needed to support existing communities will also be identified.

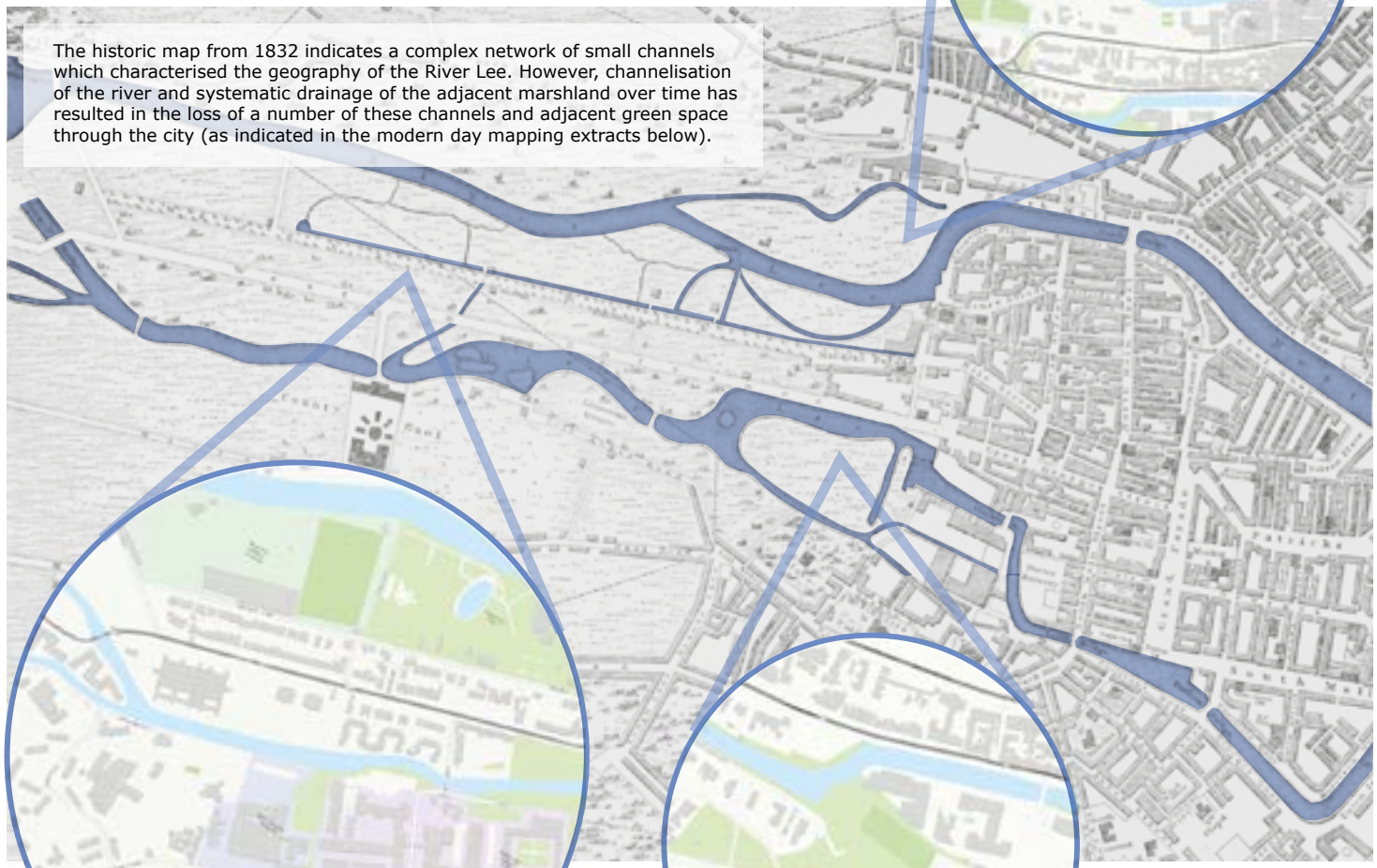
Figure 1.3: Documents forming the evidence base of the Cork City Core Strategy

Historic traits of GBI within Cork City

Connection to the river

The provision of GBI within Cork City is not a new concept. Analysis of historic mapping of the city illustrates how GBI assets can be linked back to historic traits and features. The opportunity exists to reactivate blue corridors, increase the connection to waterways, explore the potential for sustainable flood management and implement a network of urban greening interventions across the city.

The historic map from 1832 indicates a complex network of small channels which characterised the geography of the River Lee. However, channelisation of the river and systematic drainage of the adjacent marshland over time has resulted in the loss of a number of these channels and adjacent green space through the city (as indicated in the modern day mapping extracts below).



Map source: Holt (1832)

Potential modern day GBI interventions

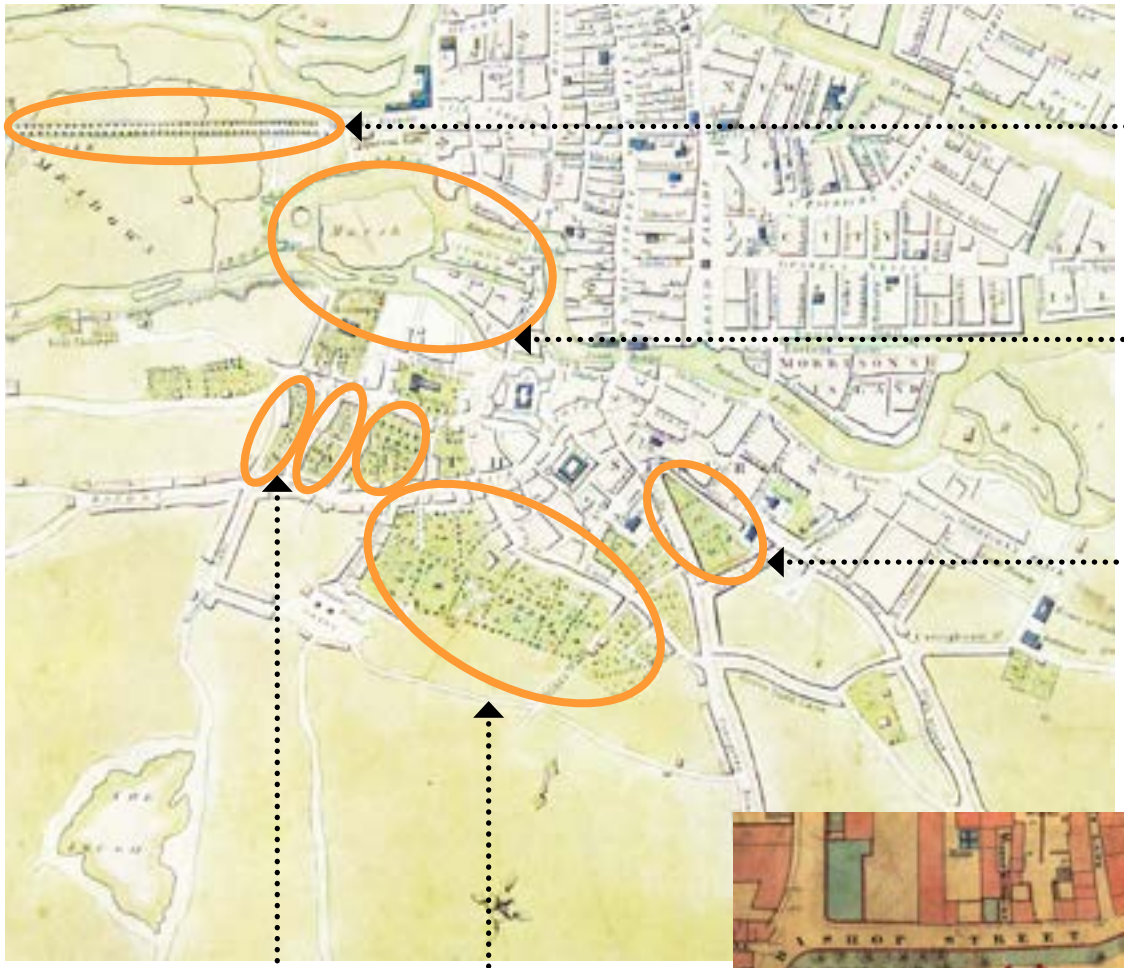
Incorporating public access adjacent watercourses

SuDS and natural flood management

Integration of planting proposals at the water's edge

Historic traits of GBI within Cork City

Open space provision and urban greening



Mardyke Walk
(raised tree-lined walkway running west across the marshland adjacent the River Lee. The feature was originally constructed as a shallow embankment to protect the city from the sea)

Marshland
(now reclaimed land following construction of Western Road and other built development)

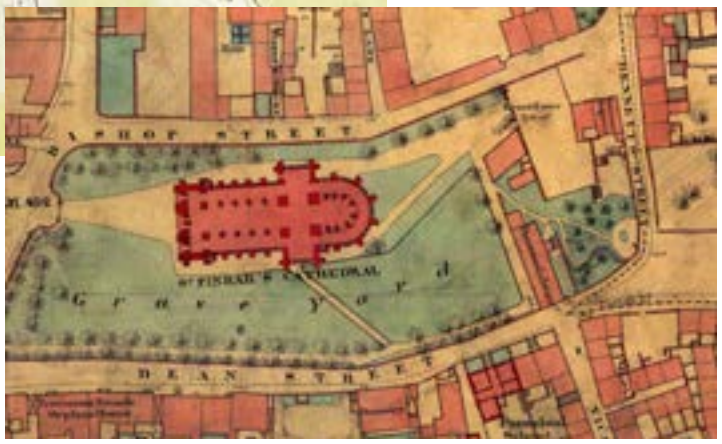
Gardens at Nano Nagle Place
(heritage museum with associated gardens)

Map source: Beaufort (1801)

Green space associated with properties off Dean Street and Bandon Road
(original street pattern now partially eroded and extent of green space lost)

Sullivan's Gardens
(now twentieth century housing development off Mount Sion Road)

Map source: OS map (1870)



Specimen tree planting / tree avenues at St Fin Barre's Cathedral in 1870

Potential modern day GBI interventions

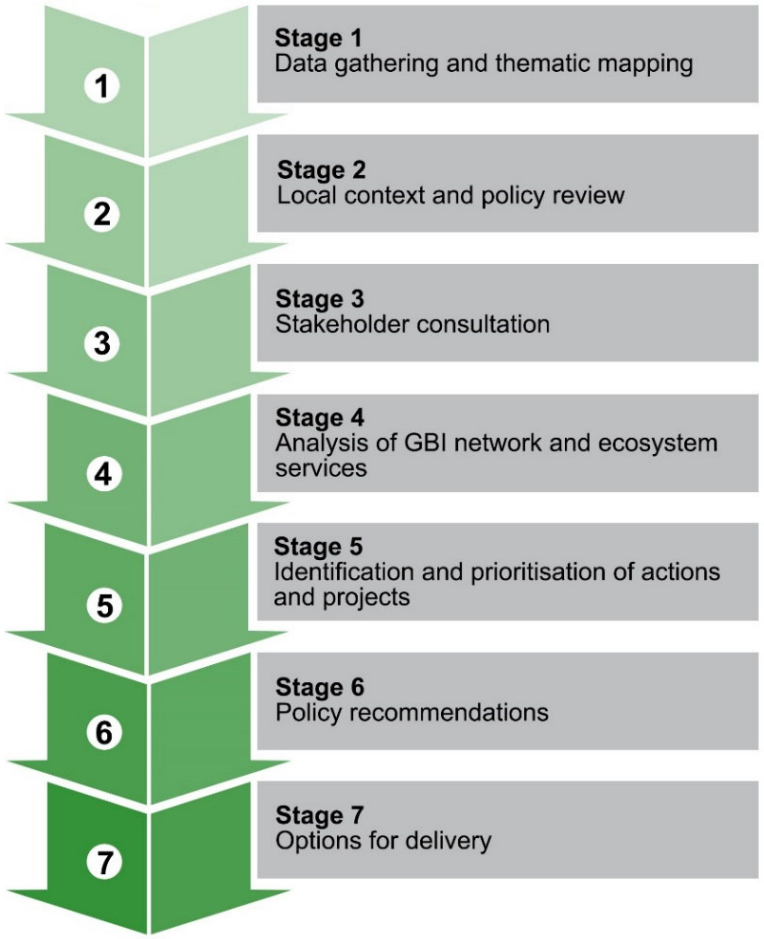
Intensive green roof

Vertical greening

Approach to the Study

1.10 Development of the Study involved seven broad stages, illustrated below in **Figure 1.4**.

Figure 1.4: Stages in the GBI Study



Stage 1: Data gathering and thematic mapping

1.11 Baseline spatial data was gathered from a wide range of sources and collated using Geographical Information Systems (GIS). This stage identified the distribution of the existing GBI network (including designated sites, local ecosystems, landscape assets and recreational areas) and their functions (e.g. recreation, aesthetic, shading, habitats etc.). Spatial socio-economic data and other environmental data (e.g. flooding / air quality) has also been analysed to identify areas with most 'need' for GBI.

1.12 The assembled data was analysed in relation to physical resources, natural systems, ecological assets/geodiversity, landscape character, archaeology/historical assets, access networks, recreational facilities, flood risk, and planning.

1.13 Sources for spatial data are referenced within mapping and summarised in **Appendix B.**

Stage 2: Local context and policy review

1.14 Relevant national, regional and local policy documents, strategies and studies were collated and reviewed. This included a high-level review of social, health, economic and environmental data. This review provided the policy context for the Study and developed further understanding of the need for GBI in Cork City.

Key policy and baseline information reviewed in preparing the Study:

- Project Ireland 2040: National Planning Framework
- Draft National Marine Planning Framework (NMPF)
- Harnessing Our Oceans Wealth: Integrated Marine Plan for Ireland
- National Landscape Strategy for Ireland 2015-2025
- Strategic review of the National Parks and Wildlife Service (NPWS) (commissioned February 2021)
- National Biodiversity Action Plan
- Ireland's Climate Action Plan 2019: To Tackle Climate Breakdown
- Strategy for the Future Development of National and Regional Greenways
- Health Benefits from Biodiversity and Green Infrastructure
- Outdoor Recreation Plan for Public Lands and Waters in Ireland 2017-2021
- All-Ireland Pollinator Plan 2015-2020
- Regional Spatial and Economic Strategy for the Southern Region
- Cork County Development Plan (existing and emerging)
- Cork City Development Plan (existing and emerging)
- Local Area Plans – North Blackpool, City Docks, Tivoli Docks
- Area Action Plans – City Centre, South Parish, Blackpool Village, Coburg Street & St. Patrick's Hill, Bishopstown & Wilton, Blackrock Village, and Cornmarket Street
- Cork Metropolitan Area Strategic Plan 2031
- Draft Cork Metropolitan Area Transport Strategy (CMATS) 2040
- Cork City Council Climate Change Adaptation Strategy 2019-2024
- Draft Cork City Local Economic and Community Plan 2016 – 2021
- Cork City Heritage Plan 2015 – 2020 (Heritage and Biodiversity Plan 2021 – 2026 currently in preparation)
- Lower Lee Flood Relief Scheme (LLFRS)
- Lee-Cork Harbour Catchment Assessment (precursor to the LLFRS)
- Cork City Sustainable Energy and Climate Action Plan (SECAP)
- County Council Landscape Character Assessments (Development Plan pp. 208 – 210)
- Local Authorities Waters Programme
- Cork City Cycle Strategy
- Cork City Walking Strategy
- Climate Action and Low Carbon Development (Amendment) Bill 2021

Stage 3: Stakeholder consultation

1.15 A wide-ranging programme of engagement and consultation has been undertaken to inform the Study. Engagement has been completed via a series of workshops which focused on discipline themes. A series of peer review workshops were also undertaken as part of the 'Blue Green City' initiative in collaboration with representatives from the municipality of Växjö (see **Chapter 5**).

1.16 Partner organisations engaged in the process include statutory consultees, conservation organisations and local partnerships. The development of the Study also involved liaison with several officers from the Council as well as partner organisations via telephone conversation.

The consultation and engagement exercises generally aimed to:

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

1.17 Consultation findings are included throughout the Study where relevant. Outputs from the consultation exercises are included in **Appendix C** and summarised in Chapters 6-13.

Stage 4: Analysis of GBI network and ecosystem services

1.18 A 'themed' approach was adopted to analyse the GBI assets across Cork City. Key considerations relating to quality, management, issues and opportunities were also assessed. Potential partners and current initiatives relevant to each theme were also assessed.

1.19 The identification of deficiencies in the GBI network was supported by existing evidence which included indicators such as indices of deprivation and housing type, demographic/socio-economic, flood risk, population, transport infrastructure, health and pollution/air quality data etc. This assessment was informed by the performance of the GBI assets – i.e. their functionality. By combining the assessment of need and function it identified:

- which GBI areas need to be protected;
- which GBI areas need to be enhanced; and,
- which areas have the potential to create new GBI.

Key tasks included:

- Appraisal of the current performance of the GBI network in relation to the multiple potential functions of GBI against key GBI themes.
- Analysis of the current performance of the GBI network with respect to the needs of the city.
- Identification of a hierarchy of high quality and multi-functional green and blue spaces, regional/city parks and GB networks and routes that can deliver connectivity in a Green and Blue context within the city.
- Analysis of the future performance of the GBI network (with respect both multi-functionality and need) in the emerging Cork Development Plan, taking into account change anticipated with respect to development, land management, climate change, demographics and any other relevant parameters.

1.20 The analysis of ecosystem services within Cork City was based on the potential multi-functional benefits of GBI as recognised in the Lawton Principle[1]. The following list from the UK National Ecosystem Assessment (2011)[2] outlines the services that GBI and the environment could provide:

- Biodiversity (Genetic resources, Pollination);
- Productive green environments (Genetic resources, Pollination);
- Air quality and noise regulation;
- Local climate regulation;
- Flood and water quality regulation;
- Recreation & tourism;
- Cultural heritage;
- Health and wellbeing;
- Aesthetic values;
- Sense of place; and
- Education.

Stage 5: Identification and prioritisation of actions and projects

1.21 The findings from Stage 4 informed the identification of GBI actions and projects for the protection, enhancement, and expansion of the city's GBI network. Each of the actions/projects were mapped, and the functions each action/project is expected to deliver highlighted.

[1] 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*. Report to Defra. http://webarchive.nationalarchives.gov.uk/20140605090108/http://archive.defra.gov.uk/environment/biodiversity/documents/201009space-for-nature.pdf

[2] http://uknea.unep-wcmc.org/resources/tabid/82/default.aspx

Stage 6: Policy recommendations

1.22 Utilising the information gathered as part of preceding stages, the current CDP's policies, objectives and actions relating to GBI were critically analysed. Recommendations were made for revised policies, objectives and actions in the emerging CDP 2022-2028. Recommendations for the emerging CDP had regard to the population, geography and the lands zoned for future development in Cork City.

Stage 7: Options for delivery

1.23 Further work was undertaken to develop outline actions, pilot projects and next steps. Funding, partnership working, monitoring and review were also explored.

Structure of the Study

1.24 The Study is structured as follows:

- **Chapter 2:** provides an overview of national, regional and local policy and strategic context for the Study.
- **Chapter 3**: describes the benefits and value of GBI to Cork City.
- **Chapter 4**: explores the key drivers and need for GBI in Cork City.
- **Chapter 5**: sets out a framework and 'Vision' for GBI in the City.
- **Chapter 6** to **13**: explores the GBI 'assets' within Cork City, organised into eight 'themes' (see **Figure 1.5**).
- **Chapter 14:** identifies the opportunities and priorities for GBI in the Cork City.
- **Chapter 15**: sets out actions and a programme for the implementation and delivery of the study.

1.25 Further background and baseline information is provided within the **appendices.**

Figure 1.5: Exploring the GBI assets

Policy and Strategic Context

2.1 This chapter provides a review of international, national, regional and local planning policy, strategies and programmes, and sets out the strategic context for GBI in Cork City. **Figures 2.1-2.6** illustrate the structure of this existing policy context.

Figure 2.1: Summary of policy hierarchy

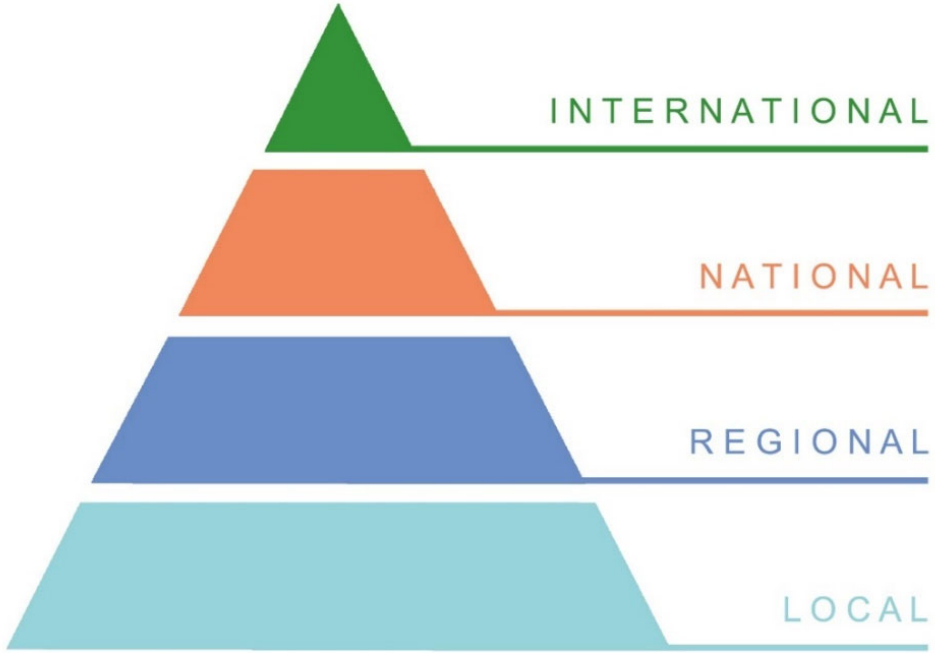


Figure 2.2: International policy context

International policy

2.2 A number of international policies (detailed in **Table 1.1** in **Appendix D**) set out high-level strategic objectives for enhancing wellbeing, improving natural environment and addressing climate change. This Study aims to address the relevant UN Sustainable Development Goals[3] (see **Figure 2.3**) such as Sustainable Cities and Communities, Climate Action, Good Health and Wellbeing, whilst indirectly contributing to many others. Through this Study, the Council highlights its commitment to International Convention on Biological Diversity[4] and to the UN Paris Climate Change Agreement[5] which aims at ensuring that global temperatures stay below 2°C (based on pre-industrial levels).

2.3 At the European Union (EU) level, there are several important directives that focus on protecting and conserving the natural environment. These include the EU Water Framework Directive (WFD)[6], The Birds Directive[7], the Habitats Directive[8] and European Convention on the conservation of European Wildlife and Natural Habitats (Bern Convention)[9]. Moreover, the Study will contribute towards achieving the goals of The EU Strategy on Green Infrastructure[10] and EU Biodiversity Strategy for 2030[11].

[3] United Nations (2015) *Sustainable Development Goals*
[4] United Nations (1992) *International Convention on Biological Diversity*
[5] United Nations (2015) *Paris Climate Change Agreement*
[6] European Commission (2000) *Water Framework Directive*
[7] European Commission (2009) *The Birds Directive*
[8] European Commission (1992) *The Habitats Directive*
[9] Council of Europe (1979) *European Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention)*
[10] European Commission (2020) *Enhancing Europe's Natural Capital*
[11] European Commission (2020) *EU Biodiversity strategy for 2030*

National policy

2.4 The Project Ireland 2040 National Planning Framework (NPF) and National Development Plan (NDP) 2018-2027 recognise the value of planning for GBI, such as greenways and blueways, 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 wellbeing 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.

2.5 National Policy Objective (NPOs) 58 of the NPF relates to planning for GBI and ecosystem services in the preparation of statutory land use plans, and highlights the importance of considering interrelationships between biodiversity, natural heritage, landscape and green spaces. Other relevant NPOs include:

- *"Protecting and enhancing biodiversity, including enhancing the conservation status and improving the management of protected areas and protected species." (NPO 59);*
- *"Conserving and enhancing the rich qualities of natural and cultural heritage in a manner appropriate to their significance." (NPO 60);*
- *"Landscape protection, management, and change (including historic landscape characterisation) to ensure a consistent approach to landscape character assessment." (NPO 61);*
- *"Identifying and strengthening the value of greenbelts and green spaces at a regional and city scale that enhance connectivity to wider strategic networks, prevent coalescence of settlements and to allow for the long-term strategic expansion of urban areas." (NPO 62); and*
- *"Ensure the efficient and sustainable use and development of water resources and water services infrastructure in order to manage and conserve water resources in a manner that supports a healthy society, economic development requirements, and a cleaner environment." (NPO 63)*

2.6 The NPF outlines how planning for GBI should inform the preparation of strategies and development plans, including enabling the growth and expansion of GBI, addressing environmental issues, encouraging more collaborative approaches to plan-making, and ensuring that sufficient and well-planned green spaces are designed in plans.

2.7 At the national level, a range of policies and strategies highlight the important role of GBI. For instance, Draft National Marine Planning Framework (NMPF)[12] sets out to develop an integrated networks of greenways and blueways to promote more sustainable and active travel modes. In

[12] Government of Ireland (2018) *National Marine Planning Framework*

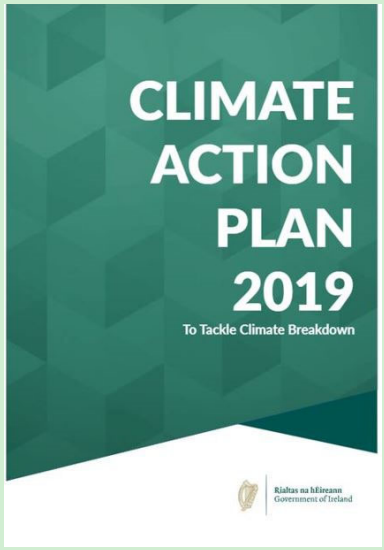
Harnessing Our Oceans Wealth[13], an Integrated Marine Plan, one of the key objectives is to maintain, upgrade and provide infrastructure (e.g. greenways, blueways, ports, harbours, etc.). Furthermore, National Landscape Strategy for Ireland 2015-2025[14] recognises the importance of greenways and blueways in providing a range of environmental services. Specifically, in terms of GBI strategies, National Biodiversity Action Plan[15] highlights the important role of GBI as a strategically planned network of natural and semi-natural areas in delivering biodiversity and ecosystem services. This is also supported by Climate Action Plan 2019[16], which highlights that cycling and walking will play crucial roles in reducing Ireland's emissions from the transport sector. Further plans and strategies, detailed in **Table 1.2** in **Appendix D**, focus on improving water quality in order to protect public health, the environment, water amenities and to sustain water-based activities. They also highlight the economic and social benefits of creating and connecting greenways.

Figure 2.3: Sustainable Development Goals

Image source: https://www.un.org

[13] Government of Ireland (2012) *Harnessing Our Oceans Wealth*
[14] Government of Ireland (2015) *National Landscape Strategy for Ireland 2015 - 2025*
[15] Government of Ireland (2017) *National Biodiversity Action Plan 2017 - 2021*
[16] Government of Ireland (2019) *Climate Action Plan 2019 – To Tackle Climate Breakdown*

Climate and Biodiversity Emergency at the national level



A Climate and Biodiversity Emergency was declared by Dáil Éireann in 2019.

The Climate Action Plan 2019[17] sets out the Government's response to the declaration with a commitment to achieving net zero greenhouse gas emissions by 2050 and in the process, create a resilient, vibrant and sustainable country. There are numerous actions outlined in the plan to reach this goal, one of which is creating a greener and more resilient country.

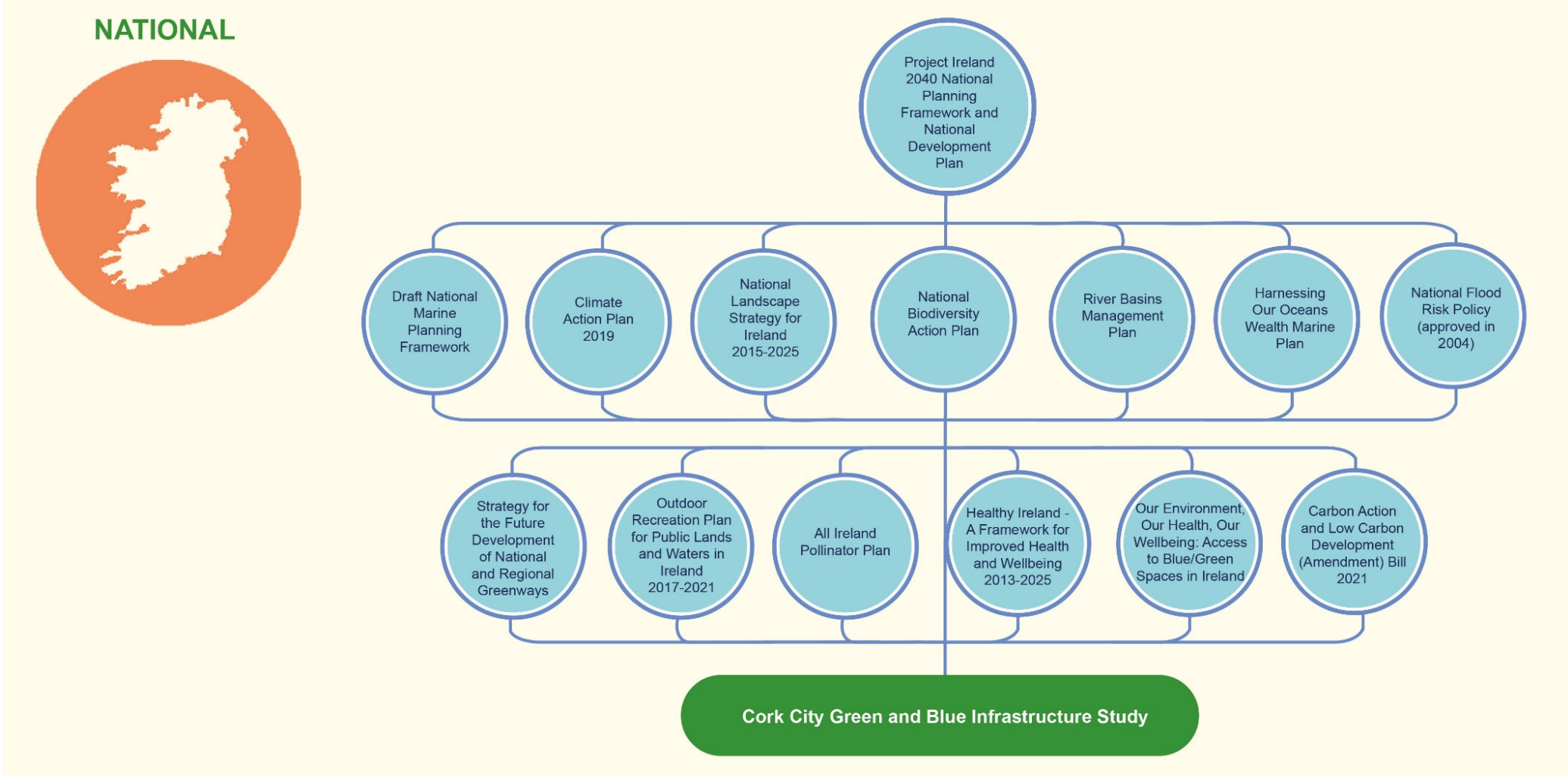
Image source: https://www.gov.ie

2.8 In March 2021, the Government approved the final version of the Climate Action And Low Carbon Development (Amendment) Bill 2021 which accelerates the transition to a climate resilient and "climate neutral economy". It places on a statutory basis a 'national climate objective', which commits to pursue and achieve by 2050, the transition to a climate resilient, biodiversity-rich, environmentally sustainable and climate-neutral economy. There is an interim target to reach 51% reduction in greenhouse gas (GHG) emissions over the period to 2030. A National Long Term Climate Action Strategy will be prepared every five years. The Bill embeds the process of carbon budgeting into law and requires each local authority to prepare a Climate Action Plan every five years. The European Union's Just Transition Mechanism is targeted at ensuring "a fair transition to a climate-neutral economy, leaving no one behind". Ireland has been allocated €176 million from the Just Transition Fund to alleviate the socio-economic impact of the transition, focusing on the regions, industries and workers who will face the greatest challenges.

2.9 Health Benefits from Biodiversity and Green Infrastructure[18] concludes that human health and wellbeing is largely influenced by a healthy environment and that the natural environment and resources significantly contribute to the Irish economy. Additionally, Healthy Ireland – A Framework for Improved Health and Wellbeing 2013 – 2025[19] details the close relationship between (physical and mental) health and the environment, physical activity and social interaction.

[17] Government of Ireland (2019) *Climate Action Plan 2019 – To Tackle Climate Breakdown*
[18] Environmental Protection Agency (2016) *Health Benefits from Biodiversity and Green Infrastructure*
[19] Government of Ireland (2013) *A Framework for Improved Health and Wellbeing*

Figure 2.4: National planning policy

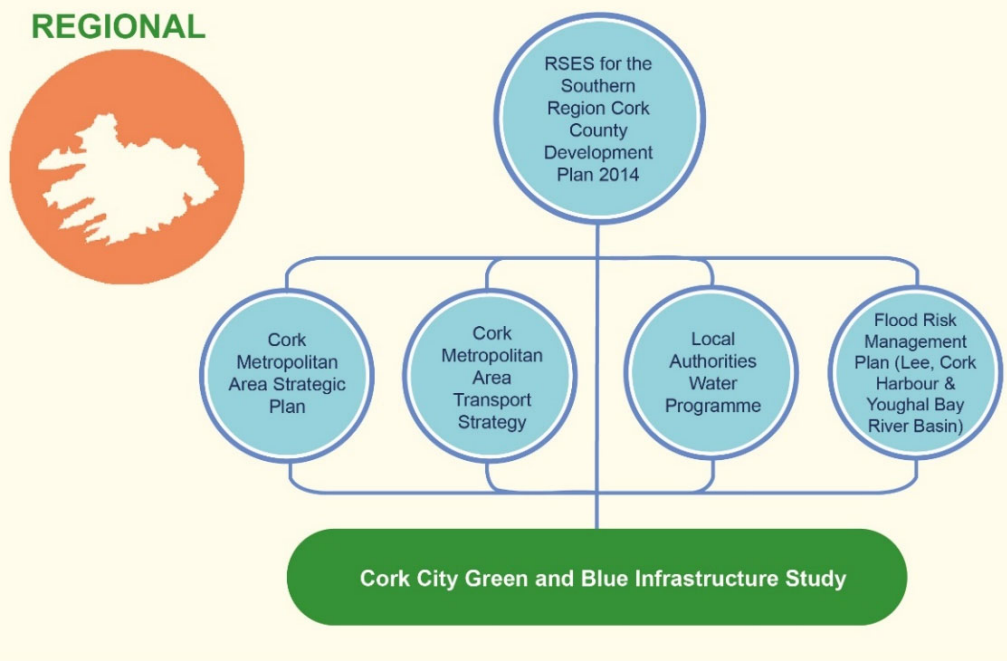


Regional policy

2.10 The importance of GBI is further recognised at the regional level through a range of strategies and policies. The Regional Spatial and Economic Strategy for the Southern Region (RSES) supports the growth and improvement of strategic scale GBI. Regional Policy Objectives (RPOs) 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. Such connections will enable tourists and visitors to access and enjoy rural Ireland and promote active travel such as cycling and walking along these routes. RPOs 200 and 201 support the development of greenways, blueways and peatways throughout the region whilst RPO 110 highlights the need for an Ecosystem Services Approach to be used in the preparation of Development Plans and other statutory land use plans.

2.11 The RSES also includes the Cork Metropolitan Area Strategic Plan (MASP). The Cork MASP identifies critical priorities for the sequencing and delivery of growth in the city and wider metropolitan area.

Figure 2.5: Regional planning policy



Local policy

2.12 The County Cork Development Plan[20] supports the development of GBI and outlines the importance of adopting an integrated and coherent approach to GBI asset management. This is expanded on in the new Draft County Cork Development Plan (2022-28)[21] which recognises the important contribution GBI can have to climate change, the County's carbon footprint, the natural environment, and social interaction. It also promotes GBI for facilitating active travel, which is also reflected strongly within the Cork Metropolitan Area Transport Strategy (CMATS)[22].

2.13 In addition, both the Local Authorities Water Programme, and the LLFRS[23] aim to protect the water environment within Cork. The scheme incorporates natural flood defences provided by GBI and promotes the enhanced connectivity of walkways along the River Lee. The Cork City Development Plan (CCDP) 2015-2021 was adopted on 20th April 2015 and sets out the statutory framework for land-use planning and sustainable development in Cork City for the period up to 2021. Since the CCDP became effective, there have been significant changes in the national and regional planning context with the adoption of Project Ireland 2040 and the RSES for the Southern Region. The CCDP includes seven main goals for the future development of Cork City, including to protect and expand green infrastructure networks.

2.14 The CCDP recognises the importance of implementing an interconnected GBI network in terms of providing habitats for wildlife, improving air and water quality, managing surface water and contributing towards landscape character/attractiveness of urban areas. Tourism and recreational opportunities as well as the overall benefits to health and wellbeing are also recognised.

2.15 The new Cork City Development Plan 2022-2028 will provide strategic guidance to the future direction of development of the City and surrounding suburbs/rural land. The document will set out the strategic land use and planning policy for Cork City having regard to the NPF, NDP, the RSES for the Southern Region, planning policy documents and other relevant Government guidance. The emerging CCDP will also incorporate the new lands included within the City's administrative area as of May 2019 (Tower, Blarney, Killeens, Kerry Pike, Ballyvolane, Glanmire, White's Cross, Ballincollig, Curraheen, Togher, Frankfield, Grange, Donnybrook, Douglas, Rochestown and Cork Airport).

2.16 The importance of GBI is also reflected in other local planning policies and strategies (detailed in **Table 1.4** in **Appendix D**). Several strategies, including the Cork City

[20] Cork County Council (2018) *Cork County Development Plan 2014*
[21] Cork County Council (2020) *Draft Cork County Development Plan 2022 - 2028*
[22] National Transport Authority, Cork City Council, Cork County Council (2020) *Cork Metropolitan Area Transport Strategy 2040*
[23] Cork City and County Councils (2020) *OPW Lower Lee Flood Relief Scheme*

Council Climate Change Adaptation Strategy[24], and the Cork City Sustainable Energy and Climate Action Plan[25] recognise the important role GBI plays in adapting to and mitigating against the effects of climate change. These strategies highlight that GBI can reduce energy emissions by provision of cooling and shading, sequestration of carbon, and general improvements to people's quality of life.

2.17 Local strategies which promote active travel, including the Cork Cycle Network Plan[26] and Cork City Walking Strategy[27] recognise the fundamental role of GBI in encouraging a shift from unsustainable modes of travel. These strategies not only encourage active travel, thereby reducing carbon emissions associated with transport, but also outline the impact of GBI in providing recreational and leisure opportunities, and contributing to improvements in the quality of the local environment. The value of GBI to the local environment is reflected within the Cork County Landscape Character Assessment[28], which outlines how GBI assets are fundamental in defining the key landscape characteristics across Cork. It also acknowledges how landscape and GBI can provide both a recreational and amenity resource to the public. In relation to landscape, the Cork City Landscape Strategy[29] identifies 18 sites within the city which have potential to be enhanced, including by incorporating GBI assets.

2.18 The Cork City Open Space, Sports and Recreational Needs Study is currently in development. Once finalised, the document will provide an audit of the quality and quantity of existing active recreation infrastructure in Cork City. Initial findings from preliminary stakeholder engagement and consultation is summarised within the Active Recreation Infrastructure Study for Cork City[30]. The results of an online survey demonstrated that 88% of respondents anticipate sporting and active recreation organisations to grow in membership over the next six years. In addition, 76% of participants felt that there was currently inadequate active recreation infrastructure within Cork City to support their organisations.

2.19 The Cork City Air Quality Strategy[31] is also currently in draft and outlines the actions that the Council will undertake between 2021 and 2026 to reduce the concentrations of air pollutants in the city. The strategy builds on significant work by the Council to develop a high quality air monitoring system and support the development of initiatives that will significantly lower the levels of air pollutants. The document underlines the importance of green infrastructure in tackling air pollution and delivering the strategy. Increasing tree

[24] Cork City Council (2019) *Cork City Council Climate Change Adaptation Strategy 2019 -2024*
[25] Cork City Council (2018) *Cork City Sustainable Energy and Climate Action Plan*
[26] Cork City and County Councils (2018) *Cork Cycle Network Plan*
[27] Cork City Council (2013) *Cork City Walking Strategy*
[28] Cork County Council (2007) *Cork County Landscape Character Assessment*
[29] Cork City Council (2008) *Cork City Council Landscape Strategy*
[30] Turley (on behalf of Cork City) (2021) *Active Recreation Infrastructure Study, Cork City*
[31] Cork City Council (2021) *Cork City Council Air Quality Strategy 2021 – 2026*. Draft

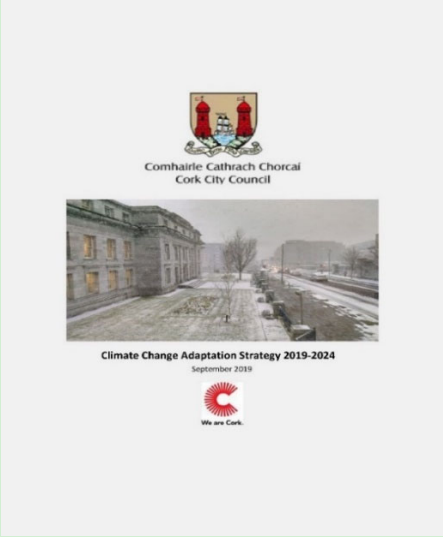
coverage, development of ecological corridors and the creation of new habitats are highlighted as key opportunities. Urban greening initiatives such as the installation of Citytrees (Air Quality Moss Walls) in the City Centre as a measure to improve ambient air quality are also outlined.

2.20 The Draft Cork City Heritage and Biodiversity Plan (2021-2026) sets out a series of realistic actions to protect, conserve and mange heritage and biodiversity in the city over the next five years. The final document will replace the Heritage Plan (2015-2020), encompassing actions regarding archaeology, built, cultural and natural heritage. Arranged as an action plan, the plan provides a methodology for the implementation of actions as well as the promotion of heritage conservation best practice.

2.21 Further plans and strategies, detailed in **Table 1.4** in **Appendix D**, focus on conserving and enhancing the built, natural and cultural heritage of the city, improving water quality within the River Lee catchment, providing new open green spaces (such as Marina Park) and promoting a greener and more sustainable city.

Cork City Climate Change and Biodiversity Emergency at the local level

The Council declared a Climate Change and Biodiversity Emergency in June 2019. The Cork City Council Climate Change Adaptation Strategy 2019-2024[32] and Cork City Sustainable Energy and Climate Action Plan (SECAP)[33] set out the Council's response to the emergency. Both the Strategy and Action Plan recognise that GBI is integral to climate mitigation and adaptation.



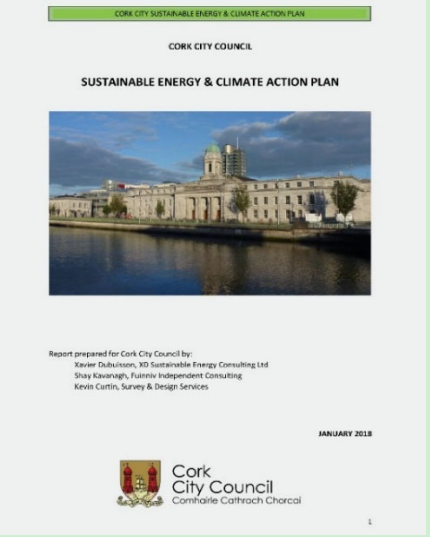


Image source: https://www.corkcity.ie/

[32] Cork City Council (2019) *Cork City Council Climate Change Adaptation Strategy 2019 -2024*

[33] Cork City Council (2018) *Cork City Sustainable Energy and Climate Action Plan*

Figure 2.6: Local planning policy

GBI opportunities within the Climate Change Adaptation Strategy 2019-2024

The Climate Change Adaptation Strategy outlines a number of adaptation action items, grouped into seven key thematic areas and considered to be of equal priority. The Infrastructure and Built Environment; Drainage, Water and Flood Management and Nature, Natural Resources and Cultural Infrastructure themes align closely with GBI and offer the potential to complement and support the opportunities outlined in this Study. The key adaptation actions which act as a template for the future development of climate change resilience within Cork City are listed below:

- Part of Action 7.1: *Integrate climate change adaptation (and mitigation) measure into the design, planning and construction of all roads and transport infrastructure, with a priority given to Nature-based Solutions (NbS) e.g., Sustainable Drainage Systems (SuDS);*
- Part of Action 8.1: *Integrate climate change (adaptation and mitigation) measures into the design, planning and construction of all capital projects, with priority given to natures-based solutions;*
- Action 8.6: *Promote cycling and walking to support a greater uptake of active travel in Cork city. … Continue to support Mobility Management Initiatives and other initiatives which support greater use of walking, cycling and public transport including Bike Week, European Mobility Week and other related promotions.*
- Action 9.1: *Integrate climate action as a guiding principle and strategic objective, thus tailoring planning policies to reduce the vulnerability of Cork city to the impacts of climate change, by: 1. Enhancing the role of the natural environment to promote climate adaptation by promoting NbS e.g. green infrastructure; 2. Continuing to take a minimised risk-based approach to development in areas at risk of flooding (coastal, tidal, fluvial, pluvial and groundwater); 3. Promoting climate resilient designs and materials; and 4. Promoting energy efficiency and renewable energy solutions and water conservation measures in new developments and promote green roofs, walls and courtyards.*
- Action 9.3 (b): *In the development of policy and the planning and provision of green infrastructure, ensure appropriate buffer zones are maintained and protected to avoid potential impacts on designated habitats or protected species and habitats and to protect and enhance wider biodiversity.*
- Action 10.4 (a) *Identify natural floodplains in Cork city and incorporate NbS in any enhancement works where possible.*

- Action 10.4 (b) *Consider and explore the use of natural water retention measures in certain suitable areas as a method of managing flood risk, improve water quality, enhance biodiversity, management of soil and sediment and to provide for the creation of new of additional amenity areas. Liaise and collaborate with the Office of Public Works (OPW) and other stakeholders engaged in research and pilot projects to develop knowledge and capacity on such measures.*
- All actions within Objective 13: *To protect, enhance and restore the natural environment and promote biodiversity.*
- Action 14.2: *Given the wider environmental benefits of green infrastructure, such as microclimate benefits including providing shade to alleviate heat stress, supporting for urban biodiversity, water retention, and flood alleviation etc., develop a green infrastructure strategy and associated action plan, including: The research and mapping of areas considered beneficial for use as local carbon offsets through carbon sequestration in conjunction with the relevant agencies; and the integration of NbS in all City Council development / works (roads, housing architecture, parks and water infrastructure.*

Benefits of Green and Blue Infrastructure

Benefits of good quality GBI

3.1 There is a significant and increasing body of evidence highlighting the societal and environmental benefits of GBI, as seen in **Figure 3.1**. Local communities generally recognise and appreciate the benefits afforded by good access to nature and green space. However, there is now a wide range of empirical data to demonstrate the need for GBI and to build a strong case for future investment.

3.2 Taking a strategic approach to GBI across the city will help to support the Council in many of its priorities in relation to the Climate and Biodiversity Emergency and health and economic crises.

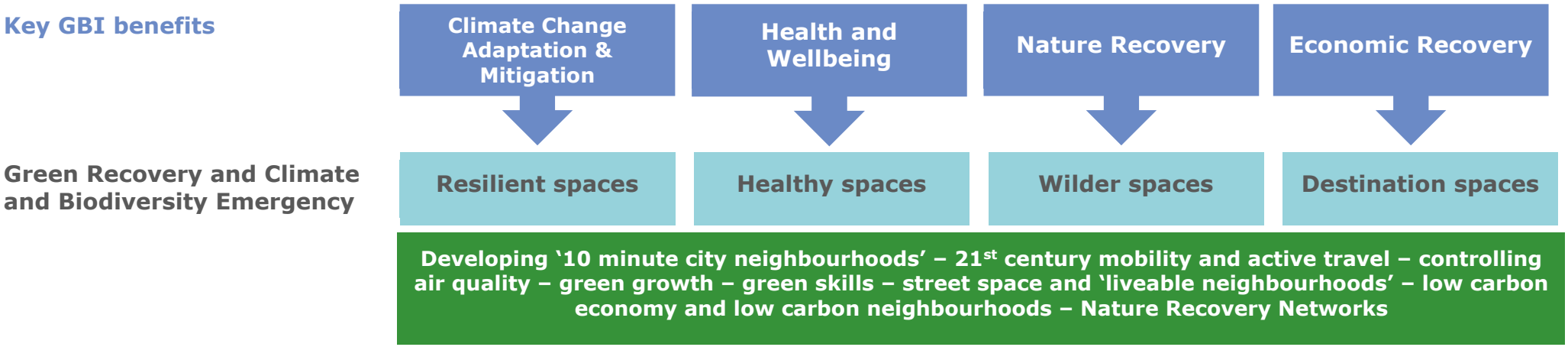


Figure 3.1: Benefits of GBI

Climate Emergency Adaptation and Mitigation – 'Resilient Spaces'

3.3 GBI can help to both mitigate climate change (address the causes) and support adaptation (address the effects). A key mitigation action for the city is a move towards net-zero carbon emissions. Providing a better-connected network of attractive, safe green corridors to promote walking and cycling will help to reduce car use in the city. Expansion of tree cover and protection of open space will also improve the potential for carbon storage.

3.4 Green space provision within urban areas helps to reduce surface water runoff and the severity of flooding events. Trees, vegetation and green roofs can help to achieve a reduction in energy use for cooling and heating through insulating effects and temperature regulation. **Figure 3.3** illustrates the distribution of existing open space and green space within Cork City.

Cork City's '10-minute city neighbourhoods'

Regional Policy Objective (RPO 176) in the RSES for the Southern Region[34] seeks to achieve sustainable compact settlements with the '10-minute city' concept. The concept is based on providing most of residents' needs and access to key amenities within a short walk or cycle from their home to improve their quality of life. Consideration of GBI will be essential in successfully implementing the principle of 10-minute city neighbourhoods in Cork City (see **Figure 3.2**). The key benefits for GBI relate to:

- Providing safe, attractive streets and a high quality environment through increased tree cover and planting in urban areas;
- Ensuring access to green space and play space within a short walk from home;
- Reducing car use and facilitating walking, cycling and the use of green corridors;
- Protecting and enhancing key destination green / blue spaces and local heritage to support local economic activity; and
- Ensuring local open spaces are multifunctional and cater for a diverse range of needs, sport and recreation.

Figure 3.2: Cork City's '10-minute city neighbourhood' concept

[34] Southern Regional Assembly (2020) Regional Spatial and Economic Strategy for the Southern Region

‘Resilient Spaces’
Example existing spaces within Cork City

1. Atlantic Pond
2. Carroll’s Bog, Tramore Valley Park
3. Passage Railway Greenway

Spotlight on the Passage Railway Greenway Improvement Scheme – a best practice example of a 'Resilient Space' within Cork City

The Passage Railway Greenway Improvement Scheme was identified as a key project in the promotion of sustainable transport by the Council. Providing significantly improved facilities for cyclists and pedestrians along the existing Passage Railway Greenway from Parc Ui Chaoimh to Mahon, the scheme aims to facilitate new access points to promote connectivity.

The GBI centred approach has aimed to attract a modal shift within the locality, with additional benefits associated with air quality and enhanced fauna and flora. A target of 8% has been set by the Council for the cycle mode share in this south eastern electoral area of the city. This project therefore forms part of a suite of infrastructural projects with the aspiration of achieving this target.

Successes to replicate?

- The design highlights the heritage value of the former Cork and Blackrock Passage Railway through the integration of the remaining railway infrastructure.
- The inclusion of SuDS as an integral component of the project also aims to deliver a sustainable drainage solution along the multi-user corridor.
- The detailed design for the scheme has sought to ensure the protection of the existing environment in combination with environmentally friendly and climate resilient drainage solutions.

Spotlight on Melbourne – the integration of GBI into existing neighbourhoods

Launched in 2018, the Minister for Planning at Victoria State Government adopted a pilot programme focussing on the delivery of a 20-minute neighbourhood concept within Melbourne. Guided by the principles of inclusivity and sustainability, the initiative aims to improve the liveability of neighbourhoods with a view to achieving multiple health and environmental benefits. The principle is centred on the concept of 'living locally', facilitating active travel networks through the alignment of spatial and infrastructure planning.

Image source: Victoria State Government (2019) 20-Minute Neighbourhoods: Creating a More Liveable Melbourne

Relevance to Cork City?

- Showcases how the adoption of a long-term planning strategy can be used to improve the liveability of established neighbourhoods within a city. The scheme demonstrates how walkable neighbourhoods can be created within an existing urban fabric, responding to the existing character and form of a settlement.
- Demonstrates the importance of the concept as an organising principle for urban development, of increasing relevance to Cork City as it works towards COVID-19 recovery.

Mechanisms to integrate GBI into delivery?

- Promotion of active travel as a fundamental part of a city's transport system. The scheme adopted a comprehensive programme of research and monitoring to evaluate the long-term success of the approach.
- Development of activation proposals or 'quick wins' combined with long term transformational concepts to demonstrate how GBI may be embedded within existing neighbourhoods. The identification of easy-to-implement proposals has enabled the city to respond quickly to the COVID-19 green recovery process.
- Establishment of a Pilot Programme to aid the determination of key findings and recommendations, ensuring the successful implementation of future proposals.

Cork City has a variety of public parks, sports pitches, playgrounds, walk and cycle ways and areas of open space on land and water. Since the onset of the Covid-19 pandemic, there is a greater appreciation for open and accessible green spaces and consequently demand to create more public open spaces, blueways and greenways in the city. Areas where there is a deficiency in access to open spaces should concentrate on enhancing connectivity to surrounding open spaces or creating new spaces, such as the recently created 'Parklets' in the city (converted parking spaces into open spaces for public to sit and relax).

AREAS LOCATED >800 METRES FROM A GREEN SPACE

- Ballynoe
- Rathcooney
  Ballyphilip
- Killeens
- Knocknagorty
  Ballysheehy
- Currabeha
  Coolatubbrid
- Curraheen
- Oldcourt
  Knocknamullagh
- Ballinvuskig
- Ballygarvan

Cork City Council boundary
City centre boundary
Urban town
Neighbourhood suburb
Hinterland
Open space
Green space
Green/open space 800m buffer

0 1 2 km

Map scale 1:75,000 @ A3

Figure 3.3: Access to Open Space

CB:CB EB:llott_J LUC FIGX_11280_r0_OpenSpace_A3L 22/03/2021
Source: LUC, CCC, OSI

Health and Wellbeing – 'Healthy Spaces'

3.5 GBI can help to improve and maintain the health and wellbeing of local communities. A study by the Irish Environmental Protection Agency (EPA) investigated the health benefits arising from biodiversity and green infrastructure[35]. The study 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 though opportunities for conversation or exercise; and
- Spending time in green spaces promotes social integration and cohesion.

3.6 In relation to illnesses often associated with income deprivation and lower socio-economic status, the study found that access and proximity to green space is demonstrated to show clear benefits in relation to circulatory disease, obesity and wellbeing.

3.7 Greening the urban environment, if implemented correctly, can also have significant benefits in relation to air quality through the removal of some forms of air pollution. Better utilising existing green and blue corridors may provide the opportunity for pedestrians and cyclists to travel away from busy polluted roads. In turn, active travel can also reduce car use and associated pollution.

Nature Recovery – 'Wilder Spaces'

3.8 If the correct principles are adopted, all elements of the GBI network can contribute towards provision of space for nature. Taking a strategic and coordinated approach to the provision of GBI provides the best opportunity to apply the key principles for conserving and enhancing biodiversity.

- **Bigger:** Habitat areas can be increased in size by ensuring that GBI is delivered alongside new 'grey infrastructure' and within new development. Strategic analysis of the GBI network can help to identify where existing habitat areas may be increased in size through habitat creation on low quality sites nearby.
- **Better quality:** Improvements to existing core habitat areas (such as existing designated areas for nature) can be focussed where there will be most benefit. Adopted standards can ensure that new GBI is multifunctional, diverse and provides for a range of species.
- **Better connected:** The provision of high quality green and blue corridors can help to create a more resilient network. Better connections between sites provide the opportunity for some species to move between microhabitats and colonise new areas. Gaps in the network

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

can be strengthened through the provision of tree lined streets and 'stepping stone' habitat areas on green roofs, incorporated into the public realm and within existing green spaces.

3.9 Furthermore, the natural capital benefits and ecosystem services which biodiversity provides will become increasingly important as climate change places further pressure on urban environments in Cork City..

Economic Recovery - 'Destination Spaces'

3.10 There are several economic benefits to GBI in terms of creating employment, promoting economic activity and encouraging inward investment. Key destination spaces that are important for their landscape or heritage value can provide a draw and destination for visitors.

3.11 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[37]. These benefits may be amplified through the adoption of modal shifts to sustainable transport modes and the promotion of 10-minute city neighbourhoods.

3.12 The key components of GBI within Cork City are illustrated in **Figure 3.4.** A spatial representation showing the current baseline of GBI in Cork City is provided in **Figure 3.5.**

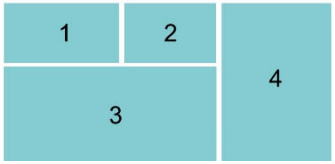
[36] Forest Research (2010) Benefits of green infrastructure

[37] The Land Trust (2018) The Economic Value of our Green Spaces

‘Healthy Spaces’

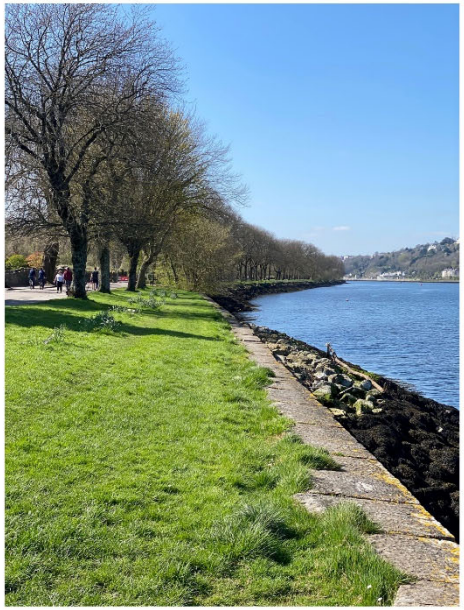
Example existing spaces within Cork City

1. Bell’s Field
2. Knocknaheeny & Hollyhill Community Garden
3. Fitzgerald Park
4. Cork Rooftop Farm



‘Wilder Spaces’
Example existing spaces within Cork City

1. The Lough
2. Ballybrack Woods
3. Thomas Davis Bridge, River Lee



‘Destination Spaces’
Example existing spaces within Cork City

1. The Marina
2. Nano Nagle Place Gardens
3. The Glen Park
4. Garryduff Woods

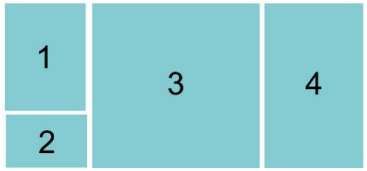


Figure 3.4: The components of GBI in Cork City

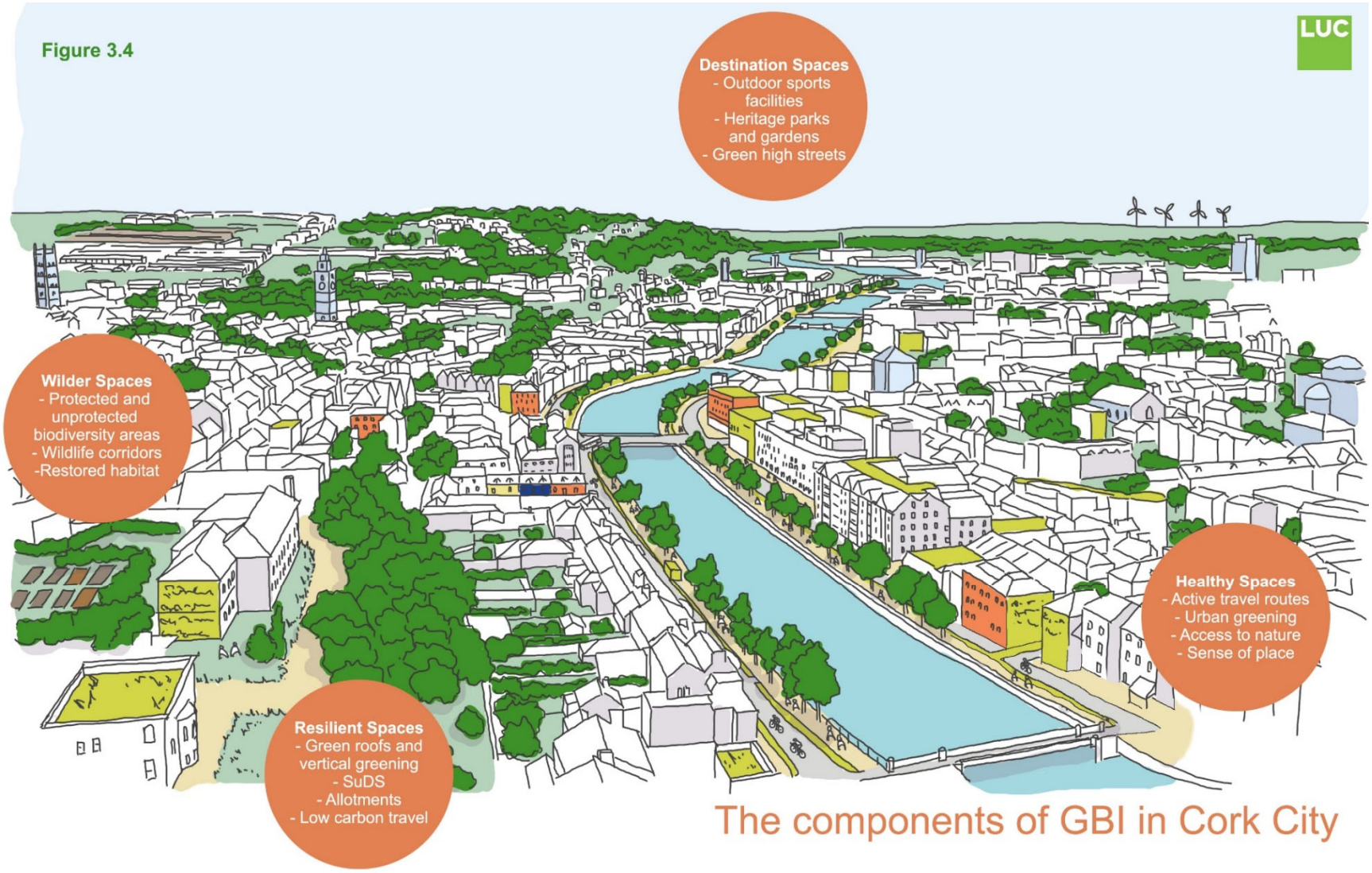
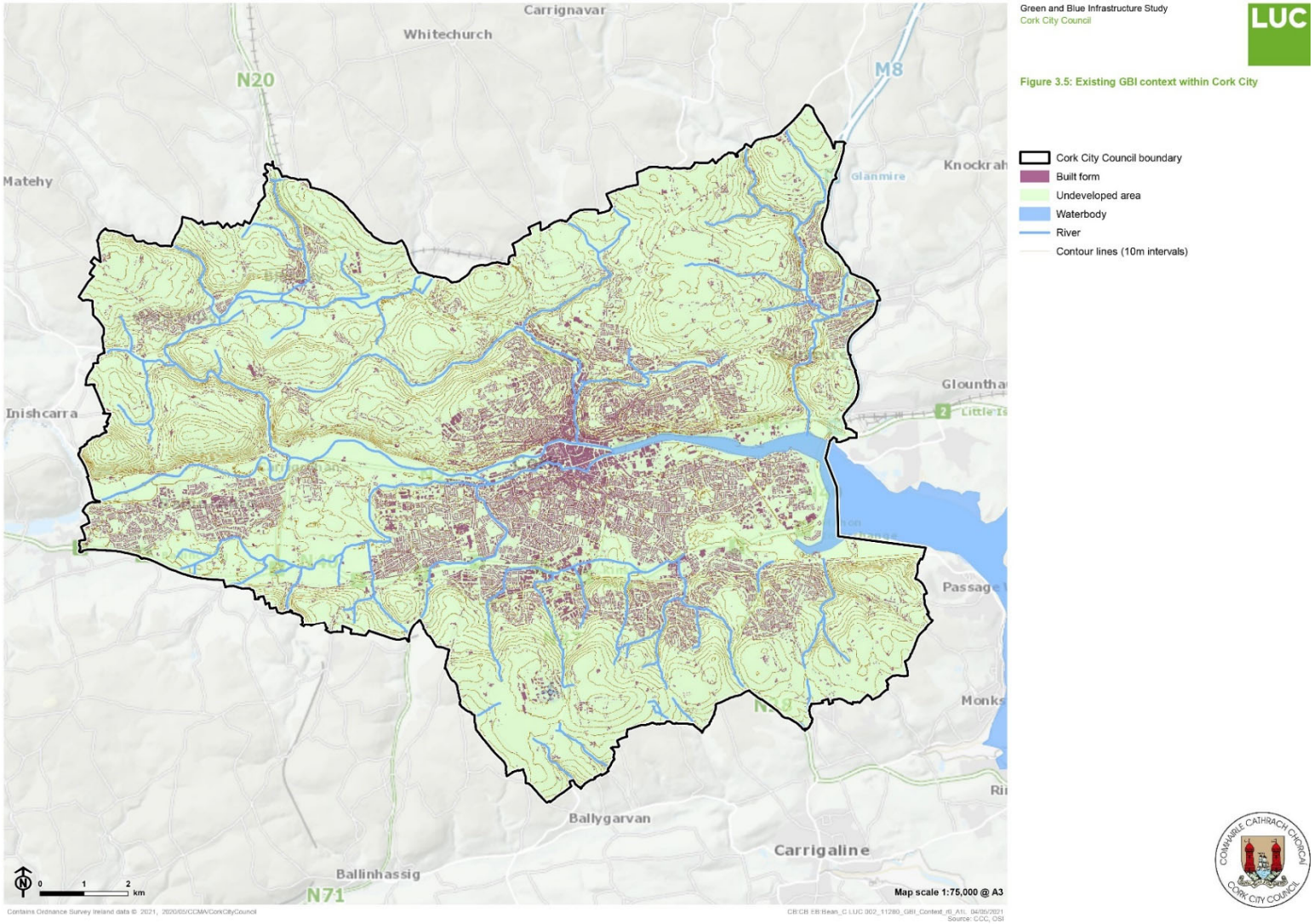


Figure 3.5: The current baseline of GBI in Cork City



Spotlight on Ballincollig Regional Park – a best practice example of a 'Healthy Space' within Cork City

Located on the banks of the River Lee, Ballincollig Regional Park became a public park in 1977. The park utilises a diversity of green, blue and heritage assets to provide a highly valued multifunctional greenspace which attracts considerable visitor numbers.

Formerly the site of Ballincollig Gunpowder Mills, the area is characterised by a network of sluices, weirs and canals drawing on the River Lee. As a result, the park now provides a valuable matrix of wet woodland, wet grassland, parkland, wildflower and scrub habitat. A number of the original structures dating from this previous use still survive in the park today as a nod to the site's industrial heritage. This historic interest, promoted by a series of interpretation boards and walking routes, form key features within the park.

The park encompasses an area of 140 acres and provides a wide range of recreational amenities; including a skate park, picnic areas, two basketball courts, playground, football pitches, rugby pitch, outdoor exercise equipment and allotments. The park also hosts a weekly Parkrun and contains a diverse number of trails, ranging from wide formal paths to nature trails.

The park won the Urban Land Institute Excellence in PlaceMaking Award in 2019 in recognition of work completed to enhance the site. The success of the park has been in large part due to the vision established in the Ballincollig Regional Park Development Plan published in 2012, outlining a €1.4 million investment in park amenities. The success of these improvements has provided a considerable increase in park visitors, with 660,000 people visiting in 2018.

The improvement and investment in the regional park is ongoing, with plans to reinstate the weir and canal system. An augmented reality app is also currently in development to engage visitors with the site's history.

Successes to replicate?

- Ballincollig Regional Park provides a good example of how heritage and ecological functions can successfully complement one another to promote health and well-being within a park setting. The green space also illustrates the potential for a site to promote a diversity of uses.
- The success of the Ballincollig Regional Park Development Plan illustrates the value of developing an ambitious plan for key open space assets and demonstrates how targeted investment can result in increased value and visitor numbers.
- Interactive apps which either provide education benefit, or engage visitors in a citizen science projects, have the potential to help to engage a new demographic with outdoor spaces.

Active travel routes, Ballincollig Regional Park

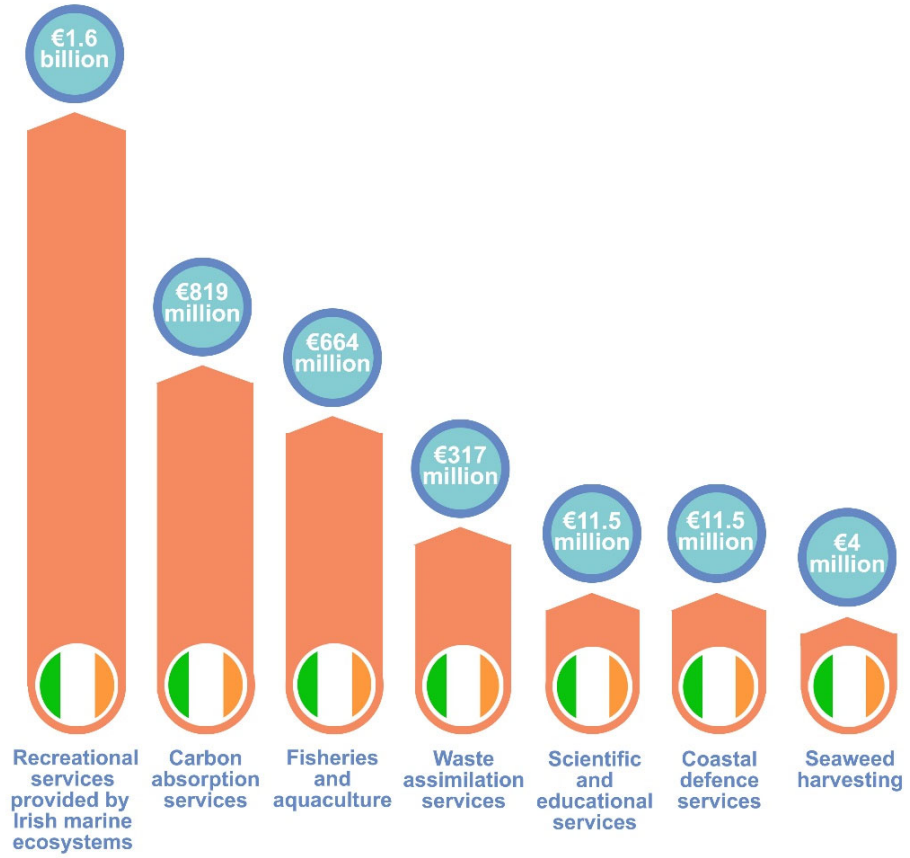
The value of GBI in Cork

3.13 A natural capital approach attempts to assess the monetary value of natural assets. This includes economic, societal and environmental benefits, and 'ecosystem services'. There are several studies that have estimated the monetary value of elements of the GBI network in Cork County and Ireland. Whilst these do not comprise comprehensive natural capital 'accounts' for the city, they do highlight and provide insight into the significant economic benefits afforded by the GBI network.

Natural Capital Value of Aquaculture

3.14 In terms of Ireland's ocean economy, it has been estimated that the direct value of Irish ocean economy accounts for €1.8 billion and it provides employment for approximately 30,000 people. Oceans are important in the carbon cycle as they are known to absorb 30% of all CO_2 emissions. Some additional economic value is provided through recreational services, carbon sequestration, fisheries and aquaculture, waste assimilation services, scientific and educational services, coastal defence services and seaweed harvesting (see **Figure 3.6**). Economic value of aquaculture for Cork County (encompassing Cork City) was estimated to be €32.8 million in 2015 (Atlantic salmon €25 million, pacific cupped oyster €3 million, and blue mussel €4.8 million)[38].

Figure 3.6: Contribution of the cultural marine ecosystem in the Republic of Ireland to welfare, health and economic activity



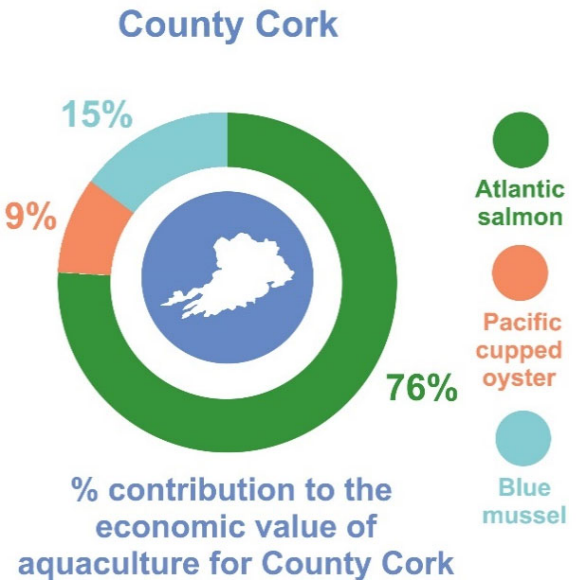
[38] Socio-Economic Marine Research Unit (undated) Valuing Ireland's blue Ecosystem Services [online] Available at: https://www.nuigalway.ie/media/researchsites/semru/files/marine_ecosystem_service_non_technical_report_final.pdf [Accessed on 08/01/2021]

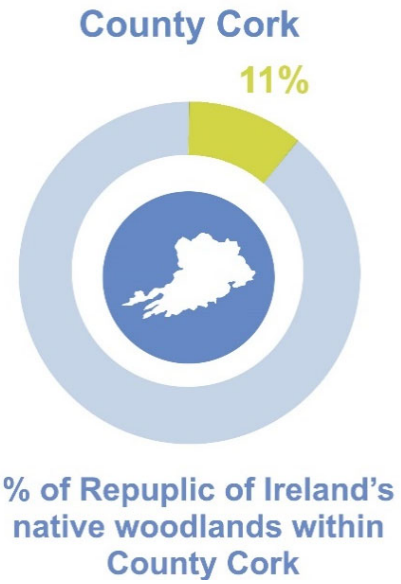
3.15 The total economic value of algae/seaweed harvesting in 2012 was €3.9 million. In Ireland, seaweed is mainly harvested on the western seaboard, on the shores of Donegal, Sligo, Mayo, Galway and Cork.[39]

Cork Harbour Marine Leisure

3.16 A study by the Cork Institute of Technology[40] investigated the economic impact of the marine leisure industry on Cork Harbour. The study found that the total value of the marine leisure industry in 2016 was approximately €10.94 million, and that the industry provided 29 direct jobs and 290 indirect jobs.

3.17 Cork Harbour is becoming increasingly popular for cruise ships, with 103 visiting in 2019[41], an increase on figures from 2018. The marine leisure study[42] highlights that the luxury cruise liner business is worth approximately €12 million per annum to the local economy, with each passenger spending on average, €73 a day while onshore.





[39] Ibid
[40] Conway Lenihan and McGuirk (2017) The Economic Impact of the Marine Leisure Industry on Cork Harbour 2017 [online] Available at: https://sword.cit.ie/cgi/viewcontent.cgi?article=1000&context=hincksart#:~:text=Of%20the%20%E2%82%AC11%20million,jobs%20and%20290%20indirect%20jobs. [Accessed on 12/01/2021]
[41] https://afloat.ie/port-news/cruise-liners/item/41322-103-cruise-ships-to-visit-cork-in-2019
[42] Conway Lenihan and McGuirk (2017) The Economic Impact of the Marine Leisure Industry on Cork Harbour 2017 [online] Available at: https://sword.cit.ie/cgi/viewcontent.cgi?article=1000&context=hincksart#:~:text=Of%20the%20%E2%82%AC11%20million,jobs%20and%20290%20indirect%20jobs. [Accessed on 12/01/2021]

Natural Capital Value of Ireland's Native Woodlands and Forests

3.18 It is estimated that the natural capital of native woodlands in Ireland is currently worth between €100 and €140 million per annum[43], when services such as carbon sequestration, domestic and international tourism are considered. At present native woodlands form 14% of the total forest cover in Ireland[44]. Similarly, the economic value of Irish native forests accounts for €67 million per year, with native forests covering only about 1.4% of the land area (100,000 hectares)[45]. Ireland's National Survey of Native Woodlands 2003 – 2008 have estimated that there is approximately 11,230 ha of native woodlands in Cork County (encompassing Cork City)[46], what accounts for approximately 11% of Ireland's native woodlands (worth approximately €7 million). A breakdown of the multiple benefits provided by trees is illustrated in **Figure 3.7.**

[43] http://www.woodlandsofireland.com/sites/default/files/WoI%20NW%20Strategy%20Final%2824July16%20LoRes%20for%20webpage%29.pdf
[44] Bullock C., Hawe J. (2014) The natural capital value of native Woodland in Ireland [online] Available at: http://www.woodlandsofireland.com/sites/default/files/Natural%20Capital%20Value%20of%20Native%20Woodland%20in%20Ireland%28Long%20version%20-%20Mar2014%29.pdf [Accessed on 08/01/2021]
[45] Ibid.
[46] Perrtin P. et al. (2008) National Survey of Native Woodlands 2003 – 2008 [online] Available at: https://www.npws.ie/sites/default/files/publications/pdf/Perrin_et_al_2008_NSNW_V1.pdf [Accessed on 08/01/2021]

Figure 3.7: Focused GBI values

1. A typical medium-sized deciduous tree can intercept over 10,000L of rainfall per year.
2. One mature oak can support over 280 different species of insect.
3. ~22kg CO2 is sequestered in a mature tree every year.
4. Research from the University of Edinburgh shows that one oak tree living for 100 years will uptake 1.5 tonnes of CO2. An average tree will uptake just under 1 tonne of CO2 in its lifetime.
5. Particulate levels can be reduced by up to 60% on tree-lined streets when compared to those without.
6. One mature tree has the same cooling effect as 10 room-sized air conditioners, reducing local energy consumption by up to 10%.
7. One mature tree releases enough oxygen into the atmosphere each year to support two human beings.
8. Records of a mature lime tree in Malmo, Sweden consuming ~670 litres of rainfall per day during heavy rainfall events.
9. Apartment blocks surrounded by mature trees experienced 52% fewer reported crimes than those without greenery.

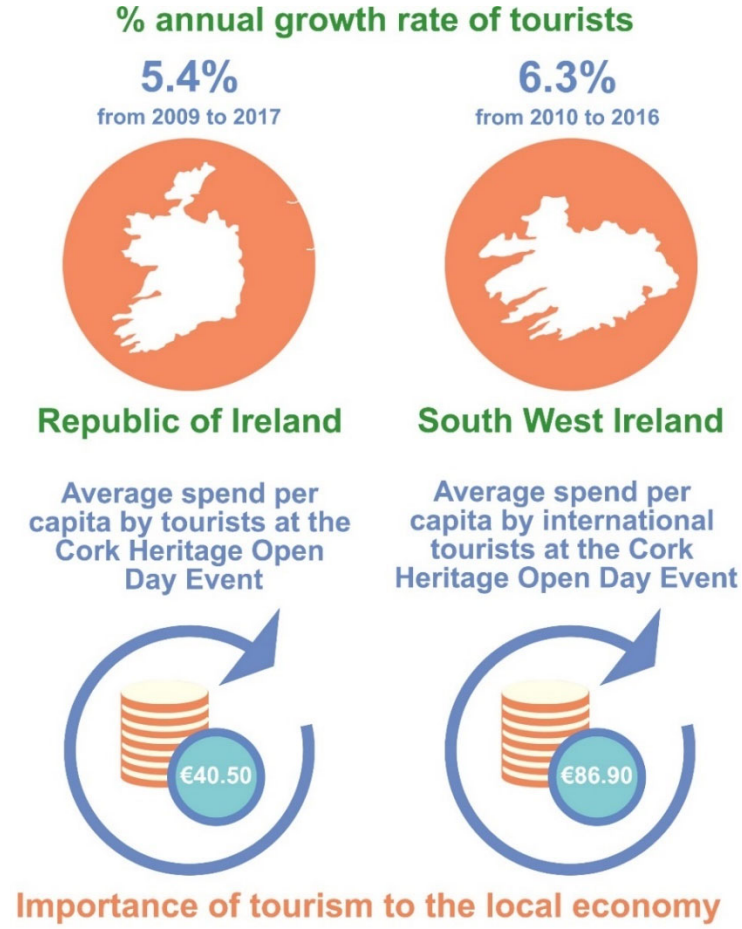
Spotlight on the Cork Heritage Open Day Event – enhancing the role of heritage in improving the city's regional competitiveness

Introduced as part of Cork City's successful bid for the 2005 European capital of culture award, the Cork City Heritage Open Day aims to showcase the city and underline the importance of cultural heritage to the local economy. Cork City Council commissioned a report in 2017 to examine and quantify the economic benefit of Cork City Heritage Open Day. The document provided recommendations to enhance the role of heritage as well as improve Cork City's regional competitiveness and tourist offer.

Ireland attracts large numbers of tourists annually and the tourism sector accounted for 3.5% of Irish service exports in 2011. The study addressed the potential of Cork City to attract increased levels of tourism and further develop the links between heritage and tourism. The report concluded that the potential exists to attract higher levels of tourism to Cork City, as part of a tourism cluster within south west Ireland. The promotion of cultural heritage also offers the city the opportunity to increase its competitiveness, with beneficial impacts on the economic development of the City Centre.

The report also highlighted that economic impact derived from international tourism associated with the Cork Heritage Open Day was larger than domestic tourism. The average spend per capita by respondents on the day of the event was €40.50. However, the average spend by international tourists was €86.90 (see **Figure 3.8**). This is more than double the average spend and indicates the importance of tourism to Cork City's local economy.

Figure 3.8: Cork Heritage Open Day Event – Summary results



Spotlight on the Global Destination Sustainability Index

The Global Destination Sustainability Index (https://www.gds.earth/about/) forms a collaborative partnership which aims to empower destination management professionals to create resilient spaces. The scheme forms a leading sustainability benchmarking and performance improvement programme for European destinations and their economy.

The evaluation criteria includes a review of the strengths and weaknesses of a city's sustainability effort and strategy recommendations. Cities are also benchmarked against averages and peers. A review of factors such as environmental, social and supplier performance within Cork City have demonstrated a steady improvement since 2018 (as shown in **Figure 3.9**). The results also allow the opportunity to compare performance against other destinations within the Republic of Ireland (see **Figure 3.10).** The following recommendations to ensure continuous improvement were provided in the 2020 feedback report:

- Ensure the city's strategy includes goals for environmental, social and economic issues;
- Align overarching goals with the city, leisure and business tourism strategies;
- Invite stakeholder participation where possible;
- Include plans for reporting on sustainability; and
- Train staff on the importance of delivering the sustainability strategy.

Figure 3.9: Cork City results 2018-2020 (reproduced from GDSI Assessment Report[47])

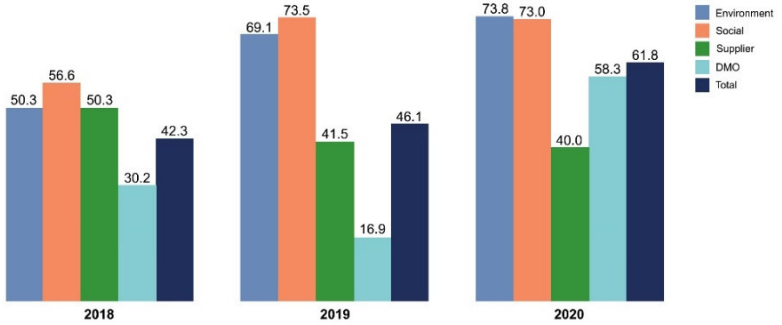
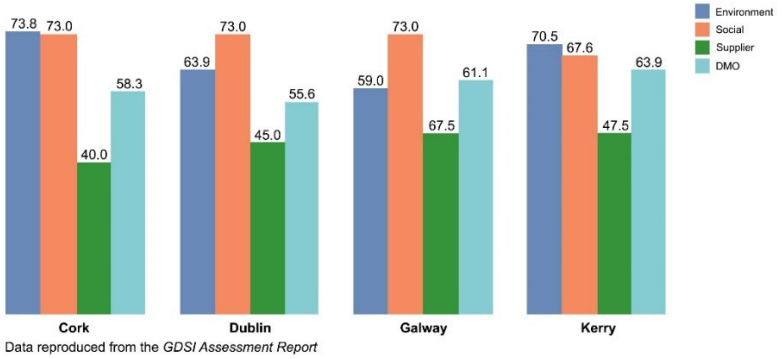


Figure 3.10: Performance against other destinations in the Republic of Ireland (reproduced from GDSI Assessment Report[47])



Data reproduced from the *GDSI Assessment Report*

[47] Global Destination Sustainability Movement (2020) *2020 Assessment Report – Cork City*

Drivers for Green and Blue Infrastructure in Cork City

4.1 The benefits of GBI are being increasingly recognised and is considered within national planning policy and guidance as essential to ensuring the delivery of sustainable development. The multifunctional nature of GBI often makes it difficult to quantify specific benefits. However, for the purposes of planning it is useful to develop a framework to further understand how GBI may provide for the needs of the community in Cork City now, and in the coming years.

4.2 This chapter sets out the key drivers for the provision and ongoing stewardship of GBI within the city. Assessing the drivers for GBI in the Cork City 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 in Cork City. Drivers are considered under the following contextual themes which have been linked, where possible, to the priorities identified in the Issues and Options Paper for the new Cork City Development Plan 2022-28:

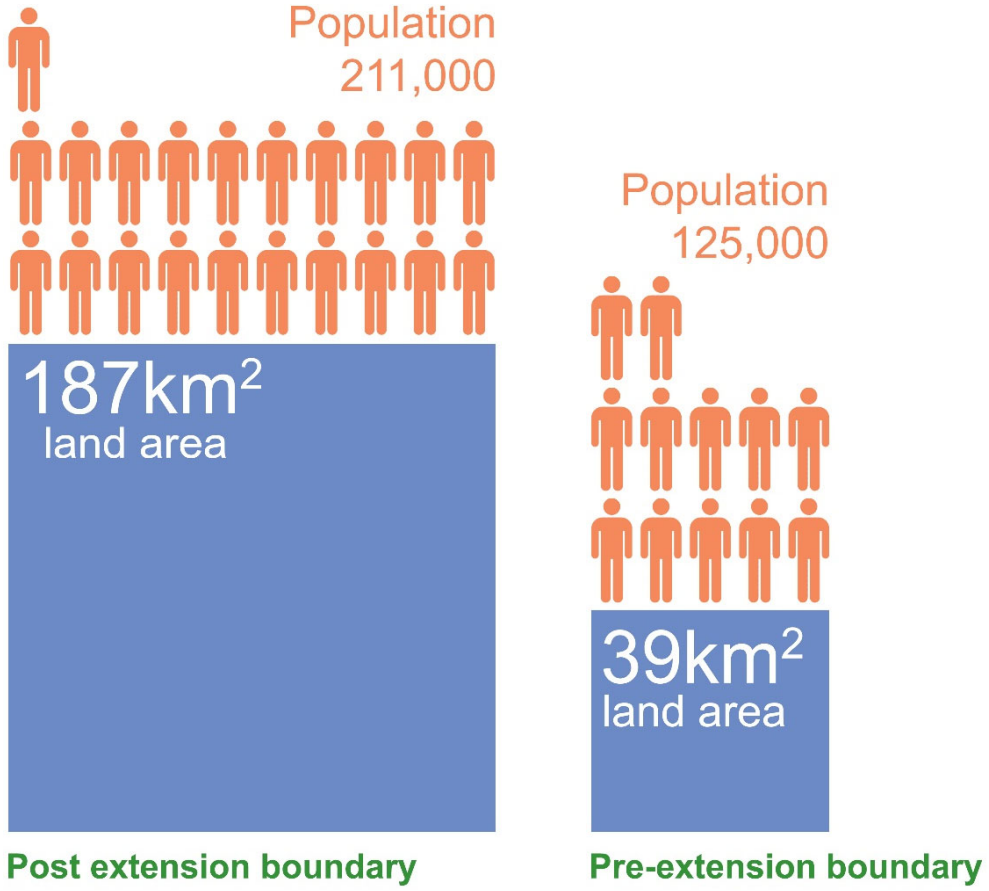
- Strong and diverse communities;
- Growth, housing and infrastructure;
- Health and wellbeing; and
- Climate resilience.

Strong and diverse communities

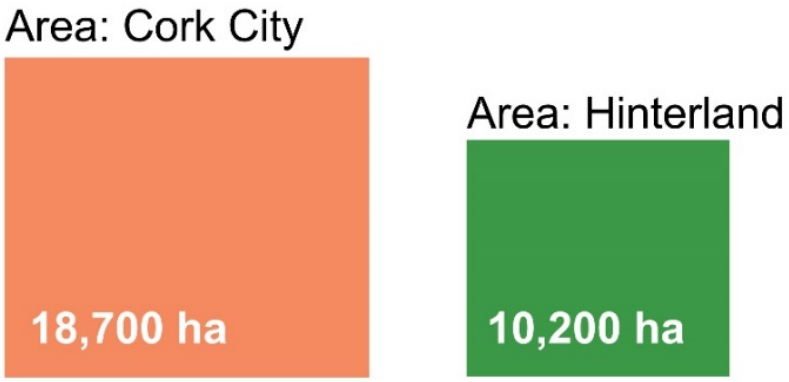
Cork City expanded its administrative boundary in 2019 and is now defined as a Medium-Sized European City. The city's population totalled 210,853 persons in 2016 prior to the implementation of the boundary extension. This boundary expansion has resulted in a fivefold increase in the city's total area, to 187km². The city population is also projected to grow by 2040 and requires measures to ensure this growth is accommodated in a balanced and sustainable way.

Well-planned GBI can help to create cohesive neighbourhoods. Parks and other green spaces promote community integration and can act as vital democratic spaces where people can come together and interact.

4.3 The Council is a predominantly urban local authority centred on the City of Cork (see **Figure 4.1**). The City is traversed by several main arterial routes; the N8, N20, N22, N27, N28, N40 and N71. Iarnrod Eireann's railway connects Dublin and Cork via Cork City, approaching from the north before continuing eastwards to Midleton. There are many definable parts to the central city's urban landscape; including the City Centre, Blackpool, Douglas, Mahon, Mayfield, Knocknaheeny, and Togher. The Urban Towns of Ballincollig, Glanmire, Tower, Blarney also lie within the administrative boundary of Cork City.



4.4 Cork City has a wide and varied range of green and blue assets, including a vibrant and diverse landscape, a wide range of ecosystems and a unique built, natural and archaeological heritage. These natural and built heritage assets give the city its identity and sense of place. Cork City features a wide range of landscapes; including wetlands, shingle beaches, reedbeds and wet grassland in the harbour area, broad valleys with agricultural fields bound by broadleaf trees and hedgerows, and transitional slopes between rugged hills and flatter farmland. The City Harbour and Estuary Landscape Character Type (LCT) defines the land surrounding the urban City Centre, with a very high landscape sensitivity and value. The Broad Lowland Valleys LCT is found to the west of Cork City, with Fissured Fertile Middleground LCT lying to the north.



4.5 The City Centre is the largest urban centre in the region, and can be divided into the sub areas illustrated in **Figure 4.2**:. There are over 30 neighbourhoods within the city suburbs which are divided into: North West Suburb; North East Suburb; South East Suburb; and South West Suburb (see **Figure 4.3**). The administrative boundary also incorporates four Urban Towns, each with a population of 2,000+ persons: Ballincollig, Blarney, Glanmire, and Tower. The city hinterland is made up of the lands beyond the City Centre, the City Suburbs and the four Urban Towns. This area is predominately rural in character with large tracts of agricultural lands. However, the Hinterland also encompasses Cork Airport and three Hinterland Settlements; Kerry Pike, Killeens and Upper Glanmire.

Figure 4.1: Location plan

4.6 The western extents of the Cork Harbour Special Protection Area (SPA) (Site Code 004030) and the Great Island Channel Special Area of Conservation (SAC) (Site Code 001058) are located within the Council boundary. There are also several proposed Natural Heritage Areas (NHAs). These include the Lee Valley, Cork Lough, Glanmire Woods, Douglas River Estuary, Dunkettle Shore, Great Island Channel, and Rostellan Lough, Aghada Shore and Poulnabibe Inlet NHAs and pNHAs. Other notable assets include the River Lee, Beaumont Quarry, Marina Park and Fitzgerald's Park. 1,200 protected structures are encompassed within the boundary of Cork City; including 16 Architectural Conservation Areas, and a further 20 smaller Architectural Conservation Areas.

Figure 4.2: City Centre Sub-Areas

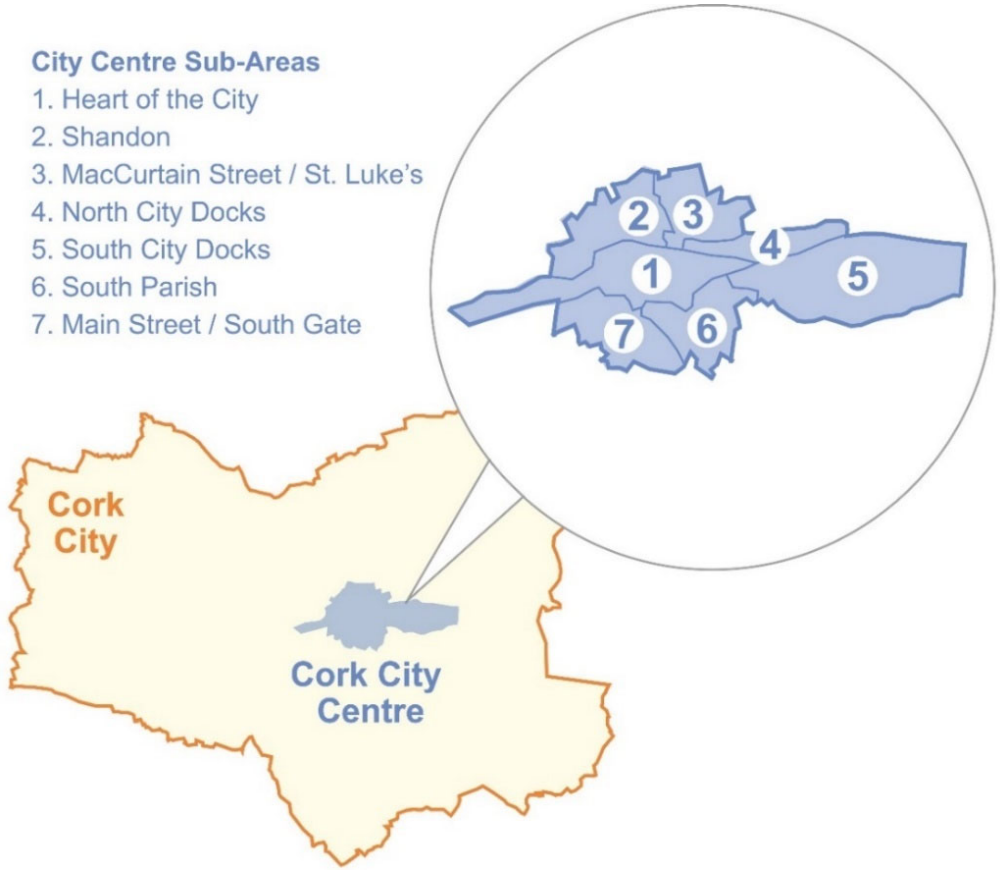
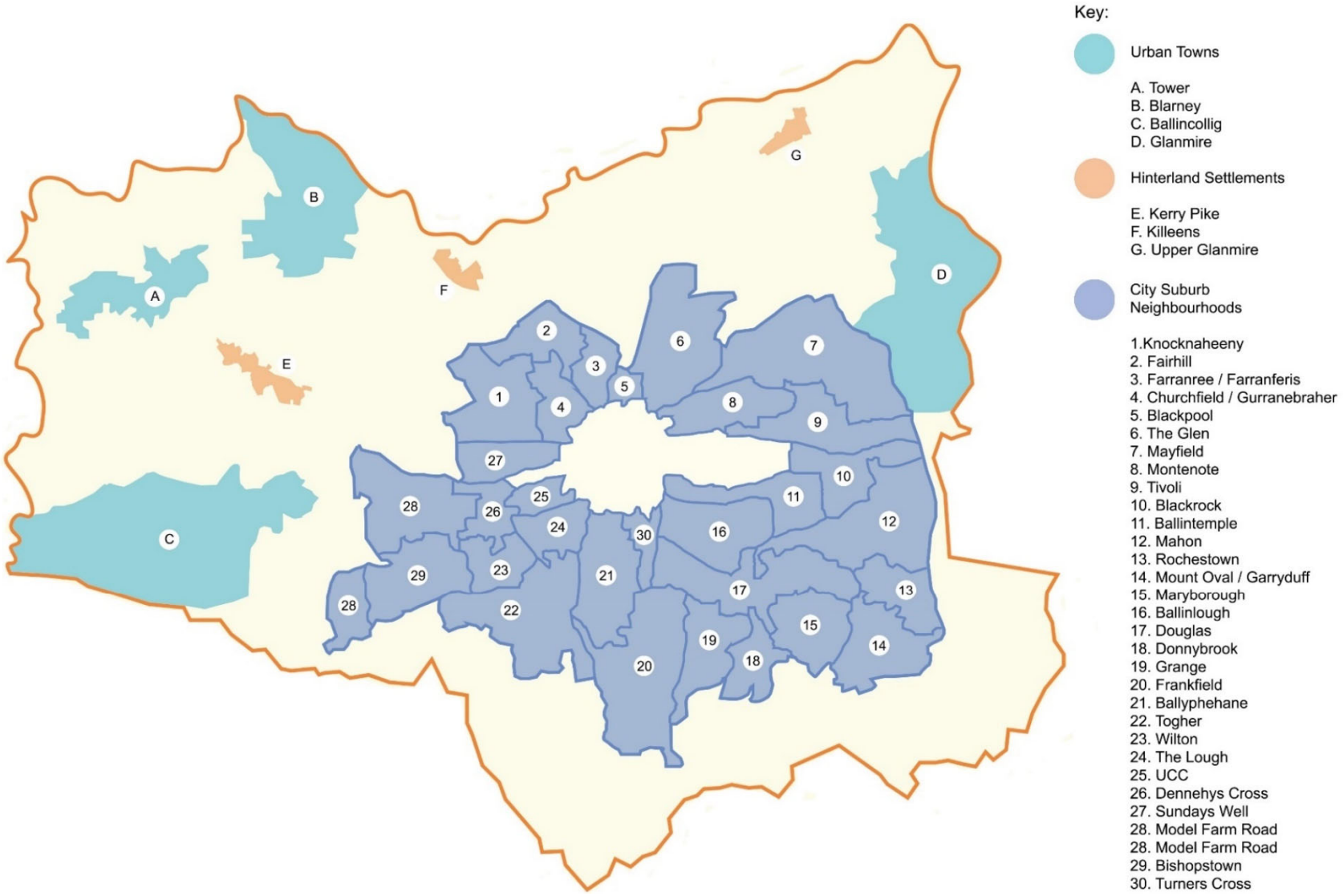


Figure 4.3: City Suburb Neighbourhoods and Urban Towns



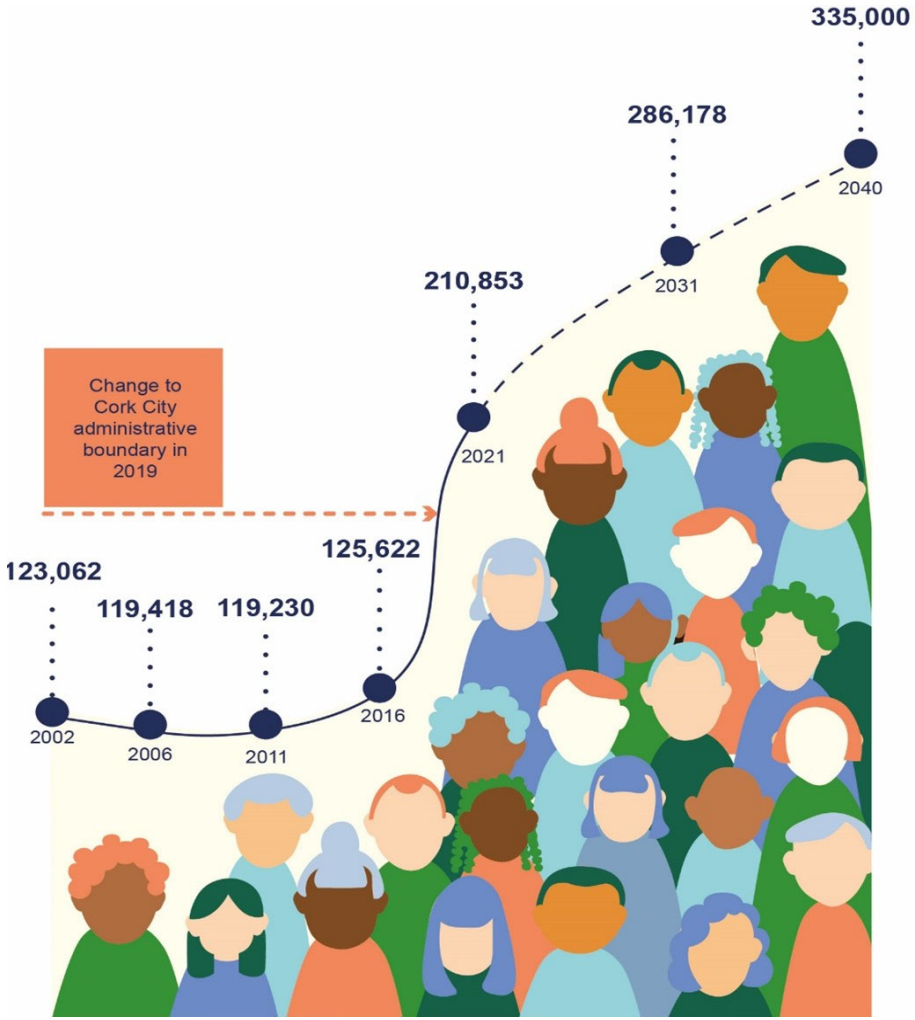
Current Population and Projected Growth

4.7 Cork City has a population of 210,853 people and is the second largest urban population in Ireland. The population target for Cork City up to 2031 is 286,178 people which is an increase of 36% from the 2016 Census. The city is projected to grow by 2040, resulting in a total population of at least 335,000 people (see **Figure 4.4**). Measures are required to ensure this growth is accommodated in a balanced and sustainable way.

4.8 Between 2011 and 2016, different neighbourhoods within the city experienced very different rates of population change. Significant growth occurred within the City Centre and some surrounding neighbourhoods such as Blackpool, Turners Cross and Bishopstown. In contrast, the city suburbs experienced minimum or negative population change. There were also small levels of population growth in Mahon, Douglas and Frankfield, whereas The Glen, Ballinlough and Farranferris experienced a population decline. The city's Urban Towns largely experienced population growth; with Ballincollig, Tower and Blarney accommodating increases in population. In contrast, Glanmire experienced a slight population decline. The Hinterland generally experienced increased growth, with the northwest area seeing higher than average levels of population change. This was largely the result of small scale and incremental residential developments.

4.9 Cork City's population rose by 5% between 2011 and 2016. This is higher than both the Southern Regional area (3% population increase) and the national trend (4% population increase) over the same period.

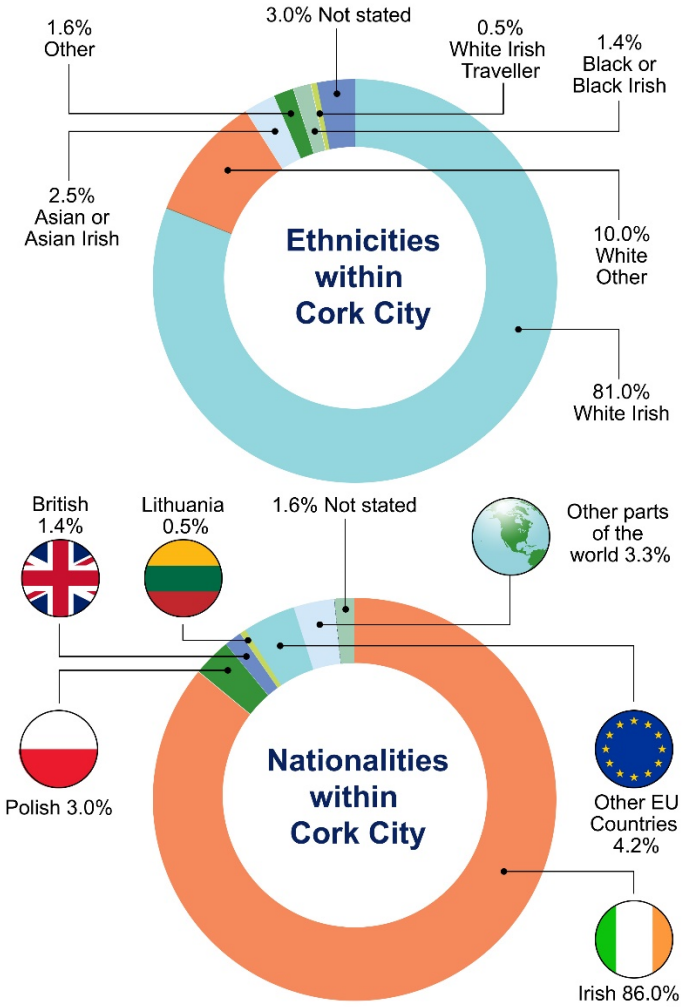
Figure 4.4: Population growth in Cork City



Demographics

4.10 Data from the 2016 Census indicates that 81% of Cork's residents identify as White Irish (166,353 people) (reduced from 87% in the 2006 Census)[48]. Additionally, 10% identify as White Other, 2.5% as Asian or Asian Irish, 1.6% as Other, 1.4% as Black or Black Irish, and 0.5% as White Irish Traveller. 3% did not state their ethnic or cultural background. Non-Irish nationals, as a proportion of the population of Cork City, increased between 2006 and 2016, from 10% of the population to 14% of the city's population.

4.11 According to the 2016 Census, 86% of the population of Cork City identified as Irish, 3.0% as Polish, 1.4% as British, 0.5% as Lithuanian, 4.2% were from other EU countries, 3.3% were from other parts of the world, and 1.3% did not state their nationality. Consideration of demographic data is important when considering the drivers of GBI as different groups of people often require, or prefer, different types of open spaces and green infrastructure.



[48] Census 2016 Sapmap Area: Settlements Cork City and Suburbs. Available at: http://census.cso.ie/sapmap2016/Results.aspx?Geog_Type=ST2016&Geog_Code=2640ADAE-4EBB-460C-BBD4-D666DEBB3C8A

4.12 The average age of Cork City's residents recorded in the 2016 census was 39.1, older than the average age of 37.4 and 37.1 for Ireland and Cork County respectively (see **Figure 4.5**). There is not an even breakdown of ages across the city, as highlighted in **Figure 4.5**. In particular there are more children in the Urban Towns than in other parts of the city, particularly in Glanmire where nearly a third of the population are under 18. In the City Centre only 10% of the population are under 18. Young adults (18-24 year olds) are most concentrated in the City Centre and in the South West Suburbs, which is where the university is located. The South West Suburbs also have a higher proportion over over-65s compared to other parts of the city.

Deprivation

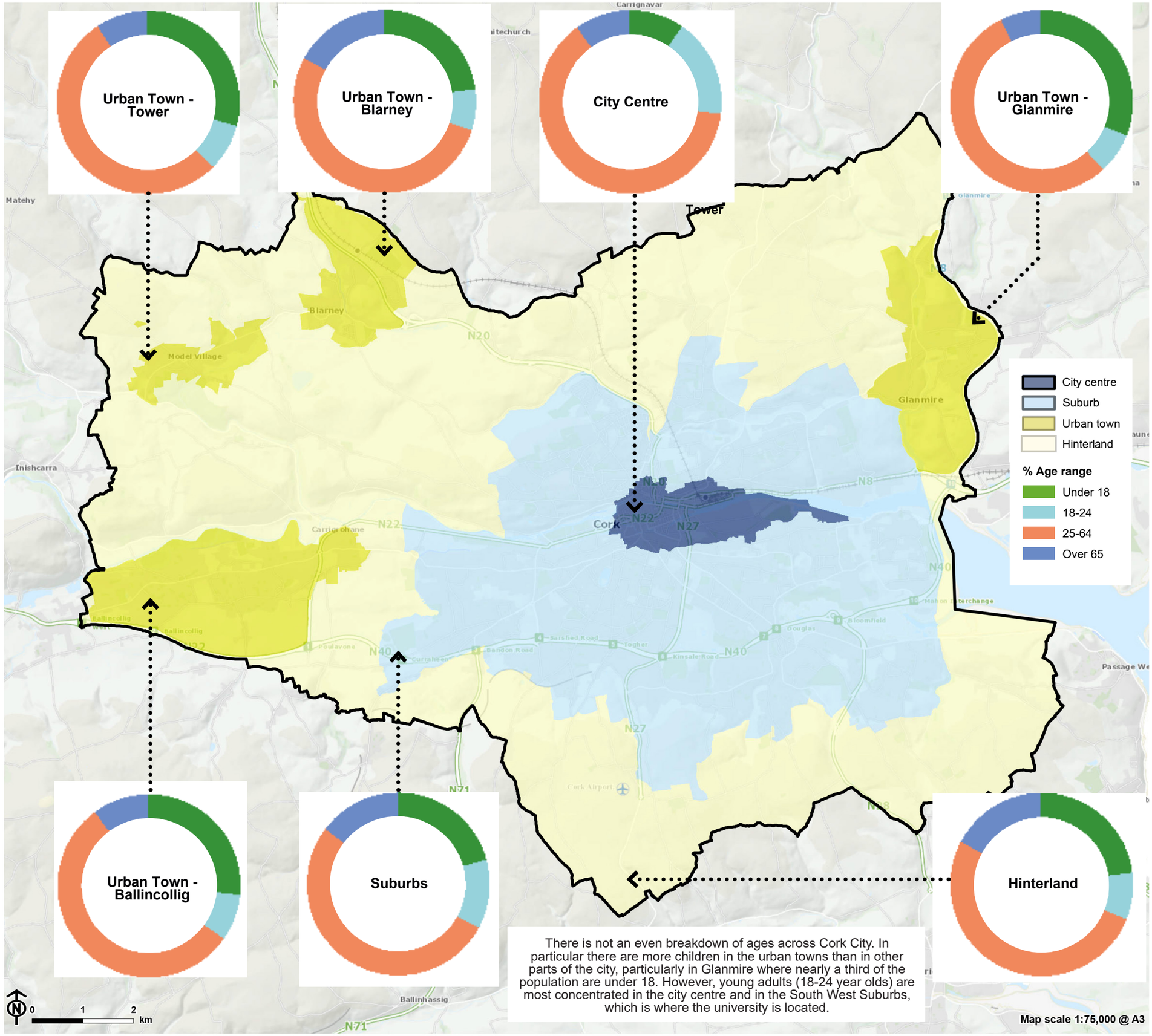
4.13 The Council has identified five areas within the city suburbs as RAPID (Revitalising Areas through Planning Investment and Development) areas, as defined below:

- Fairhill / Gurranabraher / Farranree;
- Blackpool / The Glen / Mayfield;
- Knocknaheeny / Holyhill / Churchill;
- Mahon; and
- Togher / Balleyphehane.

4.14 The Pobal HP Deprivation Index provides a method of measuring the relative affluence or disadvantage of local communities within particular geographical areas. The index score ranges from -40 (most disadvantaged) to 40+ (most affluent).

4.15 Cork City has a relative index score rating of 3.01, notably higher than the national average of 0.56 and comparable to the wider Cork County score of 2.95[49]. Whilst the majority of communities within Cork City are classified as marginally above the average rate of deprivation, there is a significant variation. The five RAPID Areas are classified as very disadvantaged, including Fairhill, Knocknaheeny, Farrangerris, Mayfield and Gurranebraher (see **Figure 4.6).** Pockets within the City Suburbs, Ballincollig, Glanmire, Tower and Blarney are also classified as being marginally below average. Particular focus should be on how the GBI network can improve access to green space for those communities.

[49] Cork City Socio-Economic Summary Profile. Available at: https://www.corkcity.ie/en/media-folder/cork-city-development-plan/socio-economic-summary-profile.pdf



There is not an even breakdown of ages across Cork City. In particular there are more children in the urban towns than in other parts of the city, particularly in Glanmire where nearly a third of the population are under 18. However, young adults (18-24 year olds) are most concentrated in the city centre and in the South West Suburbs, which is where the university is located.

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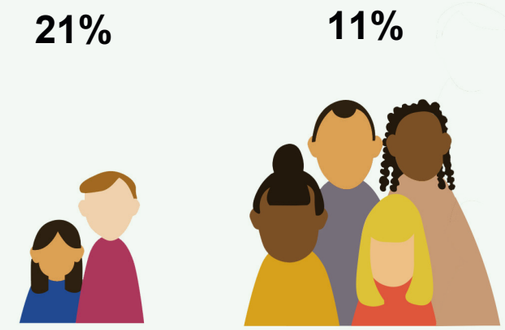
Source: CCC, OSI

Cork City - % breakdown of population



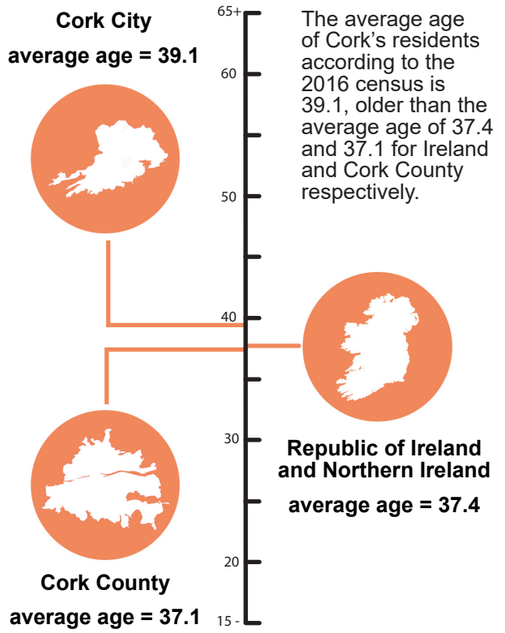
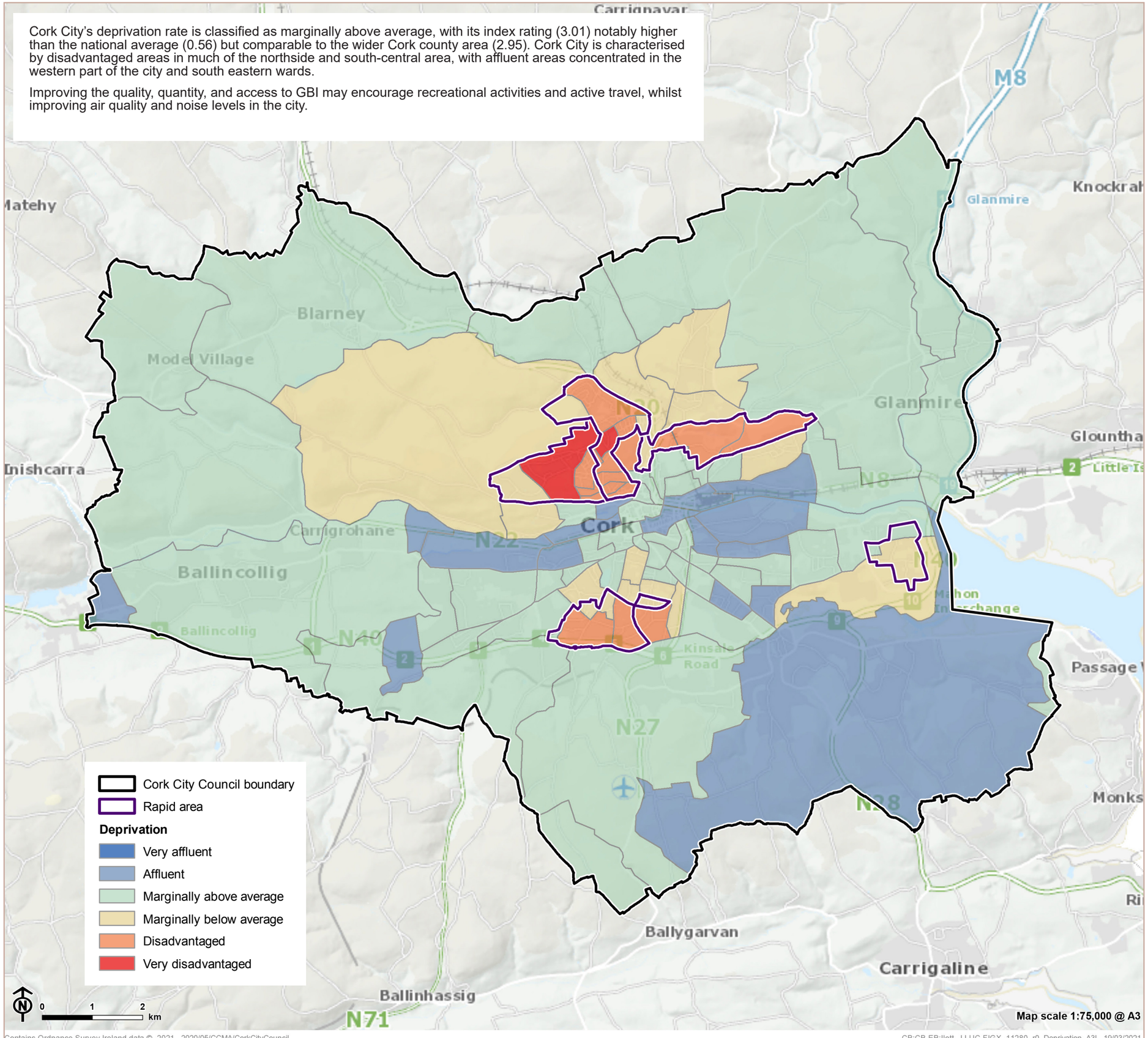


Figure 4.5 Demography - Age

Cork City's deprivation rate is classified as marginally above average, with its index rating (3.01) notably higher than the national average (0.56) but comparable to the wider Cork county area (2.95). Cork City is characterised by disadvantaged areas in much of the northside and south-central area, with affluent areas concentrated in the western part of the city and south eastern wards.

Improving the quality, quantity, and access to GBI may encourage recreational activities and active travel, whilst improving air quality and noise levels in the city.



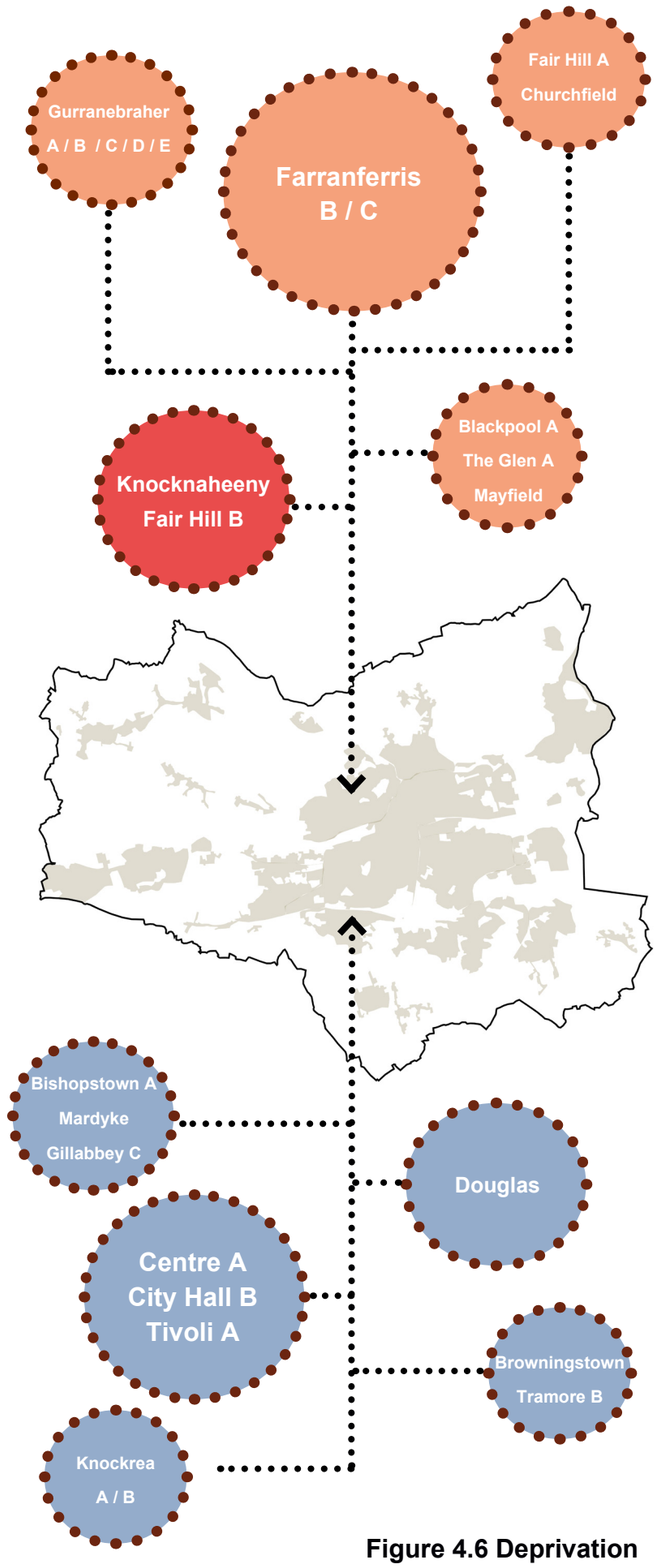


Figure 4.6 Deprivation

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Source: OSI, CCC, trutzhaase.eu

Population Density

4.16 With a population of over 24,000 persons, the City Centre accounts for 12% of the city's total population (24,399 people). Its density is nearly four times greater than that of the total city – population density in Cork City is 1,073 persons /km^2 whereas the population density in the City Centre is 4,403 persons per/km^2. As illustrated in **Figure 4.7**, population within the City Centre is particularly concentrated within the Heart of the City, Shandon / Fairhill, and Main Gate / South Gate neighbourhoods. In some parts of these areas the average population density is more than 5,755 persons/km^2, whereas in the west in the South Docklands and North Docklands neighbourhoods the population density is less than 500 persons/km^2. It is however important to factor in that the City Docks (South Docklands and North Docklands) are a focal point for significant future regeneration within the city up to 2040.

4.17 With over two thirds of the total population, the city suburbs is home to the largest population base within the city (140,783 people). The population density in the suburbs is fairly variable but generally higher than the Cork City average. The North West Suburb has a particularly high population, nearly 250 persons/km^2, and the Blackpool neighbourhood has a population density of over 560 persons/km^2.

4.18 Comprised of Ballincollig (18,159 persons), Glanmire (9,903 persons), Tower (3,274 persons) and Blarney (2,550 persons), the Urban Towns are home to 16% of the total population (33,886 people). The population densities for these areas are between 200 and 250 person/km^2, less than the Cork City average. However, as **Figure 4.7** highlights, there are key centres within each town with much higher population densities.

4.19 The city hinterland has a population of 11,546 persons, accounting for only 6% of the overall population living in the city. The area has the largest land mass but the lowest population density and is largely rural in character. The population density in this region is just over 100 persons / km^2.

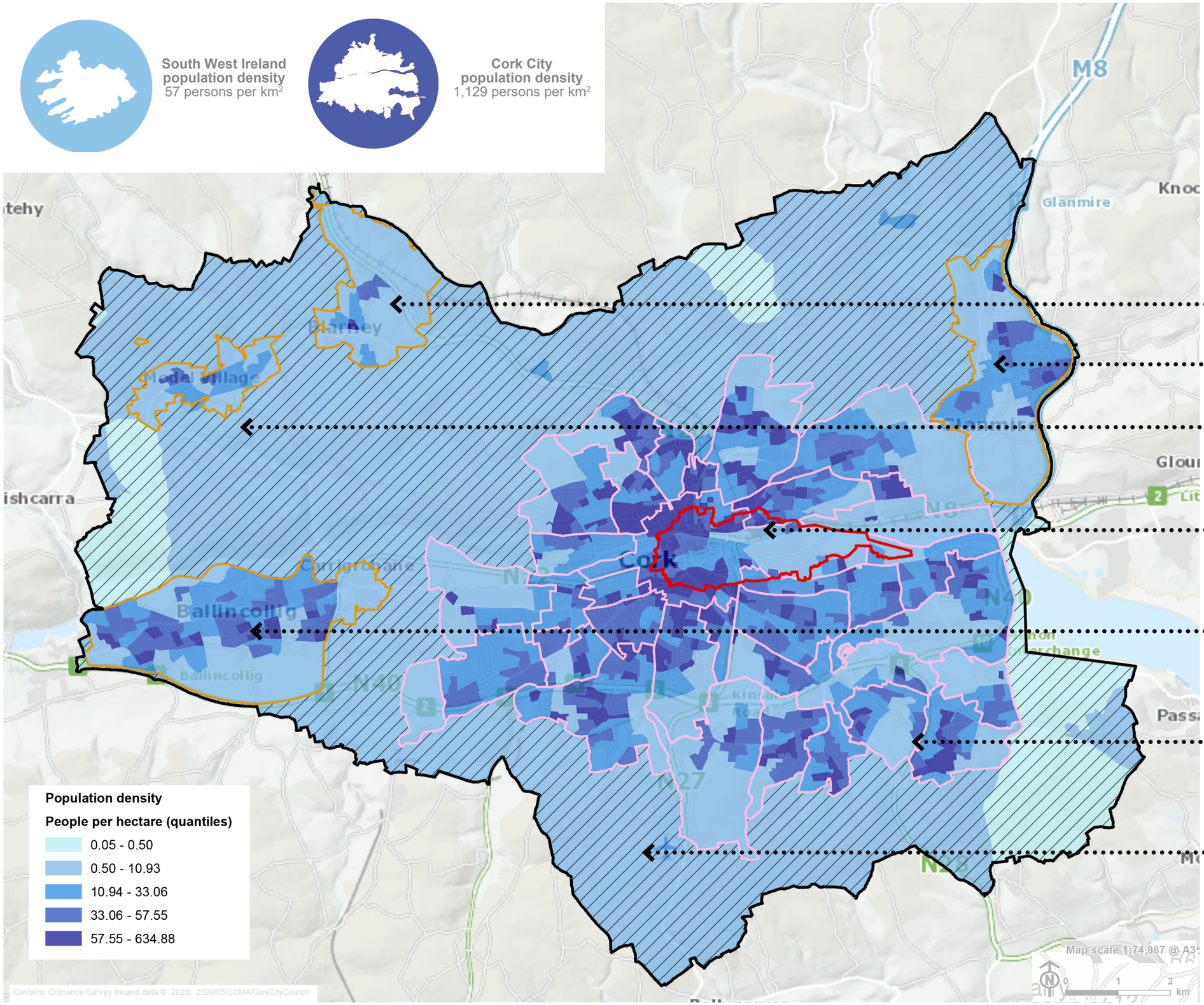
Summary: Strong and Diverse Communities

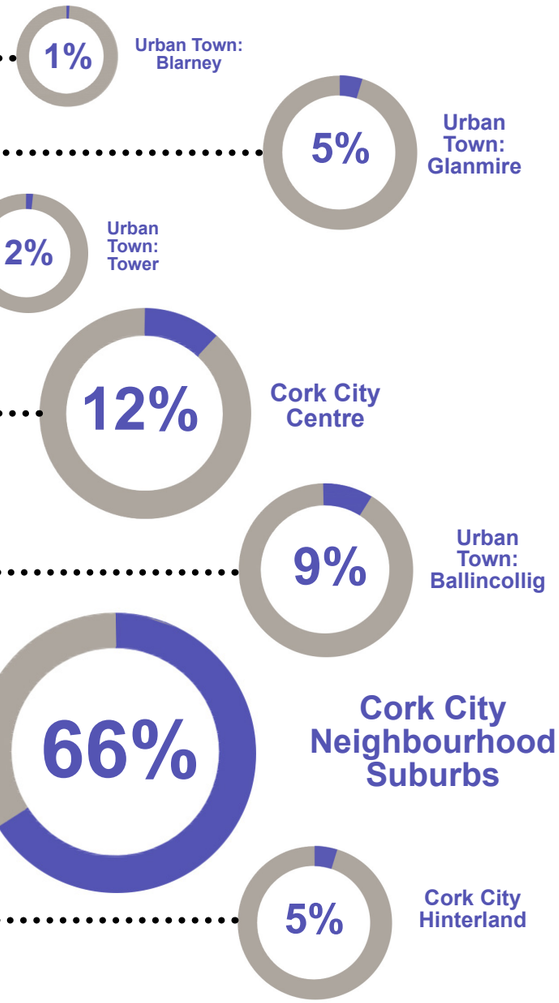
- Cork City has a growing population and changing demographic.
- GBI in the city will need to resilient to increased use and cater for the needs of a wide range of users.
- Improvements to the quality and quantity of GBI networks and infrastructure need to reflect the diversity of the socio-economic profile of the city.

South West Ireland population density
57 persons per km²

Cork City population density
1,129 persons per km²

With a population of over 24,000 persons, the city centre accounts for 12% of the city's total population. Its density is nearly four times greater than that of the total city – population density in Cork City is 1,073 persons per/km2 while the population density in the city centre is 4,403 persons per/km2. With approximately two thirds of the total population, the city suburbs is home to the largest population base within the city. There are four urban towns in Cork City, each with a population of 2,000+ persons: Ballincollig (18,159 persons), Glanmire (9,903 persons), Tower (3,274 persons) and Blarney (2,550 persons). The city hinterland has a population of 11,546 persons, accounting for only 5% of the overall population living in the city. The area has the largest land mass but the lowest population density and is largely rural in character.





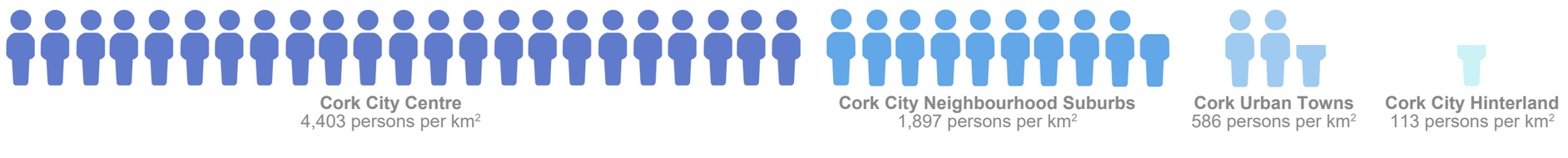


Figure 4.7 Population Density

Growth, housing and infrastructure

The National Planning Framework (NPF), the Regional Spatial and Economic Strategy (RSES) and the Cork Metropolitan Area Strategic Plan (MASP) are aligned in setting out unprecedented and ambitious population, housing and job growth targets for Cork City.

For growth to be sustainable, GBI must be considered alongside other forms of infrastructure and built development. In the context of a growing population, existing assets must be protected and enhanced so they are resilient to additional pressures and provide resource for a wide range of users. GBI assets should therefore seek to promote increased biodiversity as well as climate action and adaption measures.

Well-planned GBI can help to create cohesive neighbourhoods, which is a fundamental requirement to accompany the city's projected population and housing growth.

High quality landscape schemes within the boundaries of development sites can contribute towards the GI network and is essential to ensure future delivery of GBI is sustainable.

Housing and Employment Growth

4.20 Table 4.1 outlines the population, housing and economic growth targets for Cork City to 2031 and 2040[50].

4.21 The NPF target for Cork City to grow by an additional 125,000 people by 2040 will result in an increased housing demand (6,250 people on average) and requirement for the creation of over 3,750 jobs per annum over the next 20 years. The Southern RSES growth targets set out for Cork City up to 2031 are seeking to increase the existing population and housing base by over one third and the existing jobs base by over 50%. The Southern RSES housing unit targets would require an average annual delivery of over 2,000 new units to be sustained during this 15-year period to 2031.

4.22 Compact Growth is the first National Strategic Outcome (NSO) of the NPF, and it requires at least 50% of growth in Cork City to be located within or close to the existing 'built'-up area'. This will allow better use of underutilised land and buildings, with higher housing and employment densities. Higher densities and compact development will need to be accompanied by GBI. The NPF identifies a number of key growth enablers for Cork City which include:

- Delivering large scale regeneration projects for provision of new employment, housing and supporting infrastructure in Cork Docklands;

[50] The figures are taken from the Cork City Development Plan Issues and Options Paper (derived from the 2016 Census, NPF 2040 and the Southern RSES 2031), and will be updated in the preparation of the final City Development Plan.

- Identifying opportunities to intensify housing development in inner city and suburban areas, supported by green infrastructure and public realm, with good transport links.

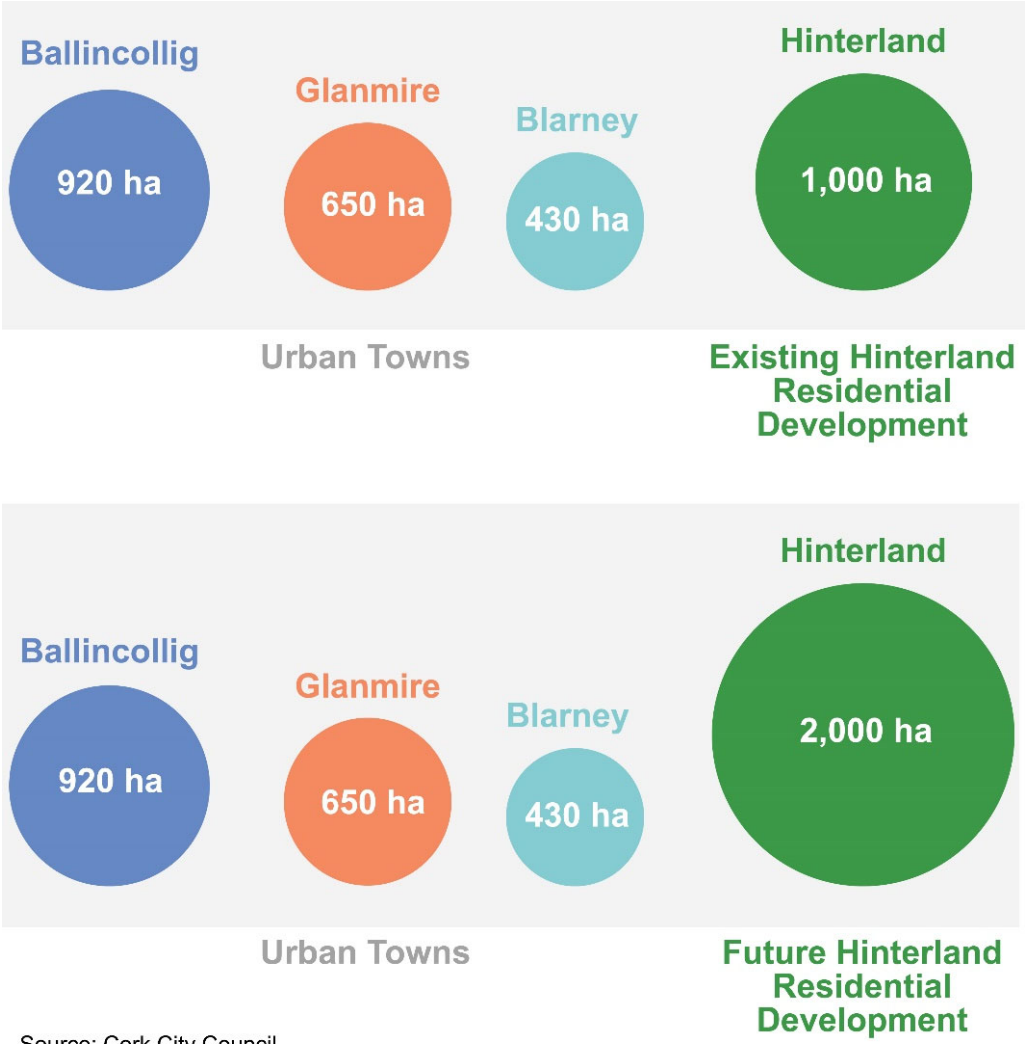
Table 4.1: Growth Targets for Cork City to 2031 and 2040

		Population	Housing Units[51]	Jobs
Cork City's existing Population/Housing/Jobs (2016 Census)		210,853	86,974[52]	92,274
Growth Targets	**National (2040)**	+1,00,000	+500,000	+500,000
	Southern Region (2031)	+343,500	+143,125	+225,000
	Cork Metro Area (2031)	+104,657	+43,607	+65,000
	Cork City (2031)	+75,325	+31,250	+47,100[53]

[51] Estimate figure based on an average household size for Cork City of 2.4 persons
[52] Of this total 78,613 units were found to be occupied and 8,361 units were found to be vacant
[53] This is a minimum jobs target for Cork City, calculated using the national population to jobs ration of 1.6 persons, as set out in the NPF. As a city, Cork City will have a higher concentration of employment than the national average.

4.23 The Council is currently undertaking a City Capacity Study which has identified that the four Urban Towns of Ballincollig, Glanmire, Blarney and Tower have the largest total area of underutilised and undeveloped land and therefore significant potential to deliver the required infrastructure to meet the needs of the growing population. The Hinterland also offers the opportunity to accommodate future housing provision, acting as a sub-city area. In addition, regeneration of strategically important brownfield sites in the City Centre, including City Docks, and brownfield lands in the City Suburbs, including Tivoli Docks, will be key in meeting the housing and employment growth targets.

4.24 Cork is a key driver of the national and regional economy and is estimated to contribute 19% to the GDP of Ireland. The Financial Times ranked Cork City 2nd small city in Europe for economic potential. There is a large pharmaceutical presence with companies including Pfizer, GlaxoSmithKline and Johnson & Johnson. Likewise, many companies within the technology and services sectors are based within Cork, including notable companies such as Apple, Amazon, EMC, IBM, McAfee Ireland Limited, and Siemens. The majority of jobs within Cork City are located within the heart of the City Centre (13.4%) and Mahon (8.3%). 'Placemaking' i.e. the provision of high-quality public services, community and social infrastructure, sustainable and active travel facilities, and green spaces is increasingly seen as critical to successful economic development.



Source: Cork City Council

COVID-19

4.25 The COVID-19 pandemic has had major economic and social impacts on Cork City. It has been estimated that 47.2% of commercial units within the Southern Region were operating in the worst affected sectors; all of which are likely to be severely impacted by the pandemic. Cork City, specifically, has had 44% of commercial units in the worst affected sectors, which accounted for 8,144 operating units, and it was the second least affected city, after Dublin with 39.4%[54]. Moreover, the pandemic has also brought significant changes to the way business operations are carried out with 23.2% of Irish businesses planning to make remote working permanent in some capacity[55]. This may have a significant impact on the future needs of office spaces, housing provision, public transport and it highlights the importance of green and open spaces to be equally distributed across the city.

4.26 The COVID-19 pandemic has also impacted unemployment levels in Cork City. In September 2020, the unemployment rate stood at 14.7% which is much higher that the pre-pandemic level. Household spending has also declined by 22% comparing to the previous year[56].

4.27 A survey undertaken by Cork Chamber of Commerce has highlighted that business confidence decreased from 73% in Q2 down to 68% in Q3 2020. Moreover, 51% of businesses experienced a decreased turnover. In terms of employment, 36% of businesses indicated that they reduced the number of employees in Q3 2020, with 22% of employers forecasting further impacts on staff retention in the future[57]. GBI has a central role to play in Cork City's recovery from the pandemic. The function of GBI such as parks and open spaces may continue to be influenced by the effects of the pandemic.

Summary – Growth, Housing and Infrastructure

- Cork city is forecasted to significantly grow its population, and as a result of it there will be a growing demand for housing and employment opportunities.
- Cork city is important for Irish economy as it contributes almost 20% to the national GDP.
- Due to the COVID-19 pandemic, businesses are likely to embrace remote working in a more permanent capacity, with significant impacts also expected in relation to office space, housing, public transport and green and open space.

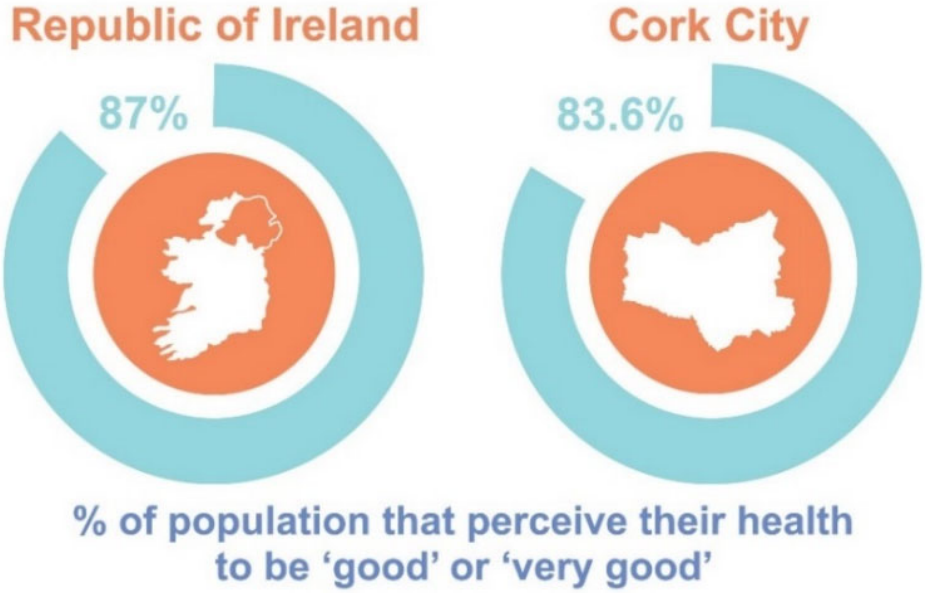
[54] The Three Regional Assemblies (2020) Covid-19 Regional Economic Analysis. [online] Available at: https://www.southernassembly.ie/uploads/general-files/CV19-Regional-Economic-Analysis.pdf
[55] CSO (2020) Covid-19 Information Hub: Business Impact of Covid-19 Survey. [online] Available at: https://www.cso.ie/en/releasesandpublications/ep/p-covid19/covid-19informationhub/economy/businessimpactofcovid-19survey/
[56] Economic and social Research Institute (2020) Covid-19 having a significant but disparate impact on the Irish economy. [online] Available at: https://www.esri.ie/news/covid-19-having-a-significant-but-disparate-impact-on-the-irish-economy
[57] Cork Chamber (2020) Economic Trends. [online] Available at: https://www.corkchamber.ie/economic-trends/

Health and wellbeing

Physical Health

4.28 Overall, 87% of the Ireland's population perceive their health to be good or very good[58] and only 3% perceive it to be bad or very bad (2017)[59]. Cork City is below the national average with its population perceiving their health to be good or very good (83.6%). Cork City residents with very bad health account for 0.4% which is just above the national average of 0.3%[60]. **Figure 4.8** illustrates the percentage breakdown of the total population of Cork City who perceive their general health to be 'very good'. Self-reported health scores indicate that Southern Regional Assembly (SRA) area is healthier (89.73%) than Northern and Western Regional Assembly (NWRA) area (89.31%), but it is less healthy and wealthy than Eastern and Midlands Regional Assembly (EMRA) area (90.23%).

4.29 Those living in more deprived areas are less likely to perceive their health to be good. 76% of those living in deprived areas perceive their health as good, as opposed to 90% of those who live in more affluent neighbourhoods. Within Cork City, the highest proportion of the population with fair, bad or very bad general health live within areas such as Fair Hill, City Hall and Gurranebraher[61].



4.30 Access to and use of green spaces is associated with higher rates of physical activity, these in turn are shown to be linked with a range of health outcomes, including improved cardiovascular health, mental health and neurocognitive development[62]. It is also suggested that access to green spaces may lead to a reduced risk of being overweight,

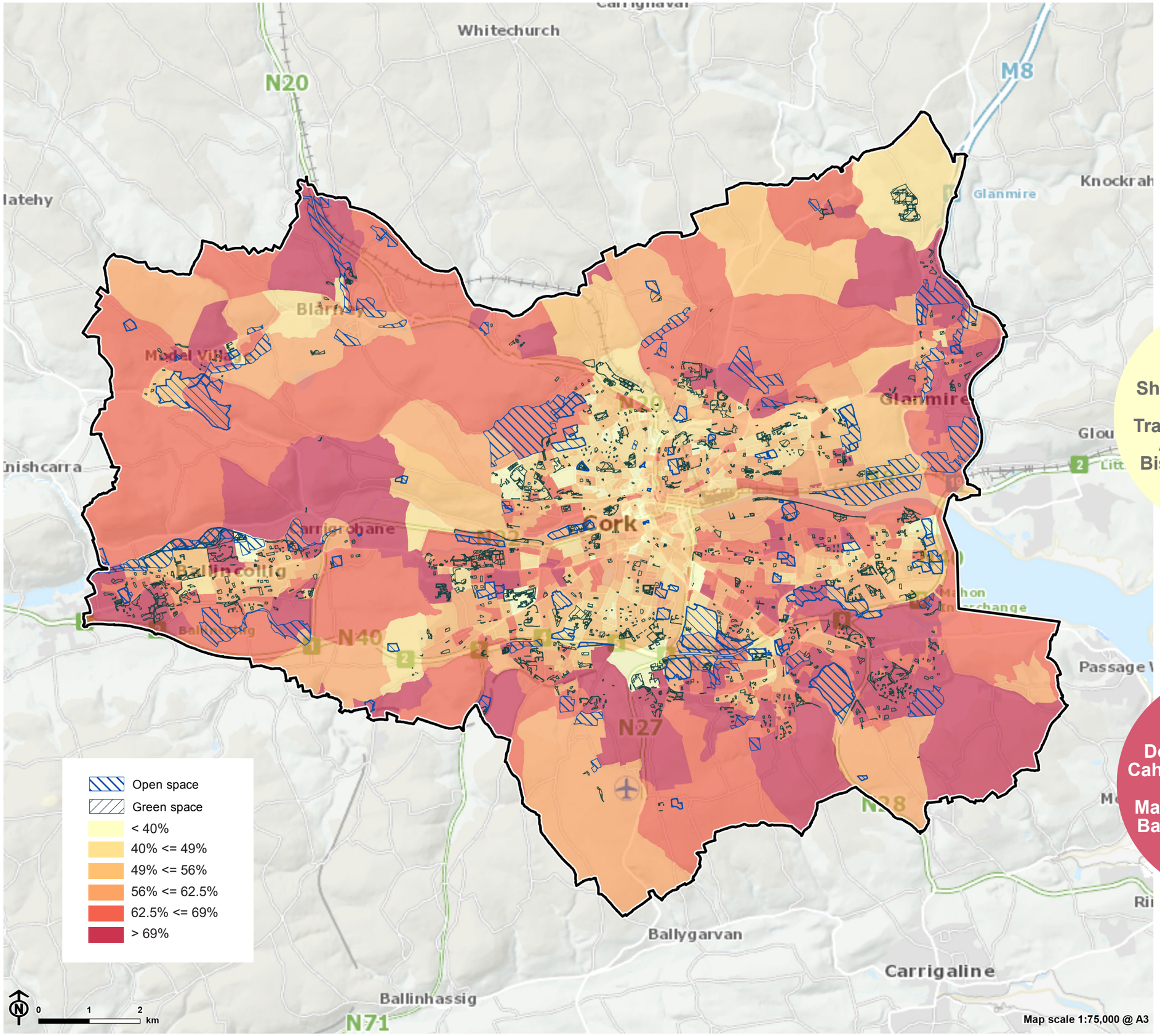
[58] Cork City Council (2019) Cork City Profile [online] Available at: https://corkhealthycities.com/wp-content/uploads/2019/01/ED-Profiles-Ballinlough-to-Mahon-C.pdf
[59] Cork City Council (2018) Cork City Profile 2018 [online] Available at: https://corkhealthycities.com/wp-content/uploads/2019/01/Chapter-10-Health.pdf
[60] Ibid.
[61] Cork City Council (2018) Cork City Profile 2018 [online] Available at: https://corkhealthycities.com/wp-content/uploads/2019/01/Chapter-10-Health.pdf
[62] Environmental Protection Agency (2021) Our Environment, Our Health, Our Wellbeing: Access to Blue/Green Spaces in Ireland [online] Available at: http://www.epa.ie/pubs/reports/research/health/researchsheer.html

reduced rates of obesity and type 2 diabetes[63]. Open space and GBI therefore plays a vital role in improving and maintaining the health and wellbeing of local communities. A study by the Irish EPA[64] investigated the health benefits arising from biodiversity and GBI.

Mental Health

4.31 Men tend to enjoy better general mental health than women (69.8% and 65.9% respectively). One in two people will be affected by mental health or neurological problems at some point of their lives. Approximately 7% of Ireland's population have suffered from depression (in the last 12 months of the survey). Some of the extreme results of depression and other mental issues is suicidal behaviour. In Cork City, the rate of suicide in 2015 was 11.7 per 100,000 people, which is 27% higher than Ireland's average (9.2 per 100,000). The male rate was 52% higher (14.6 per 100,000) and female rate was below the average (3.8 per 100,000)[65]. There is an overall decline in this trend from 18.6 per 100,000 in 2010 to 11.7 per 100,000 in 2015[66].

[63] Ibid.
[64] EPA (2016) Health Benefits from Biodiversity and Green Infrastructure [online] Available at: https://www.epa.ie/pubs/reports/research/health/EPA%20Research%20Report%20195_webFinal.pdf
[65] Cork City Council (2018) Cork City Profile 2018 [online] Available at: https://corkhealthycities.com/wp-content/uploads/2019/01/Chapter-10-Health.pdf
[66] Ibid



< 40%

Shanakiel, Glasheen A, Lehenagh, Tramore A, Shandon A, Blackpool A, Bishopstown C and Knocknaheeny

40% <= 49%

Rathcooney, St. Mary's, Blarney, Carrigrohane Beg, Ballincollig, Inishkenny and Douglas

> 69%

Douglas, Mahon B, Caherlag, Rathcooney, Riverstown, St. Mary's, Whitechurch, Ballincollig, Blarney, Inishkenny and Lehanagh

Figure 4.8:
% Total Population who Perceive their General Health to be Very Good plus Distribution of Green Space / Open Space

CB:CB EB:llott_J LUC FIGX_11280_r0_GeneralHealth_A3L 19/03/2021
Source: OSI, CCC, trutzhaase.eu

Social Impact of COVID-19 Survey[67]

The Central Statistics Office carried out three iterations of this survey focusing on the social impacts of COVID-19. Among others it was evidenced that:

- Almost one third (32.4%) of respondents felt downhearted or depressed 'at least some of the time', compared to almost one in ten (13.4%) in 2018.
- More than one in five (22.2%) said their alcohol consumption had increased, and 17.2% said their consumption had decreased. Respondents with low wellbeing scores had higher increase in alcohol consumption.
- Over 37% stated that their frequency of exercising had increased, and 33.2% said that it had decreased. More than half of respondents aged 70+ reported that their frequency had decreased.
- Over 44% of respondents reported that time spent watching television had increased and 59.1% increased time spend on the internet[68].
- Two in five respondents (40.9%) reported that they have gained weight since the implementation of COVID-19 restrictions. Women were more likely than men to put on weight (46.8% and 34.8% respectively). People with BMI classified as obese were the most likely to gain weight (55.5%) followed by respondents classified as overweight (44.9%). Only a quarter of respondents with a healthy BMI (24.8%) increased weight. There was a higher prevalence of gaining weight amongst people who were newly labour inactive (49%) as opposed to working people (37.6%)[69].
- The percentage of respondents that felt downhearted or depressed 'all or most of the time' doubled between April and November 2020 (from 5.5% to 11.5%). Similarly, the percentage of respondents that felt lonely increased from 6.8% in April to 13.7% in November, where younger respondents (aged between 18 and 34) were most likely to feel lonely. Almost one third (28.7%) reported 'more quality time with the people I live' as an aspect that has changed for the better[70].

[67] Central Statistics Office (2020) Social Impact of Covid-19 Survey. https://www.cso.ie/en/statistics/socialconditions/socialimpactofcovid-19survey/
[68] Central Statistics Office (2020) Social Impact of Covid-19 Survey April 2020 [online] Available at: https://www.cso.ie/en/releasesandpublications/ep/p-sic19/socialimpactofcovid-19surveyapril2020/introductionandsummaryofresults/
[69] Central Statistics Office (2020) Social Impact of Covid-19 Survey June 2020: A Snapshot of Experiences and Expectations in a Pandemic [online] Available at: https://www.cso.ie/en/releasesandpublications/ep/p-sic19eep/socialimpactofcovid-19surveyjune2020asnapshotofexperiencesandexpectationsinapandemic/introductionandsummaryofresults/
[70] Central Statistics Office (2020) Social Impact of Covid-19 Survey November 2020: Wellbeing and Lifestyle under Level 5 Restrictions [online] Available at: https://www.cso.ie/en/releasesandpublications/ep/p-sic19wbl5/socialimpactofcovid-19surveynovember2020wellbeingandlifestyleunderlevel5restrictions/introductionandsummaryofresults/

4.32 There is growing evidence indicating that green and blue spaces are associated with positive mental health effects, especially in older adults. Moreover, exposure to green spaces can also increase feelings of relaxation and restoration[71].

Disability

4.33 Over 32,000 residents within Cork City identify themselves as having a disability (see **Figure 4.9**). This equates to 15.5% of the total population of the city, which is higher than the national and southern region averages of 13.5% and 14.3%, respectively. The average for Cork city is also higher than the average for County Cork (12.9%).

4.34 Rates of disability vary throughout the City. Whilst areas within the City Centre generally have higher rates of disability than the city average (15.5%), the Heart of the City and South City Docks areas have lower rates at 12.9% and 15.0%, respectively. Likewise, the rates in the majority of city suburbs are higher than average – 18.2% in the North East, 20.8% in the North West, and 16.9% in the South West. The South East suburb is the exception, with a rate of 13.2%.

4.35 Urban Towns have lower rates of disability than the city average (15.5%). Glanmire and Tower have the lowest rates, at 10% and 10.7%, respectively, whilst Ballincollig and Blarney are slightly higher at 12.1% and 13.6%. Likewise, the Hinterland also has lower rates of disability, at 14.0%.

[71] Environmental Protection Agency (2021) Our Environment, Our Health, Our Wellbeing: Access to Blue/Green Spaces in Ireland [online] Available at: http://www.epa.ie/pubs/reports/research/health/researchsheer.html

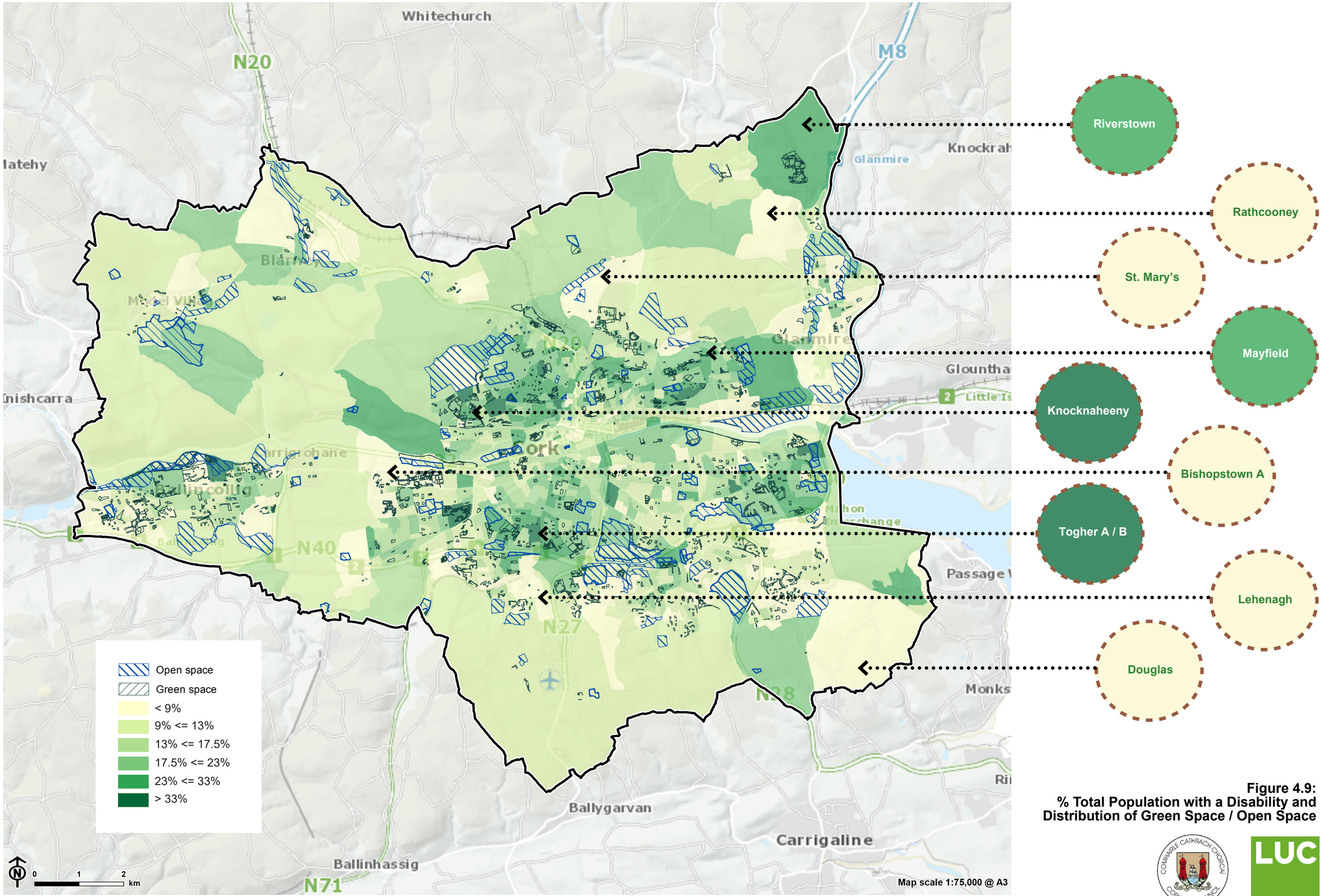


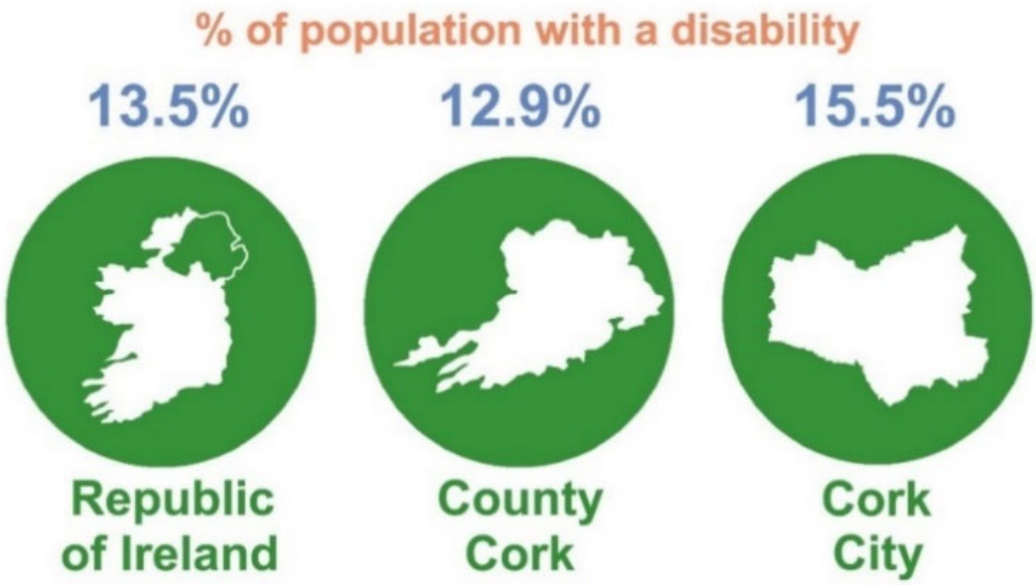
Figure 4.9:
% Total Population with a Disability and Distribution of Green Space / Open Space

CB:CB EB:llott_J LUC FIGX_11280_r0_Disability_A3L 19/03/2021
Source: OSI, CCC, trutzhaase.eu

4.36 The study by the Disability Federation of Ireland[72] provides disability statistics within Cork City, pre-boundary change, based on the 2016 Census data. The results highlight that 35.5% of the population with a disability were over 65 years old, whilst 29.3% were aged 45-64, 19.5% were aged 25-44, 9.8% were 15-24, and 5.9% under the age of 14. Of those that identified as having a disability:

- 45.7% had difficulties with basic physical activities;
- 43.4% had difficulty with pain, breathing, or other chronic illness;
- 21.8% had mental health troubles;
- 16% had deafness or hearing impairment;
- 10.1% had intellectual disability; and,
- 9.3% had blindness or vision impairment.

4.37 The study[73] also found that 37% of people with a disability did not have access to a car or van. This is significantly higher than the rate for the general population (26%).



[72] DFI (2018) Disability Profile: Cork City [online] Available at: https://www.disability-federation.ie/assets/files/pdf/dfi_august_infographic_cork_city.pdf

[73] Ibid.

Air Quality

4.38 Air pollution may have a detrimental impact on human health: in 2016 it was estimated that 1,180 people in Ireland died prematurely due to poor air quality[74]. Although not directly attributable to air quality, 11% of deaths in Cork (City and County) were related to diseases of the respiratory system in 2016[75].

4.39 Managed by the Irish EPA, there are four 'reference level' air quality monitoring stations in Cork: at South Link Road, Tramore Valley; Munster Technological University (MTU), University College Cork (UCC), Distillery Fields, North Mall Campus; and Heatherton Park. The Cork City Air Quality Dashboard has also been recently developed by the Council in association with UCC to indicate real-time air quality information for the city using a network of sensors. Some of the threats to Cork's air quality are highlighted below[76].

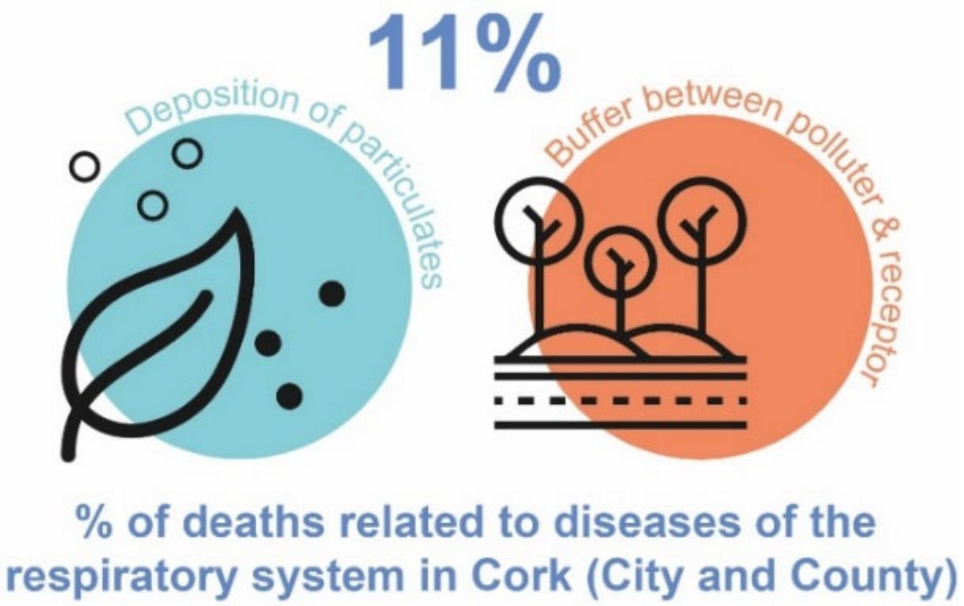
- Monitoring in 2016 highlighted that Cork City was one of the two monitored locations in Ireland where sulphur dioxide (SO_2) levels were above the WHO recommended levels. SO_2 is predominantly produced from burning coal and oil. High levels of SO_2 can cause temporary difficulty in breathing and long-term exposure can heighten existing cardiovascular diseases and respiratory illnesses.
- PM(Particulate Matter)10 and PM2.5 monitoring, which measures particles such as dust, emissions, plant spores and pollens, found in 2017 that annual levels in Cork City did not exceed EU and WHO guidelines levels. However, the daily level did exceed the WHO air quality guideline value. Inhalation of particulate pollution increases problems associated with cardiopulmonary, respiratory disorders, circulatory disease and mortality.
- In Cork City in 2016 the mean concentration of Polycyclic aromatic hydrocarbons (PAHs) exceeded the European Environment Agency guidelines. PAHs are emitted from burning solid fuels and may be produced by incomplete combustion of fuel in vehicles, bonfires and cigarette smoke.

4.40 GBI can affect both the deposition (removal) and dispersion (distribution) of air pollutants, thereby reducing public exposure. When utilising GBI to improve air quality, it is important to use interventions which are suitable to the context and space. For instance, narrow urban canyons where the pollution source is at street level should not be lined with dense avenues of trees, as this can trap pollutants at ground level. The use of GBI to promote active travel also offers an alternative to car use which forms a significant source of particulate pollution.

[74] Cork City Council (2021) *Cork City Council Air Quality Strategy 2021 – 2026*. Draft
[75] Cork Healthy Cities (2018) *10 Health.* In *Cork City Profile 2018*. Available: https://corkhealthycities.com/wp-content/uploads/2019/01/Chapter-10-Health.pdf
[76] Cork Healthy Cities (2018) *7.4 The Environment, Air Quality and Water*. In *Cork City Profile 2018.* Available: https://corkhealthycities.com/wp-content/uploads/2019/01/Chapter-10-Health.pdf

4.41 In 2019, Cork performed relatively well in terms of PM_{10} concentrations. Data from the Irish EPA found that the annual mean concentrations of PM_{10} at three of Cork City's air monitoring stations were significantly below the value for the protection of human health (40 µg/m^3), as shown in **Figure 4.10**. South Link Road achieved 18 µg/m^3, whilst Bishopstown CIT and Heatherton Park averaged 15 µg/m^3 and 12 µg/m^3, respectively. However, despite the relatively low averages each monitoring station recorded daily maximum concentrations substantially higher than 40 µg/m^3. The daily max was 58 µg/m^3 at South Link Road, 51 µg/m^3 at Heatherton Park, and 15 µg/m^3 at Bishopstown CIT. This data suggests that during specific times of day, air pollution levels at these locations were high enough to have potentially adverse effects on human health.

4.42 The COVID-19 pandemic resulted in an unprecedented shutdown of large parts of the global economy and substantial shift in human behaviour. A large proportion of the population switched to remote working with increased engagement in active travel and a reduction in long distance travel. Within Cork City, this resulted in a significant effect on the environment, with a dramatic reduction in air pollution compared to pre-COVID-19 levels.



4.43 Figure 4.11 compares air quality levels at University College Cork between January 2020 (pre-COVID) to January 2021**.** The figure highlights that at 8pm on Tuesday 19th January 2021, $PM_{2.5}$ levels were 2.25/ µg/m^3 – a reduction of 74.75/ µg/m^3 compared to the same time last year. This represents a significant 97% reduction in particulate matter at this location. Similar readings taken the following day revealed an 80% reduction in $PM_{2.5}$ levels. Likewise, comparison between the two periods highlight a significant reduction in transport related nitrous oxide emissions. With more businesses in Ireland expected to make remote working permanent in some capacity, there is potential for long-term improvements in air quality within Cork City.

Figure 4.10: Annual data from three air monitoring stations in Cork City recorded in 2019

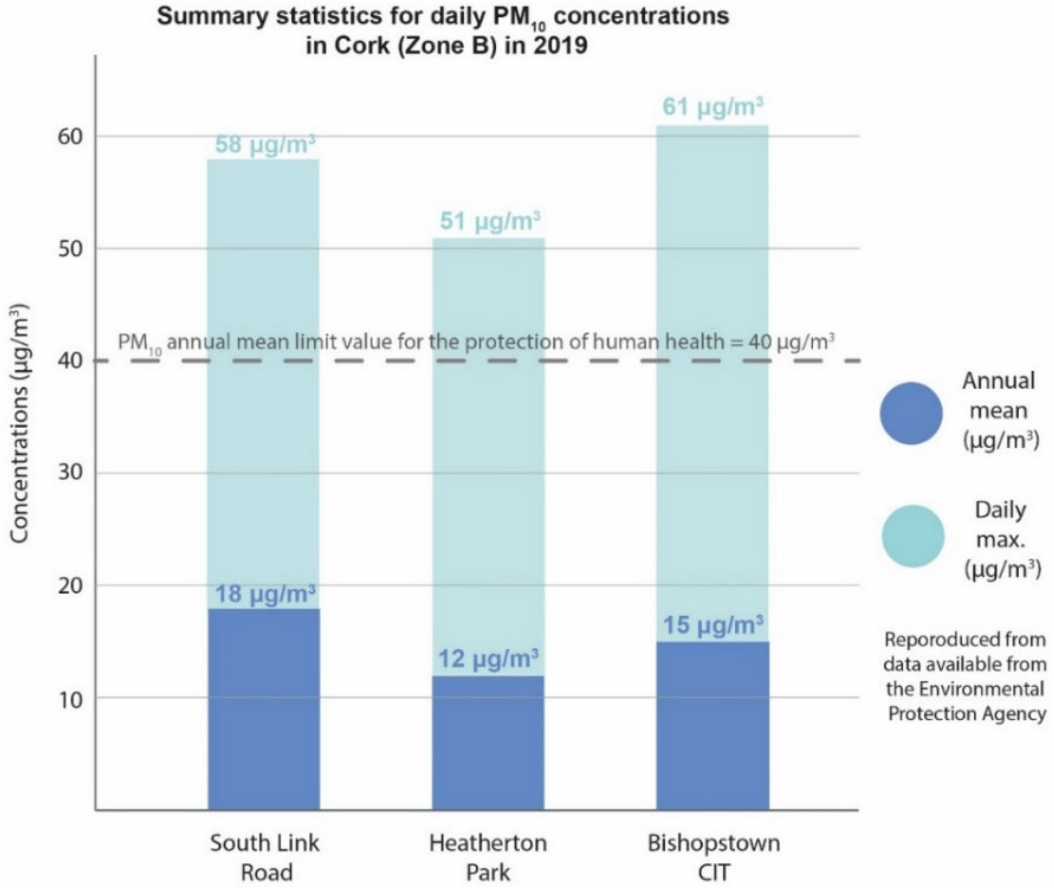
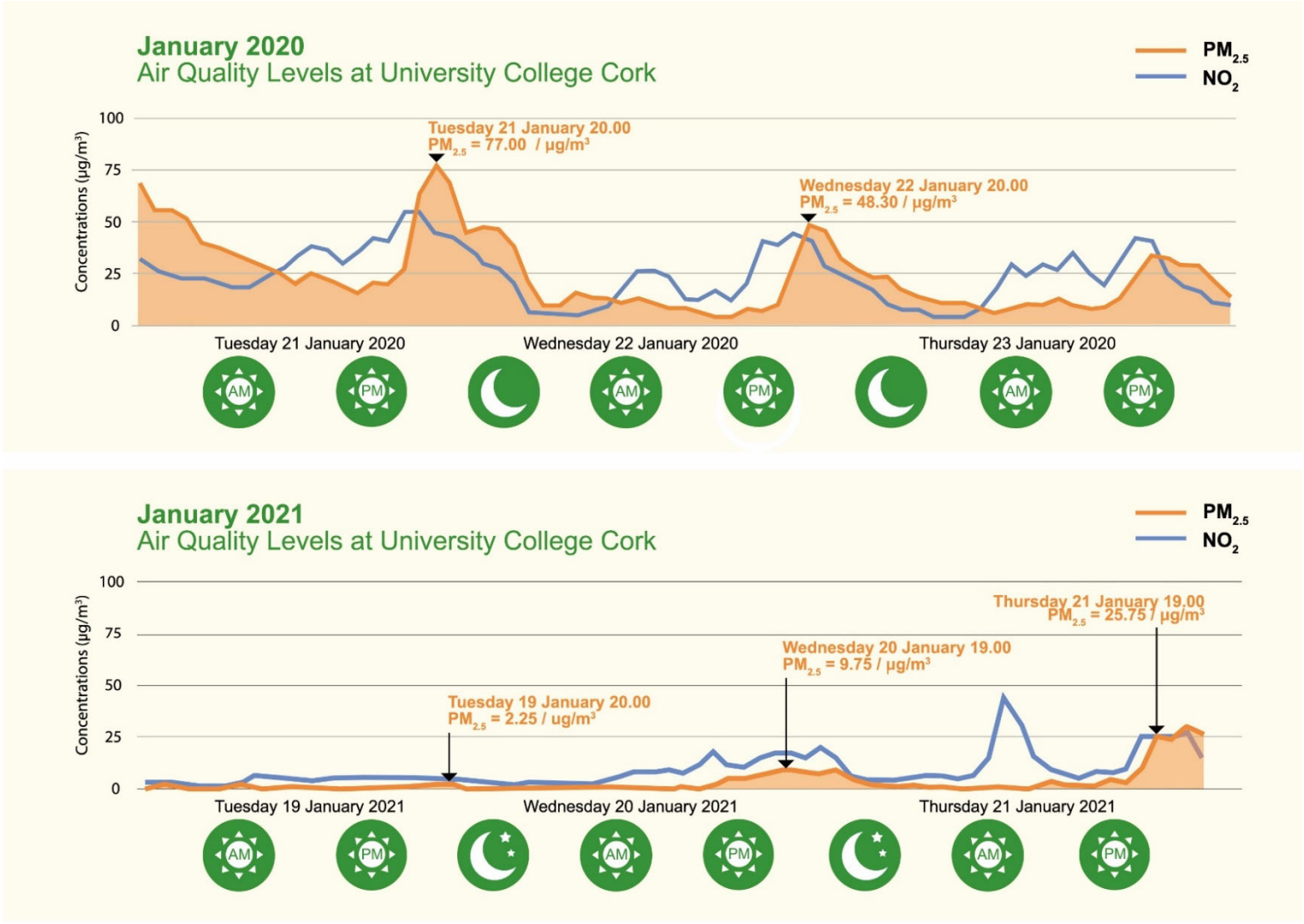


Figure 4.11: Air Quality – January 2020 and January 2021



Reproduced from data available from the Environmental Protection Agency (https://airquality.ie/)

Summary: Health and Wellbeing

- Provision of GBI may be used as part of the mix of measures required to address priority health needs in Cork City.
- A high quality GBI network that is easily accessible to all residents is essential to encourage healthy lifestyles for all.
- GBI can play a fundamental role in improving resident's living conditions, particularly in relation to air quality.

Climate resilience

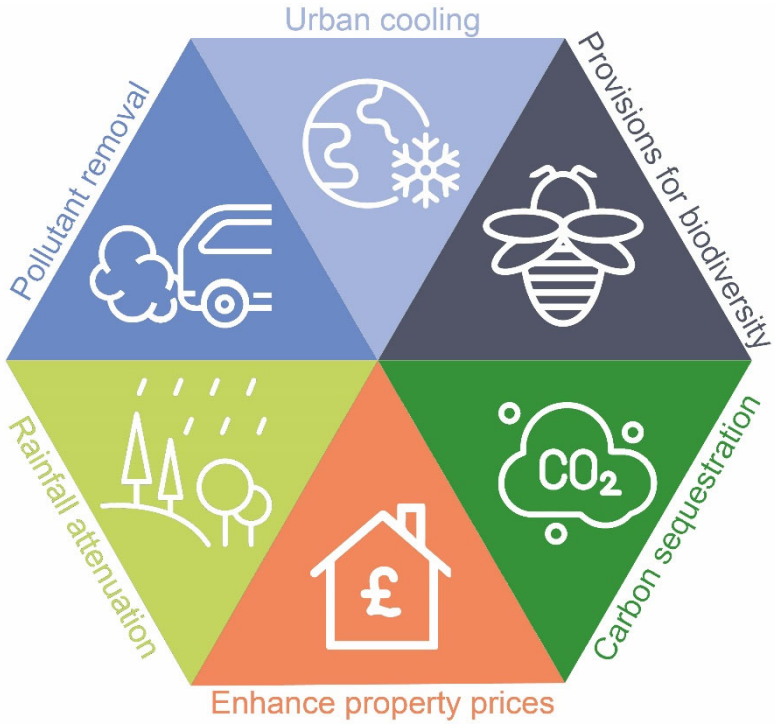
4.44 The resilience of urban areas to the effects of climate change will be essential to ensure good quality living environments and health, functioning ecosystems in the years to come. GBI provides a means to help mitigate the effects of climate change, and work towards reducing some of the causes; developing a more resilient environment.

- Trees can reduce flood risk. It is estimated that 10,000 trees can retain around 35 million litres of water per year.[77]. The general benefits of trees are summarised in **Figure 4.12.**
- Vegetation can mitigate the effects of the Urban Heat Island effect by creating shade; reducing the risk of heat stroke and exhaustion.
- There is a need to consider green infrastructure alongside built or 'grey' infrastructure. Where major infrastructure is coming forward it is essential that green infrastructure is considered at an early stage, whether this is for the purposes of the protection of key assets, or to identify key strategic opportunities for strengthening the network.
- Opportunities to mitigate negative impacts from infrastructure projects may also need to be considered, some of which may be delivered through GBI. For instance, it has been shown that a 30m wide shelter belt of trees and shrubs can reduce noise levels by around 5 to 10 decibels.[78]

[77] Parliamentary Office of Science & Technology (2016) Adapting Urban Areas to Flooding

[78] Parliamentary Office of Science & Technology (2016) Green Space and Health

Figure 4.12: Benefits of trees



The Climate Emergency

4.45 The Council declared a Climate Change and Biodiversity Emergency and prepared the Climate Change Adaptation Strategy 2019-2024 in 2019, establishing their commitment to responding to the threat of climate change. Over the last decade, Cork City has experienced severe flooding events, heavy snowfall, drought, heatwaves and more frequent and intense storms, which have caused significant disruption to the city's society and the economy. This is representative of a wider global trend of more severe and frequent weather events, an increasing annual global average temperature, and rising sea levels. These events are expected to intensify in the coming decades. The effects of a changing climate will be far reaching, extending to impacts on health, resources and biodiversity within Cork City.

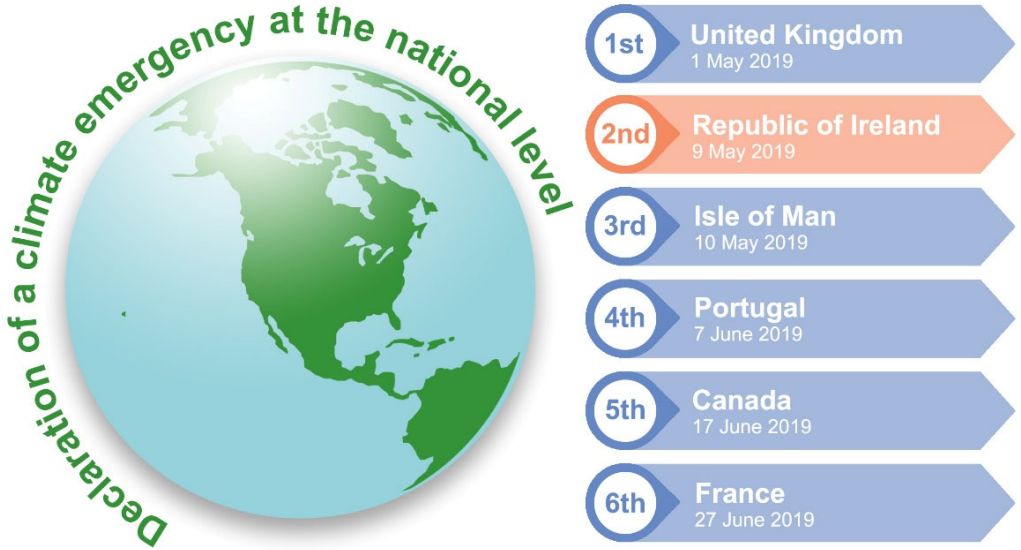
4.46 Given its geographic setting, susceptibility to flooding and its increasing urban population and employment base, the city's existing GBI network plays a significant role in climate change mitigation and adaptation. This also includes the benefits of surface water and flood management, storage of greenhouse gas emissions and provision of habitats for wildlife. The Council is responsible for managing the large majority of these spaces and it is therefore their role to ensure this network continues to meet the current and future needs of the city.

Warming cities

4.47 Within urban areas, increases in temperature are exacerbated by the 'urban heat island effect', whereby the concentration of built development retains heat, resulting in a cumulative effect on overall temperatures. The issue has been identified as one of the risks in the coming decades in the Cork City Climate Change Adaptation Strategy 2019-2024. Surface air temperatures are expected to increase resulting in the urban heat island effect, drought and violent thunderstorms. These impacts are expected to have longstanding effects on human health and physical infrastructure.

4.48 GBI functions to reduce urban air temperatures through evapotranspiration, reflecting increased solar radiation and providing shade. Inland habitats and species will have to manage changing seasonal temperatures and rainfall patterns. New pests and diseases are likely to take on a new prevalence, as well as exotic, non-native plant and animal species – combining to change the distribution and composition of semi-natural habitats across the landscape.

4.49 In response, GBI proposals and projects will need to strengthen the resilience of habitats, as well as providing sustainable drainage. The challenge will be to respond to climate change whilst ensuring the retention and creation of green and blue assets.



Environmental Consequences of COVID-19

The short-term environmental impacts of the pandemic, both positive and negative, have been significant. Many of these consequences are likely to be temporary, while some may endure in the form of longer-term structural or behavioural changes:

- Global CO2 emissions are expected to decline overall by 8% in 2020, to levels of 10 years ago. However, this one-off expected decline will not have any long-term impact on the CO2 levels in the atmosphere as the atmospheric concentration of CO2 (the primary driver of climate change) continues to climb rapidly.
- Air pollution also declined temporarily as industrial activity, ground transport and air travel were heavily curtailed for several months. However, this will be a temporary phenomenon as air pollution is expected to increase once economic activity resumes.
- The reduction in economic activity led to an improvement in water quality in a number of waterways and coastal zones, with a number of countries and regions reporting reduced concentrations of suspended particulate matter and other water pollutants.
- The generation of waste (excluding medical waste) has decreased, accompanied by a significant increase in the levels of recycling. The exception to this is the generation of medical waste, which has increased

substantially due to increased use of PPE and hospitalisations.

- The pandemic and the ensuing economic crisis have underscored the importance of environmental health and resilience as a critical complement to public health. Better air quality, improved water quality, effective waste management, and enhanced biodiversity protection will not only reduce the vulnerability of communities to pandemics but will also improve overall societal wellbeing and resilience.

Flooding

4.50 Climate change can contribute to increases in local flood risk in a number of ways. Rising sea or river levels may result in increased flood risk inland due to interactions with drains, rivers and small watercourses. In addition, more intense rainfall events may increase surface water run-off, with subsequent additional risk of sewerage overflow and potential for damage to water quality, property and people.

4.51 Flooding is an existing threat to Cork City, and this is likely to become more pronounced with the effects of climate change. The risk to Cork is two-fold; the City's low-lying location and geographical position within the River Lee's Catchment area dictates that areas to the west of the city and within the Central Business District are at risk of flooding. The area is also at risk of tidal flooding from the Harbour. Currently tidal flooding is more frequent in Cork City, but typically causes less damage than fluvial flooding. It is estimated that, even with anticipated effects of climate chance, a tidal surge barrier would not be necessary in Cork for at least 50 years[79]. Not only is climate change predicted to raise sea levels, increasing the risk of tidal flooding, but it is also estimated to cause more intense storms and rainfall events which could increase the risk from fluvial flooding.

4.52 Cork is located in the Lee, Cork Harbour & Youghal Bay River Basin and the River Lee runs through the City. The flood management plan has identified six locations within Cork City that are potentially at risk of significant tidal and fluvial flood risk[80]. These areas are:

- **Cork City Centre:** The area is at risk from fluvial flooding from the River Lee and tidal flooding, albeit the LLFRS is currently proposed.
- **Blackpool:** This area, to the north of Cork city centre, is at significant risk of flooding from the River Bride. The Blackpool Flood Relief Scheme received ministerial approval to proceed in March 2021.
- **Douglas:** This area in the suburbs in the south of Cork is at risk from fluvial flooding from the Ballybrack Stream

[79] The Office for Public Works (2019) *Lower Lee Flood Relief Scheme brochure*

[80] The Office of Public Works (2018) *Flood Risk Management Plan: Lee, Cork Harbour & Youghal Bay*

and from tidal flooding. The Douglas Flood Relief Scheme is currently in place[81].

- **Glanmire:** This town is at risk of fluvial flooding from Glashaboy River and tidal flooding. The Glashaboy Flood Relief Scheme received ministerial confirmation (approval) to proceed in January 2021. It is intended that construction will commence on the scheme before by the end of 2021.
- **Togher:** This area is also at risk from fluvial flooding along the Tramore River. Flood Relief Works along the River Tramore in Togher will commence in mid-2021.
- **Tower and Blarney:** These Urban Towns are at risk from fluvial flooding along the River Shournagh.

4.53 In addition, there are several other locations within Cork City that suffer from less significant flood risk than those areas highlighted in the Flood Risk Management Plan. Such areas are intended to be subject to minor flood relief scheme projects over the coming years.

4.54 A non-exhaustive summary of flood risk within Cork City is provided in **Figure 4.13**. In addition, agricultural areas located upstream on the River Lee Catchment Area are also at increased risk of flooding due to more frequent intense rain events. There are a significant number of key economic assets such as port facilities, electrical and water services, road and rail transportation links, significant employment areas, cultural / heritage sites and population centres adjoining coastal areas of the harbour. These features are at increased risk of flooding from higher sea levels.

4.55 In summary, GBI has a key role to play in helping to manage flood risk (e.g. by intercepting, slowing and storing run-off from the land) and helping to improve water quality.

Water Quality

4.56 The Lee Cork Catchment Assessment outlines the WFD status of the 92 river water bodies, three lakes, 13 transitional, six coastal water bodies, 16 groundwater bodies and five heavily modified water bodies with the catchment.

- Of the 92 river water bodies, 22 are at risk of not meeting their WFD objectives. All of the rivers within Cork City are classified as 'at risk' (River Lee, Bride, Martin, Shournagh, Curragheen, Two Pot, Owenboy).
- All three lake water bodies in the catchment are at risk of not meeting their WFD objectives.
- The Upper Lee Estuary, Lower Lee Estuary and Lough Mahon are all at risk of not meeting their WFD objectives.
- Excess phosphorus leading to eutrophication is also a concern in several water bodies, as well as ammonia for a limited number of water bodies. Elevated phosphorus is associated in the catchment with pressure types diffuse urban, agriculture, urban waste water, forestry, industry, agriculture and domestic waste water and anthropogenic

[81] https://www.floodinfo.ie/frs/en/douglas/home/

pressures. The ammonia is associated with a waste facility.

- Hydro morphological (or physical) conditions is a major issue for three surface water bodies, all of which are at risk from channelisation which reduces habitat quality and leads to sedimentation.
- There are five heavily modified water bodies affected by impoundments or port facilities.
- There are eight traditional and coastal (TraC) water bodies at risk in the catchment. Elevated nutrients and hydromorphology are the dominant issues.
- There are two groundwater bodies that are at risk from contamination from ammonia generated from waste facilities. These have the potential to impact on associated 'at risk' surface water bodies.

4.57 Expected fluctuations in rainfall and climate change driven alterations in hydrological regimes threaten to exacerbate any existing issues with water quality and limit the ecological value of Cork City's blue network. Further growth has the potential to increase this pressure through requirements for flood defences, an increase in sealed surfaces and increased pollution.

4.58 GBI solutions and a strategic approach to Cork City's network of rivers and streams will be needed to ensure that any additional pressures from growth and development are suitably mitigated. This may include the provision of SuDS as part of development and infrastructure, alongside the appropriate protection and enhancement riparian areas.

EU Green Capital Award

Established in 2006, the European Green Capital Award seeks to promote and award cities that share a commitment to sustainability and environmentally friendly urban living. The initiative aims to encourage cities to adopt innovative approaches to tackle environmental challenges and set ambitious goals for future improvement. Cities are rewarded where they are able to demonstrate a successful shift towards healthy and sustainable living environments, with an overall winner announced annually.

The *Expert Panel Technical Assessment Report: Cork*[82] provides feedback on the city's submission to the European Commission. Applicant cities were assessed on 12 environmental indictors and ranked from best (1) to weakest (12). The indicators included: 'climate change mitigation and adaptation'; 'local transport'; 'green urban areas incorporating sustainable land use'; 'nature and biodiversity'; 'ambient air quality'; 'quality of the acoustic environment'; 'waste production and management'; 'water management'; 'waste water

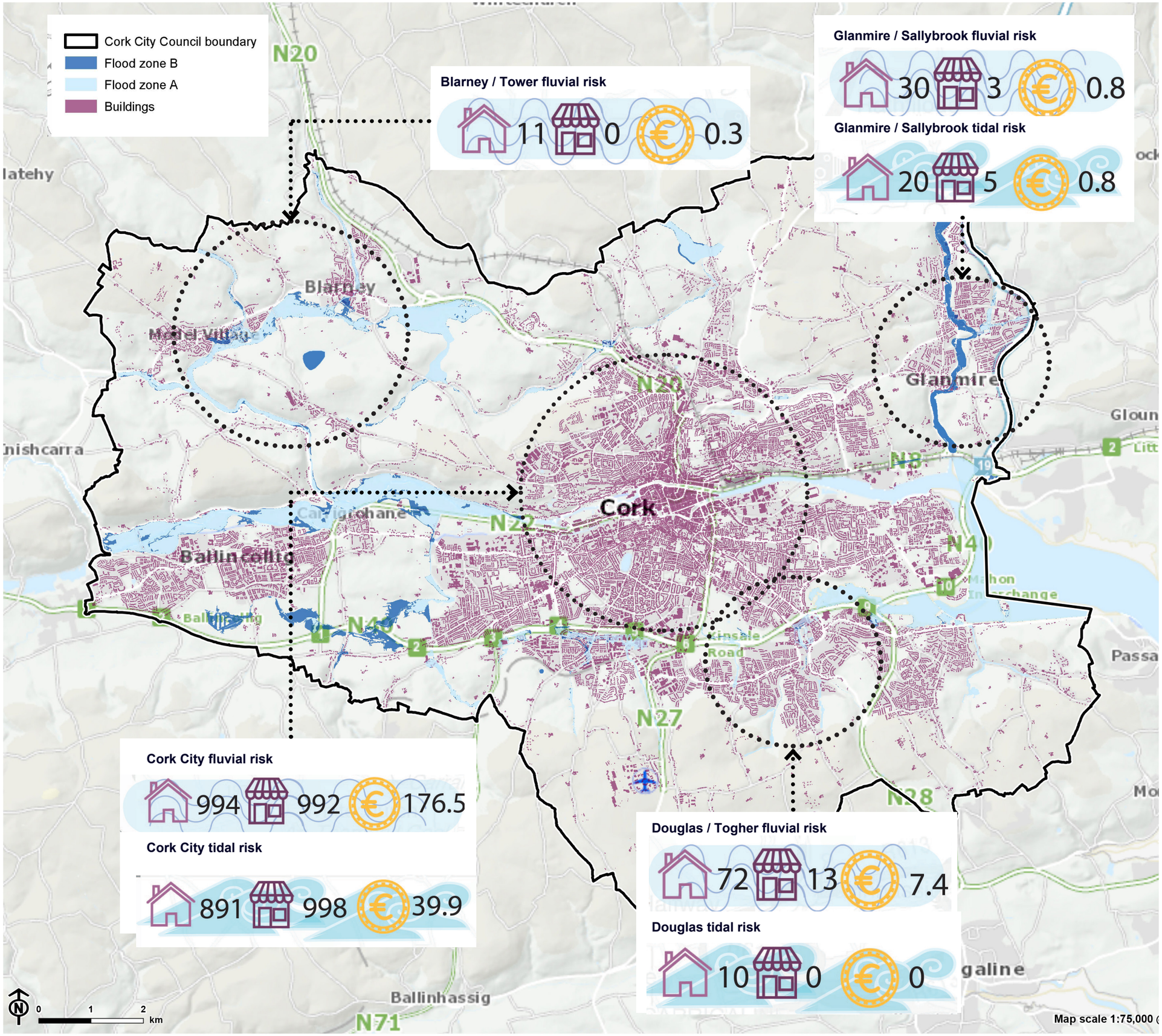
[82] *European Commission – European Green Capital (2015) Expert Panel – Technical Assessment Report: Cork (European Green Capital Award 2017 Application)*

treatment'; 'eco-innovation and sustainable employment'; 'energy performance'; and 'integrated environmental management'.

Across all indicators Cork was ranked 7th on average, with the majority of indicators ranked between 6th and 9th. Cork was ranked highly for: 'local transport' (4th); 'green urban areas incorporating sustainable land use' (6th); and 'ambient air quality' (6th). It ranked poorly for: 'nature and biodiversity' (9th); 'quality of the acoustic environment' (9th); and 'water management' (11th).

The application feedback recognized that Cork City has many existing assets and a suite of strong aims for the future. However, these aims were not supported in the application by evidence of budgeted action plans. The consensus across the 12 indicator areas was that the application lacked detail when describing how it would successfully implement aims. In some areas the application also lacked sufficient evidence to monitor the impact of interventions, including how GBI is to be integrated within the city and linked to wider connections beyond the administrative boundary.

Image source: European Commission – European Green Capital (2015) Expert Panel – Technical Assessment Report: Cork (European Green Capital Award 2017 Application)



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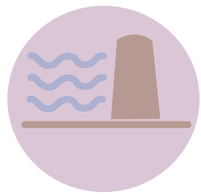
Source: CC

Cork City is at increasing risk from the impacts of future sea level rise and has experienced significant recent flood events. Cork City's low-lying location and geographical position with the River Lee's Catchment area dictates that areas west of the city and the Central Business District of the city are at risk of flooding in addition to the areas within Cork Harbour. Agricultural areas located upstream on the River Lee Catchment Area are also at increased risk of flooding due to more frequent intense rain events. There are a significant number of key economic assets such as port facilities, electrical and water services, road and rail transportation links, significant employment areas, cultural / heritage sites and population centres adjoining coastal areas of the harbour, which are at increased risk of flooding from higher sea levels.

GBI has a key role to play in helping to manage flood risk (e.g. by intercepting, slowing and storing run-off from the land) and helping to improve water quality. GBI can also help mitigate against other predicted effects of climate change by sequestering carbon, providing cooling and shading, providing habitats for wildlife, and creating opportunities for low carbon energy schemes.

Lower Lee Flood Relief Scheme: the largest flood relief investment project ever proposed in Ireland



- **390** Protected Structures safeguarded by the scheme;
- **1km** of new river walkways;
- **900** homes protected against tidal and river flooding; and
- **1,200** businesses protected against tidal and river flooding.

Data source: https://www.floodinfo.ie/

Number of residential properties at risk from flooding from 100-year flood events (for fluvial flooding) or 200-year flood events (for coastal / tidal flooding)

Number of non-residential properties at risk from flooding from 100-year flood events (for fluvial flooding) or 200-year flood events (for coastal / tidal flooding)

Net Present Value Damages (accumulated, discounted damages over 50 years) (in millions of Euros)

Data source: OPW (2018) *Flood Risk Management Plan*

Figure 4.13 Flood Risk

Biodiversity / Ecological Resilience

4.59 Biodiversity (the variety of all life) is under threat throughout the world. The National Biodiversity Action Plan[83] states that a significant proportion of Ireland's biodiversity is in a vulnerable state. The main threats and pressures to habitats and species in Ireland are from agriculture, forestry and fisheries, natural system modifications mining and quarrying climate change, pollution, and invasive and problematic species. Habitat loss is also recognised as an ongoing pressure. Cork City contains numerous areas of designated biodiversity sites, which are at risk from these threats and pressures. Large areas of the GBI network are 'unprotected' but nevertheless provide valuable space for nature and are also at risk from these threats and pressures.

4.60 There is evidence that climate change is negatively impacting Irish habitats and species, including coastal and upland environments resulting in increased acidification[84]. Expected increases in temperature, changes in precipitation patterns, weather extremes and sea-level rise will affect the abundance and distribution of Irish species and possibly encourage the spread of alien invasive species. The potential also exists for detrimental effects on inter-tidal habitats through 'coastal squeeze'. Development on greenfield land is impacting on the landscape character of areas and contributing to increased habitat fragmentation, resulting in a reduction in species movement. In order to maintain and enhance biodiversity in Cork City in the coming years it will be necessary to ensure existing habitats are resilient to the effects of climate change and form a 'coherent ecological network'.

4.61 Careful design of GBI can help retain biodiversity features within the growing city as well as create new habitats and ecological connections, linking into surrounding areas. This will help improve species' resilience to climate change. Where appropriately planned and designed, the multifunctional nature of GBI means that other benefits may be derived alongside the conservation of biodiversity, such as access to nature for residents of Cork City.

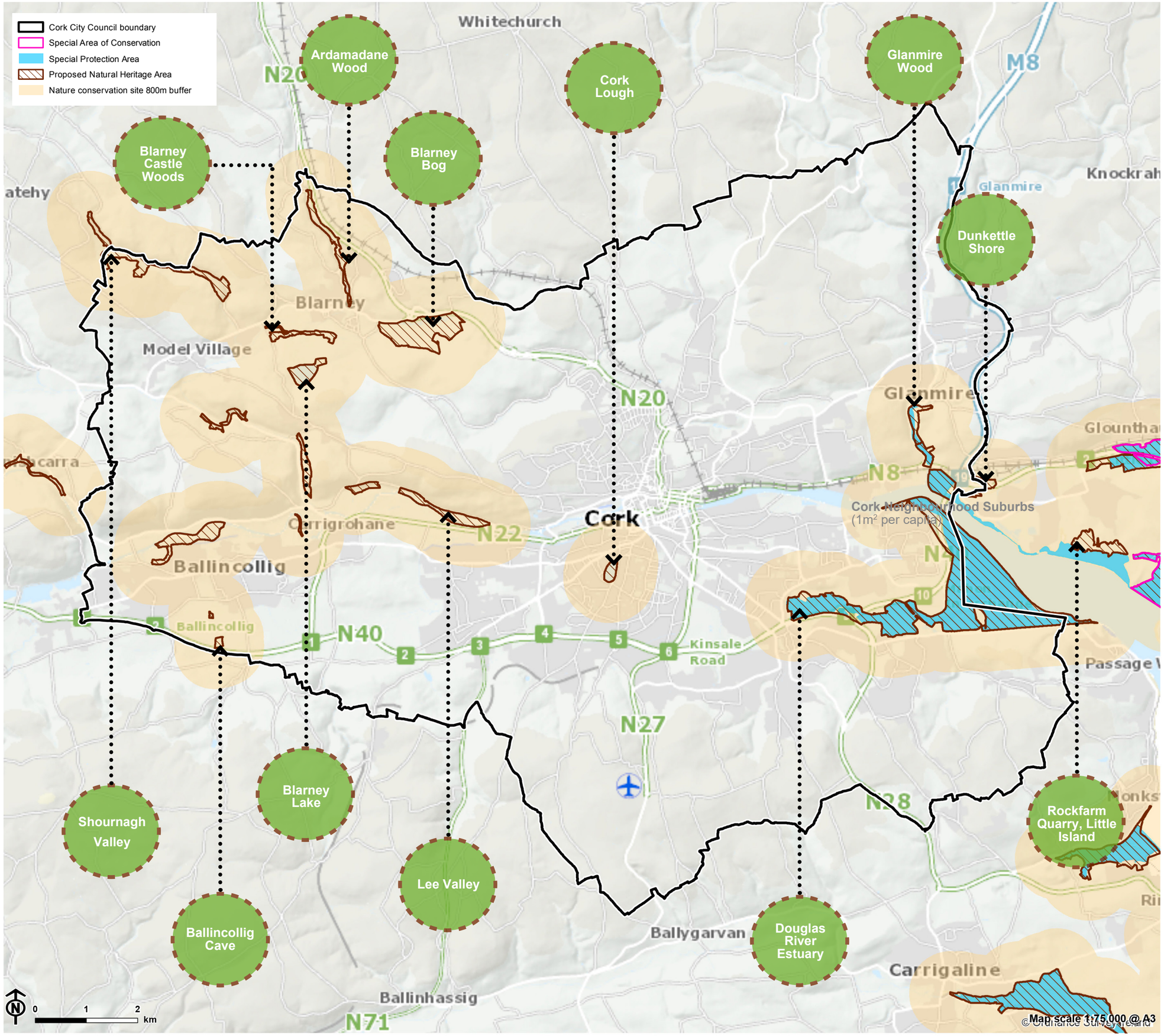
4.62 Access to nature is invaluable for both physical and mental health, with the latter being associated with reduced stress, better cognitive function, improved mindfulness and enhanced creativity. Furthermore, encouraging an interaction with nature is an important tool for raising awareness of the value of biodiversity conservation and climate resilience, therefore helping communities to build more sustainable habits. The Cork City Hinterland performs relatively well in terms of the provision of opportunities to access designated nature assets (pNHA / SAC / SPAs) when compared to other areas in Cork City, with 29m^2 of natural green space per capita, as indicated in **Figure 4.14**. However, access to designated nature assets is significantly reduced in the City Centre, the Neighbourhood Suburbs and the surrounding Urban Towns.

[83] Government of Ireland (2017) *National Biodiversity Action Plan 2017 - 2021*

[84] Ibid.

Summary: Climate Resilience

- Cork City's Climate Change Adaptation Strategy 2019-2024 highlights the role of GBI in mitigating and adapting to the pressures of climate change.
- The City is at risk of tidal, fluvial and surface water flooding, the magnitude and frequency of which of is expected to increase with climate change. GBI offers tools for natural flood management.
- GBI can also be used to enhance the ecological status of the City’s watercourses through the filtering of pollutants.
- A coherent ecological network is needed across Cork City to ensure climate resilience.
- Ensuring city-wide access to nature is essential for resident’s wellbeing.



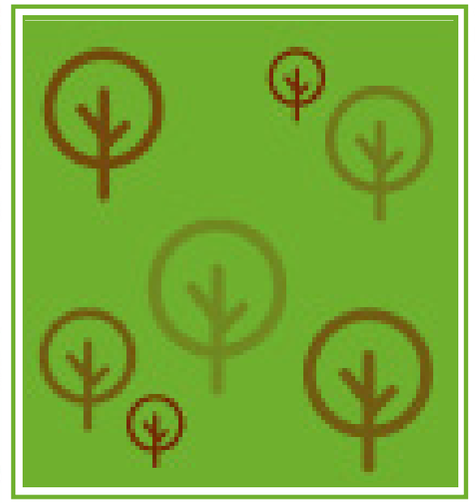
Ensuring city-wide access to nature is essential for resident's physical and mental health and wellbeing. Furthermore, encouraging interaction with nature is an important tool for raising awareness of the value of biodiversity conservation and climate resilience, therefore helping communities to build more sustainable habits.

The western extents of the Cork Harbour Special Protection Area (SPA) (Site Code 004030) and the Great Island Channel Special Area of Conservation (SAC) (Site Code 001058) are located within the Cork City Council area. There are also several proposed Natural Heritage Areas (NHAs) located in the City Council Area. These include the Lee Valley, Cork Lough, Glanmire Woods, Douglas River Estuary and Dunkettle Shore. Other notable assets include the River Lee, Beaumont Quarry, Marina Park and Fitzgearld's Park.

Approximate area of pNHAs / SAC/ SPAs per capita (m²)

Cork City Neighbourhood Suburbs (1m² per capita)

Cork City Urban Towns (2m² per capita)



Cork City Hinterland (29m² per capita)

Figure 4.14 Access to Nature

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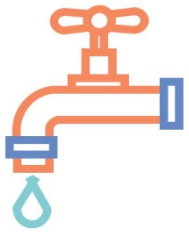
Source: LUC, CCC, OSI, DCHG

Key sustainability issues

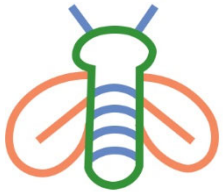
4.63 The opportunities GBI provides in addressing key issues within Cork City are outlined below in **Table 4.2.**

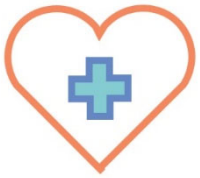
Table 4.2: Key Issues and Opportunities

Topic	Issue	Opportunities for GBI
 **Climate change** The use of GBI to mitigate the predicted effects of climate change	Cork City is likely to experience more extreme impacts as a result of climate change – wetter winters with greater incidences of flooding, and warmer, drier summers with greater incidences of low flow rivers (during the summer months).	The city's GBI network will play a vital role in climate change mitigation and adaptation through surface water and flood management, storage of greenhouse gases, improvement of 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.
 **Flood risk** GBI offers the potential to reduce flood risk and improve water quality within Cork City	Cork City is at increasing risk from the impacts of future sea level rise and has experienced significant recent flood events. Cork City's low-lying location and geographical position within the River Lee's Catchment area dictates that areas to the west of the city and the central business district of the City are at risk of flooding. Agricultural areas as well as key economic assets are also at increased risk of flooding due to more frequent intense rain events. Ecologically rich intertidal habitats are	GBI has a key role to play in helping to inform a sustainable response to rising sea levels and future flood risk. This includes the interception, slowing and storing of run-off from the land, improvement of water quality and positive management of intertidal habitats.

Topic	Issue	Opportunities for GBI
	also at increased risk of 'coastal squeeze' due to rising sea levels.	
 **Water quality** The role of GBI in the interception of water resources	Numerous Coastal and Transitional Water Bodies, Groundwater Water Bodies, and River Water Bodies within Cork City are currently 'at risk' of deteriorating or not achieving 'good' ecological status by 2021.	GBI can play a key role in regulating and improving water quality, by intercepting and reducing contaminated surface-water runoff.
 **Population growth** The use of GBI to accommodate future population growth within Cork City	The Regional Spatial Strategy population projections are forecasting a population increase to 286,178 people by 2031 and the National Planning Framework sets a population target for Cork City in the region of 333,000 people by 2040.	The expansions and improvement of GBI assets across Cork City will reduce pressure on the quality and quantity of existing GBI in the wake of population growth.
 **Inequality** GBI offers the opportunity to tackle social inequalities through increased access to open space	Cork City is characterised by disadvantaged areas in much of the northside and south-central area, with affluent areas concentrated in the western part of the city and south eastern wards.	The expansions and improvement of GBI, particularly in more disadvantaged areas within the City may provide greater opportunities for people to enjoy and engage with nature, whether it is for recreational and leisure purposes or by means of active and sustainable transport.

Topic	Issue	Opportunities for GBI
 **Transport** The use of GBI to encourage the establishment of active travel corridors	There is high dependency on the use of private vehicles for transport in Cork City.	GBI can provide opportunities to increase connectivity across the City for people and encourage people to make journeys by means of active travel, such as cycling or walking. Increased active travel due to improved GBI will also contribute towards improving noise levels and air quality in the city. The provision of GBI offers the potential to link to planned transport infrastructure projects identified within CMATS, including LRT, Bus Connects and Lee to Sea Greenway.
 **Contaminated land** The role of GBI to regenerate and improve accessibility to the built environment	Areas of contaminated land from historic land uses (heavy industry and fuel generation/storage depots), particularly in the port area. Over 100 sites identified on the Derelict Sites Register and 16 sites on the Vacant Sites Register 2020 are located within Cork City. Cork City also comprises a number of Seveso establishments, defined as sites where dangerous substances may be present exceeding health and safety thresholds.	The incorporation of GBI into the regeneration of contaminated sites offers the potential to improve the quality of the built environment. Improved accessibility to green space for recreation and physical activity could result in the improved health and mental wellbeing of the population.

Topic	Issue	Opportunities for GBI
 **Biodiversity** The use of GBI to create and expand habitat networks	Cork City contains numerous areas of internationally and nationally designated biodiversity sites, which are under threat from changing land uses and development, recreational pressures and climate change. Development on greenfield land is impacting on the landscape character of areas and contributing to increased habitat fragmentation, with loss of hedgerows in particular, resulting in a reduction in species movement.	Careful design of GBI can help retain biodiversity features within the growing city as well as creating new habitats and ecological connections, linking into surrounding areas. This will help improve species' resilience to climate change.
 **Landscape** GBI offers the potential to enhance Cork City's sense of place	There is a need to protect important landscapes (designated and undesignated); increase access to semi-natural landscapes and create new linkages within the existing urban fabric; create new landscapes or publicly accessible landscapes for an increasing population; balancing competing demands within the public landscape such as biodiversity and recreational uses.	GBI can play a key role in creating a distinctive sense of place whilst delivering a resilient and attractive environment to live, work and spend leisure time.

Topic	Issue	Opportunities for GBI
 **Health and wellbeing** GBI offers the potential to support the delivery of mental and physical health benefits within Cork City	The local context includes the delivery of further planned city parks (Marina Park) and local GBI projects such as those delivered through other established initiatives within the City.	The potential benefits of GBI are far reaching, including development of priorities in relation to the health and wellbeing of Cork's residents. The expansion and improvement of GBI projects such as those delivered by Cork Healthy Cities as well as further planned city parks (e.g., Marina Park) offer the potential to support the delivery of physical and mental health benefits within the city.

Consultation and community engagement

4.64 Assets, issues and opportunities were identified as part of the development of the Study, derived from desk-based research, surveys and wider consultation (see **Figure 4.15**). 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 and the Harbour, Tourism and Economic Value;**
- **Workshop 2 - Biodiversity, the Water Environment and Climate Change;** and
- **Workshop 3 - Access & Connectivity, People and Communities, Health & Wellbeing.**

4.65 Workshop invitations were extended to stakeholders and partners, a grouping pre-determined by the client. All workshops were held on Microsoft Teams and supported by use of *Miro*, an online collaboration tool. **Figures 4.16 - 4.17** indicate example workshop outputs following the use of this software platform. The sessions were led by members of the LUC project team and introduced by the Senior Executive Planner at the Council.

4.66 The workshops were structured around a series of exercises which focused on the identification of the following elements:

- Key issues for the study;
- Existing / forthcoming projects or initiatives; and
- Potential GBI interventions, opportunities and delivery partners.

4.67 Key findings from the various strands of the consultation programme are considered under each of the relevant themes in **Chapters 6-13.**

Figure 4.15: Consultation strategy

Figure 4.16: Miro outputs - key issues for the study

Figure 4.17: Miro outputs - potential GBI interventions, opportunities and delivery partners

Developing a Framework and Vision for Green and Blue Infrastructure in Cork City

The vision for Cork City's GBI is to ensure the city's network of parks, greenspaces, street trees, rivers and wetlands are planned, designed and managed to deliver benefits for people, the economy and the environment. This Study will inform and guide the planning and management of a network of multi-functional green and blue spaces within Cork City to 2040 and beyond.

5.1 This document provides strategic guidance, recommendations and priority actions for GBI in Cork City that will directly inform the policies, objectives and land use zoning to be established within the emerging City Development Plan. Furthermore, the Study will support and help to deliver multiple and interconnected work streams which promote the use of GBI to help drive the transition to a low carbon and climate resilient society.

5.2 A prioritised set of GBI projects and investments for Cork City are outlined in order to inform the protection and enhancement of important and vulnerable habitats, landscapes, natural heritage, and green and blue spaces. These networks are regarded as natural capital; assets that provide value, contribute to a greener economy and improve

the quality of life for all Cork City residents, employees and visitors. A review of successful approaches to GBI and opportunity development, where relevant to the Cork City context is also highlighted.

A 'themed' approach

5.3 In order to establish GBI principles and policy recommendations to achieve the vision, the following section of the report first explores the existing GBI assets within Cork City. **Figure 5.1** outlines the approach to development of the 'themed' approach. The evidence based approach has been divided into eight 'themes', which provide a useful framework to understand and plan for GBI within the city (see **Figure 5.2**). The themes are listed below:

- **The Water Environment:** *Rivers and water bodies considered at a landscape scale.*
- **Landscape and the Harbour:** *Provision of easily accessible high quality, well designed multi-functional open spaces*.
- **Biodiversity**: *Connected and conserved, resilient networks of habitats across the city.*
- **Access and Connectivity:** *Permeable landscapes for sustainable travel, access to areas for recreation and wildlife.*
- **Climate Change and the Environment:** *Use of GBI to tackle the effects of climate change, habitat adaptation and climate mitigation.*
- **People, Communities, Health and Wellbeing:** *Consideration of the health and societal benefits of GBI within Cork City.*
- **Economic Value and Land Use Management:** *Understanding the contribution of GBI to the economy of the city.*
- **Tourism, Culture, Recreation and Leisure:** *Recognising the cultural assets of the city.*

5.4 The **key assets** relevant to each theme are explored, followed by a summary of key **considerations.** The study also identifies **opportunities** across the city to protect and enhance GBI, helping to guide the investment and delivery of GBI and its associated benefits. Following the exploration of the GBI themes, **principles** for delivery and proposed projects are outlined. Potential linkages with existing initiatives are also emphasised.

5.5 The 'cross cutting' nature of the thematic chapters results in intentional overlap between some actions due to differing stakeholders and interests.

Figure 5.1: Development of the GBI themes

5.6 The themes were developed to reflect best practice and local factors, including the Council's declaration of a Climate Change and Biodiversity Emergency in June 2019. The themes are set out below with a brief description of the assets and factors considered as part of each theme.

The Water Environment

The water environment is an integral component of GBI networks, providing a fundamental role in managing flooding, improving or maintaining good water quality, improving surface water drainage and enhancing the enjoyment of public open space. Bisecting Cork City, the River Lee reaches the sea at Lough Mahon estuary and plays an important role in the city's wider GBI network. A functional and resilient GBI network, inclusive of all water resources, is required to achieve the multiple benefits associated with slowing the flow of surface water, increasing water storage and encouraging infiltration.

Landscape and the Harbour

GBI contributes to the wider setting of open spaces; helping to restore areas of degraded landscape character, enhancing the condition and setting of historic features and promoting a sense of place. The identification of GBI opportunities relating to landscape and seascape aim to conserve, enhance and increase the enjoyment of the environment as well as increase the accessibility of these assets to residents and visitors.

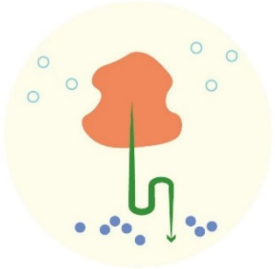
Biodiversity

The need to create a functional, resilient network which supports thriving wildlife is essential, not only for the inherent value of biodiversity, but to support carbon sequestration, address flood risk and air quality pressures, maintain healthy food production, and to inspire and educate residents through accessing nature. GBI acknowledges these interwoven benefits and ensures that the conservation of a functional ecological network can be delivered as a fundamental consideration in sustainable development.

Access and Connectivity

Access to open space and areas for recreation, together with good connectivity between assets, provides a host of benefits to health and wellbeing, air quality, climate change and biodiversity. GBI can help to facilitate sustainable active travel, with a network designed to improve accessibility and enhance recreational opportunities. Providing and promoting safe active travel routes, be it through walking, running or cycling, can maximise the benefits provided by open spaces, especially in areas where they are small or few in number.

Climate Change and the Environment



Climate change and GBI interact in many different ways. However, a well-planned GBI network considers those assets most at risk and seeks to ameliorate detrimental impacts such as degradation and decay, ensuring the assets unique to an area continue to provide the valuable ecosystem services for which they are known. GBI allows for the planning of changes and implementation of measures that increase the resilience of our terrestrial and water environment to extreme weather events and future warming.

GBI assets can also play an important role in absorbing and storing carbon from the atmosphere.

People, Communities, Health and Wellbeing

GBI assets offer notable benefits for health and wellbeing; including creating opportunities for healthy exercise, sport and leisure, amenity space, recreation (including formal and informal play), social inclusion and community enterprise. A functional and resilient ecological network, that is species-rich and structurally diverse, can also optimise the opportunities for people to access nature, whilst accommodating the need for our more sensitive species to remain undisturbed.

Economic Value and Land Use Management

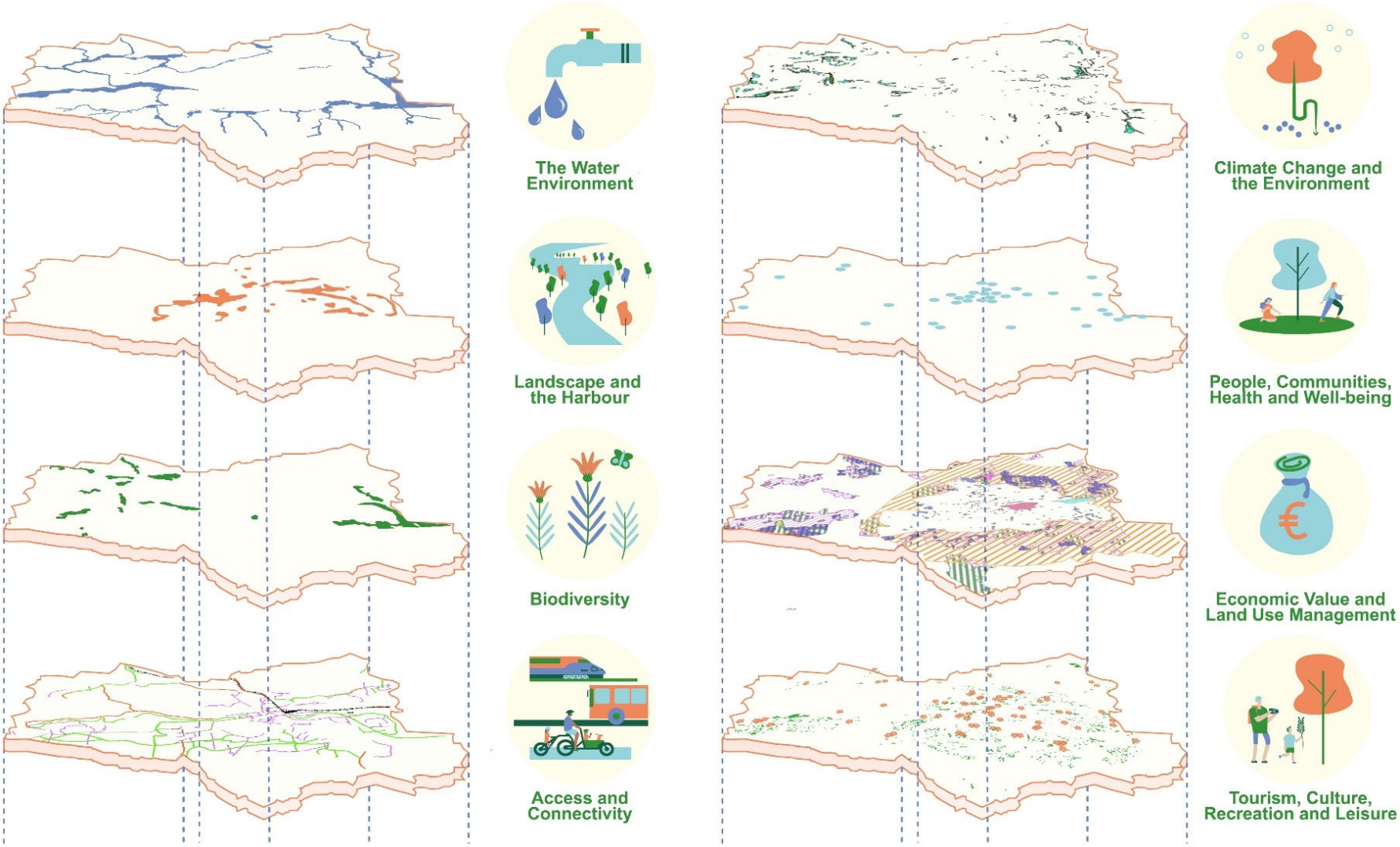
GBI offers the opportunity to provide localised economic benefits, including promotion of inward investment, employment creation and the wider stimulation of economic activity. High quality GBI can help make the city an attractive place to live, work, visit and invest. Integration of GBI assets into the network will also ensure the network delivers across the wider landscape context, supporting connectivity between urban and rural areas.

Tourism, Culture, Recreation and Leisure

With the rise in ecotourism and increased demand for green and ethical products, GBI offers the potential to form a useful marketing tool to enhance the natural aesthetic of the city. In particular, GBI can have an important role in promoting nature-based and heritage-based tourism.

Open spaces provide notable benefits for health and wellbeing by providing opportunities for healthy exercise, informal recreation, amenity space for formal and informal play, social interaction and community enterprise. Planned GBI networks can take advantage of opportunities to enhance these multifunctional benefits both in terms of improving the quantity and quality of open and green spaces, and in addressing deficiencies in access to them.

Figure 5.2: Theme layers



The vision

5.7 Cork City Development Plan 2022-2028 will outline the future objectives, policies, and land use zoning in order to meet future growth objectives. An underlying theme underpinning the Plan is the need to reduce human impact on the environment and transition to a low carbon city. **Figure 5.3** highlights the principles driving the emerging Cork Development Plan.

Aims

The Study forms an important mechanism in achieving low impact, low carbon growth. The vision for GBI within Cork City is underpinned by the key aims listed below and illustrated in **Figure 5.4:**

1. Climate action, mitigation, and adaptation;
2. Protection of important landscapes;
3. Interconnecting GBI, including sustainable transport and active travel corridors;
4. NbS to all types of development at different scales (including transport / road infrastructure, mixed use development, water infrastructure and drainage etc.);
5. Increasing the provision and management of wildlife habitats and biodiversity areas;
6. Conservation of European designated sites and their catchments;
7. Conservation of other ecological networks;
8. Integrating an Ecosystem services approach to GBI delivery;
9. Air quality and noise management;
10. Water and wastewater management;
11. Eco-innovation and sustainable technology;
12. Energy performance and production areas; and
13. Local food production areas.

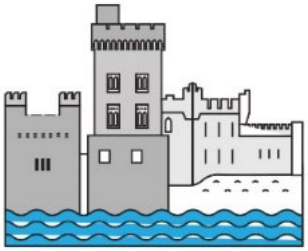
Figure 5.3: Principles driving the Cork City Development Plan and the framework for shaping the future structure of the city

A city of strong communities, with liveable neighbourhoods and an excellent quality of life

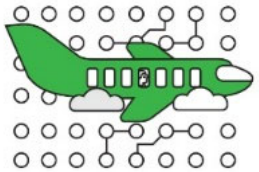
A resilient city that addresses challenges and risks posed by climate change and pandemics

A diverse city offering equality for all

A healthy city offering a vibrant and interactive environment for all



An architecturally rich and beautiful city by the River Lee

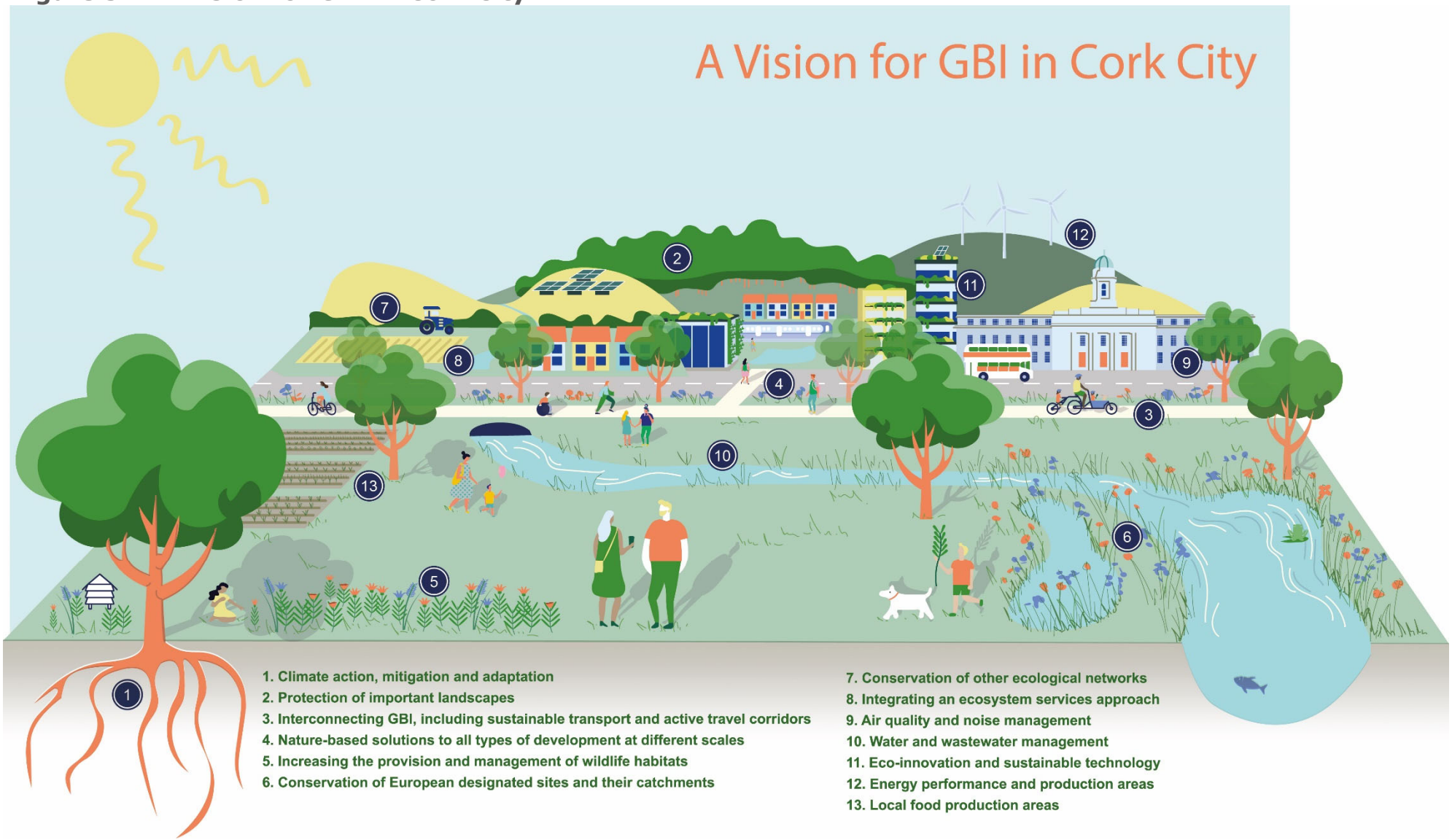


A highly connected city, providing local, regional, national and international connectivity

A city of learning, using knowledge as a key enabler for city growth

A city of culture and heritage, creatively embracing its past, present and ambitious for its future

Figure 5.4: A vision for GBI in Cork City



Examples of GBI best practice relevant to Cork City

Växjö, Sweden

Recognised as one of the most progressive countries in the European Union (EU) for climate change mitigation and adaptation strategies, Sweden is a world leader in long term planning for sustainable landscapes.

Växjö became the first city in the world to set the goal of becoming fossil fuel free by 2030 and carbon neutral by 2050. Known as "the greenest city in Europe", the city has adopted ambitious strategy guidance to ensure this high standard is upheld. As part of the Sustainable Växjö 2030 Vision, the approach to GBI aims to create environments that foster good health, support opportunities for active travel and enhance the water and built environment to support a rich variety of species.

The city has a long tradition of broad institutional collaboration on environment-related initiatives, including taking the lead in the monitoring of carbon dioxide emissions and the introduction of policies to reduce these emissions within the city's geographical boundaries. It was also one of the first municipalities in Europe to sign the Covenant of Mayors, one of the largest climate change and energy initiatives in the world.

Mechanisms for implementation?

- Adoption of a multifaceted policy approach which integrates GBI into the planning system and local governance.
- Establishment of a collaborative approach that includes partnerships between the city council, industries, transport companies, university and citizens.
- Integration of sustainable development into policy and decision making.
- Use of community engagement and social inclusion to address the ecological and economic aspects of sustainable development.
- Promotion of a common responsibility for everyone living, residing and working in Växjö municipality.

Relevance to Cork City?

- Both cities benefit from a unique geography; comprising a network of existing green spaces and landscape assets which provide a natural resource and are successful in the promotion of active travel initiatives.
- The water environment plays an important role in strategic decision making within both cities. The recreational potential of waterside environments, including opportunities to enhance accessibility to natural resources, is well recognised within both cities.
- Underlines the importance of urban planning in the development of Växjö, aiding the establishment of ambitious sustainability priorities and the 'green city' agenda.

Hamburg, Germany

Forming the 2011 European Green Capital, Hamburg adopted an ambitious plan to increase the city's resilience to flooding whilst enhancing the connectivity of sustainable transport.

Encompassing approximately 40% of the city's land area, the proposals sought to introduce a green network aimed at improving recreational opportunities for residents. The city functions as Germany's largest seaport and experiences increased susceptibility to the effects of climate change. Consequently, Hamburg introduced a number of initiatives to promote climate adaption and mitigation, including the establishment of a comprehensive green roof strategy.

Image source: Climate ADAPT (2016) Four pillars to Hamburg's Green Roof Strategy: financial incentive, dialogue, regulation, and science

Relevance to Cork City?

- Both Hamburg and Cork are cities of considerable green ambition, with existing networks of green and blue corridors.
- Forming port cities, Hamburg and Cork face several challenges as a result of climate change. Their location along the lower stretches of riverside environments also result in a vulnerability to the increased risk of flooding from extreme events.
- Both cities are characterised by a similar geography, comprising a compact urban structure and growing population.

Mechanisms for implementation

- Integration of the green network into city-scale land use planning.
- Provision of financial incentives to public and private organisations who voluntarily incorporate green roofs within built development.
- Adoption of a city-scale campaign to raise awareness of the project: "On Your Roofs, Get Set, Green!". This includes collaboration with HafenCity University to provide scientific support for the project and development of robust guidance.
- Integration of green roofs into the urban landscape planning, forming a legally binding feature within building / wastewater laws and planting regulations.

Vancouver, Canada

Vancouver, in British Colombia on the west coast of Canada, has a strategy for staying on the leading edge of city sustainability. With its coastline location at the foot of the North Shore Mountains, Vancouver is the home of extensive western red cedar and Douglas fir forests. Introducing street trees and the protection of the urban forest therefore forms an important component of the city's green vision.

The Vancouver Urban Forest Strategy was conceived in 2012 to promote the increased resilience of the urban forest and create a coordinated long-term approach to its protection.

In addition, Vancouver recently adopted an ambitious green infrastructure and urban rainwater management initiative aimed at implementing sustainable rainwater management across the city. The scheme, named the Rain City Strategy, transformed the approach to the management of rainfall with the aim of improving water quality and creating healthy urban ecosystems. The city has targeted the capture and treatment of 90% of Vancouver's average annual rainfall through the use of green rainwater infrastructure tools and design guidelines on public and private property.

Mechanisms for implementation?

- Adoption of a clear and balanced approach to the protection and expansion of the urban forest through recognition of the competing demands in tree management.
- Introduction of financial incentives for homeowners to plant trees to increase the urban forest on public and private land.
- Amendment of street bylaws, that previously allowed property owners to remove up to one tree a year regardless of health, to promote the retention of trees in the urban environment.
- Establishment of a dedicated and long term approach by the City and Park Board to sustain the urban forest, aligning with trends and best practices.
- Implementation of an integrated approach to rainwater management within the city.

Relevance to Cork City?

- Cork is similar to Vancouver as it boasts an extensive network of urban trees, requiring a robust tree policy that encourages the retention and prevents the loss of canopy coverage across the city.
- Both cities are 'second cities' within their respective countries and have many similarities in terms of their changing roles from former port related cities. The cities have significant waterfront transformation sites and plans for expanding city areas based on ambitious transport orientated development strategies. Vancouver is ahead in delivering on these regeneration and transport orientated development plans.

Stockholm, Sweden

Located on an archipelago of 14 islands in the Baltic Sea, Stockholm is considered to be a forerunner in sustainable urban development with GBI planning playing a significant role. In 2010, Stockholm became the first European Green Capital.

Stockholm is known as a welcoming city with a closeness to nature and track record of integrating sustainability into all aspects of city planning.

Stockholm is growing quickly, resulting in tough demands on the development of the urban environment. GBI helps address many of the challenges required to meet the goal of becoming a long term sustainable city, including the ability to accommodate fast population growth. In particular, Stockholm has invested in active travel, achieving a 76% increase in the number of cyclists in the city within 10 years.

Relevance to Cork City?

- Stockholm and Cork are both experiencing population growth. The cities have ambitious growth targets with an accompanying expectation for housing provision and associated built development.
- Both cities enjoy a network of large scale open spaces as well as a fine-grain network of green spaces which provide a range of ecosystem services.

Mechanisms for implementation?

- Development of a road-map guidance document to aid with the close cooperation and exchange of successful accomplishments with other aspiring green cities.
- Adoption of a common Scandinavian approach to urban GI planning, which provides a general framework for future globally strategic GI planning.
- Creation of a hierarchy of GBI, including large cohesive natural areas within the city which form 'core zones' connected by 'transition zones

Image source: Stockholms Stad (2019) Stockholm City Plan

GBI for sustainable cities – the 'Blue Green City' initiative

Supported by Interreg Europe, the 'Blue Green City' initiative seeks to improve policies that promote GBI through a programme of project events, workshops and training. The project promotes shared international experience and good practice through the implementation of an inter-regional learning process.

5.8 The partnership is led by the Nice Cote d'Azur and is comprised of the following partners:

- Southern Regional Assembly, Waterford, Republic of Ireland;
- University of Greenwich, London, UK;
- Municipality of Växjö, Sweden;
- City of Ingolstadt, Germany;
- Piedmont Region, Italy;
- Rijeka Development Agency Ltd., Croatia; and
- Bucharest-Ilfov Regional Development Agency, Romania.

5.9 The objectives of the programme include the development of best practice recommendations for improving policy instruments that promote GBI. The scheme also aims to raise awareness and knowledge of the concept of ecosystem services. The potential barriers for adopting GBI are identified and the value of GBI in protecting, preserving and enhancing natural capital are also promoted.

5.10 The development of action plans to improve GBI strategies form the principal outputs of the programme; supported by a system of training manuals, best practice guidance and peer-review workshop reports. These deliverables aim to improve natural heritage preservation through the mapping of existing GBI provision and the implementation of strategic spatial plans.

A collaboration between the Southern Regional Assembly (Republic of Ireland) and the municipality of Växjö (Sweden)

The goals of the municipality of Växjö in the development of its GBI strategy included the adoption of methods for mapping, evaluating and highlighting ecosystem services within the city's spatial planning and building process. The process aimed to ensure the delivery of an action plan that is integrated and used throughout the spatial planning and building process.

Due to the number of parallels that exist between the two regions in terms of geography, a good practice collaboration and network of peer review workshops was established in the development of Cork City GBI Study. The Green Structure Strategy for Växjö was adopted in 2016 and describes the functions of GI in the city planning process. GI in Växjö is categorised by the following functions; cultural aspects and identity, recreation and outdoor activities, biodiversity, climate mitigation and urban agriculture. The outputs of the partnership involved the sharing of best practice experience to support the implementation of GBI. Feedback was also obtained to guide the development of the Study.


Image source: Växjö Kommun

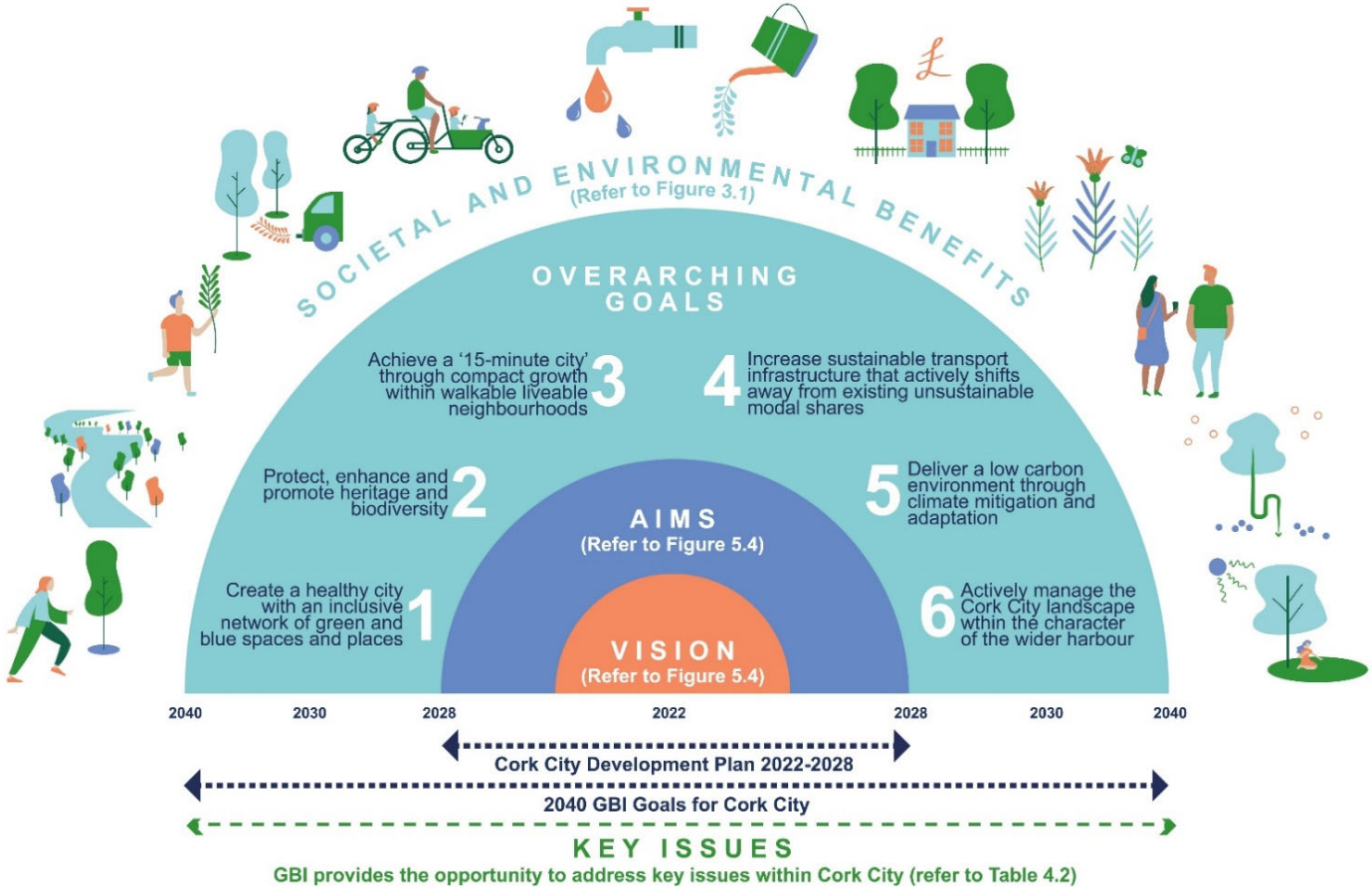

Image source: Växjö Kommun

Overarching GBI goals for Cork City

5.11 Analysis of the city's wider aspirations, coupled with the study of best practice examples, has informed the development of a series of GBI goals for Cork City. Six overarching goals, illustrated in **Figure 5.5**, have been identified to guide Cork City's approach to GBI up to 2040.

5.12 The goals will support the vision and aims of the Study which align with the timescales of the emerging Cork City Development Plan. Each goal will also address overarching areas of focus within Cork City.

Figure 5.5: Development of the overarching goals for GBI in Cork City



Chapter 6
Theme 1: Water Environment

Why is this theme relevant to GBI?

Climate Change

Climate change projections indicate increased temperatures, variability in rainfall and variations in the frequency and magnitude of extreme weather events. These changes will impact the water environment whether through drought and/ or higher risk of flooding as a result of intense storms. It is important to plan for changes and implement measures that mitigate these effects within Cork City. GBI can play a key role in increasing the resilience of the water environment to extreme weather events and future warming.

Wellbeing and Social Inclusion

Water features contribute to health and wellbeing in several ways. They provide opportunities for water-based recreation, often enabling people to come together and experience nature. Active travel routes and greenways tend to follow the course of waterways and river corridors, providing enhanced connectivity between urban and rural areas and the opportunity to undertake healthy physical activity for both commuting and pleasure.

Environmental Factors

River corridors can enhance air flow and filter out pollutants, contributing to improved air quality. However, waterways are at threat from a legacy of water quality issues from a range of pollutants. Careful management of waterways and their associated habitats (e.g. wetlands and floodplains) can seek to reverse declining trends and incorporate measures to enhance their role in filtering harmful pollutants.

Key GBI Assets

Lee-Cork Harbour catchment

6.1 Rising in the Shehy Mountains on the western border of County Cork, the River Lee flows eastwards through Cork City and is joined by a number of tributaries (including the River Bride, River Shournagh and River Martin) before entering Lough Mahon (see **Figure 6.1**). The watercourse enters the tidal waters in Cork Harbour and Youghal Bay, lying between Knockaverry and Templebreedy Battery and encompassing a total area of 2,153 km^2. The wider Lee-Cork Harbour catchment also includes a number of small streams which drain directly into Cork Harbour; including Glashaboy, Owennacurra, Tramore and Owenboy Rivers. In total, the Lee-Cork Harbour catchment comprises 18 sub-catchments with 92 river water bodies, three lakes, 13 transitional, six coastal water bodies and 16 groundwater bodies. There are also five heavily modified water bodies in the catchment[85].

6.2 Cork Harbour forms the second largest natural harbour in the world and covers an area of approximately 340 square kilometres. The Port of Cork is situated in the harbour itself and forms the key seaport in southern Ireland with an emerging tourism offer. The Lee-Cork Harbour catchment also includes two reservoirs upstream of the River Lee (Carrigadrohid and Inniscarra reservoirs). However, both have a relatively small capacity and, in the event of extensive floods, rainwater drains through a dam system[86]. These waterbodies are managed by the Electricity Supply Board (ESB) rather than the Council itself.

River Lee and its tributaries

6.3 Blue infrastructure within Cork City comprises watercourses (river, canal, streams), reservoirs, lakes, floodplains, riverbanks, wetlands and ponds. The city's watercourses form key linear landscape features which contribute towards good ecological connectivity and in some instances, provide opportunities for active travel. Data available from the EPA indicates that the current water quality for the watercourse ranges from 'moderately polluted' to

[85] EPA (2018) Lee-Cork Harbour Catchment Assessment 2010 – 2015 [online] Available at: https://catchments.ie/wp-content/files/catchmentassessments/19%20Lee,%20Cork%20Harbour%20and%20Youghal%20Bay%20Catchment%20Summary%20WFD%20Cycle%202.pdf

[86] ESB (undated) The River Lee information [online] Available at: https://www.esb.ie/docs/default-source/education-hub/river-lee-information

'unpolluted' with 'high and good' ecological quality. The River Lee is the city's primary source of blue infrastructure. The watercourse is fed by three major tributaries, the Bride, the Shournagh and the Curaheen. All three channels join the River Lee below Inniscarra and add to the flow of the river before reaching Cork City[87]. These together act as the main source of fluvial flooding within the city.

6.4 There is a history of frequent flooding within the Lee-Cork Harbour catchment and Cork City itself, resulting in damage to properties, infrastructure and farmland. In the recent past, significant flood events have occurred in 2004, 2006, 2009[88], and more recently in 2018, 2020[89] and in February 2021[90]. Changes to the climate will result in greater pressure on the water environment. Increased heat and more frequent drought during the summer months may result in reduced water levels within rivers and waterbodies, with potential impacts on water quality and biodiversity. Increasingly frequent flood events associated with sea level rise and extreme weather are also expected along the River Lee, with low-lying coastal and intertidal areas around Cork Harbour at risk.

Lower Lee Flood Relief Scheme

6.5 In light of flooding events and the predicted effects of climate change, the OPW in partnership with the Council have advanced plans for the Lower Lee Flood Relief Scheme (LLFRS). The scheme will deliver investment in flood protection, including significant public realm improvements and plans to incorporate natural solutions such as the designation of upstream washlands. A critical aspect of the LLFRS will be the incorporation of a flood Early Warning System (FEWS) to optimise flows from the upstream reservoirs in consideration of flows in the watercourses downstream of Inniscarra Reservoir, and effectively manage flood flows through the City Centre. The LLFRS will enable land adjacent to rivers to be deliberately flooded in advance of an extreme event to facilitate an increase in storage capacity within the Carrigadrohid and Inniscarra reservoirs[91]. The project forms the largest flood relief investment project ever proposed in Ireland.

The scheme aims to reduce the risk of flooding within the densely populated residential areas and the commercial and

[87] Ibid.
[88] OPW, Cork City Council, Cork County Council (2010) Draft Catchment Flood Risk Management Plan [online] Available at: https://discomap.eea.europa.eu/map/Data/Milieu/OURCOAST_285_UK/OURCOAST_285_UK_Doc3_CatchmentFloodManagementPlan.pdf
[89] Floodlist (2020) Ireland – Tidal Floods Hit County Cork [online] Available at: http://floodlist.com/europe/ireland-tidal-floods-cork-october-2020#:~:text=Local%20authorities%20in%20County%20Cork,early%20on%2020%20October%2C%202020.&text=Local%20media%20described%20it%20some,up%20to%201%20metre%20deep.
[90] Irish Times (2021) Cork braces for further flooding after torrential rain [online] Available at: https://www.irishtimes.com/news/ireland/irish-news/cork-braces-for-further-flooding-after-torrential-rain-1.4492660
[91] ARUP; OPW (2017) Lower Lee (Cork City) Flood Relief Scheme (Drainage Scheme). [online] Available at: https://www.floodinfo.ie/frs/media/filer_public/92/de/92de219c-e817-4fe2-894f-81d687b6905a/lowerleefrs_exhibitionreport.pdf

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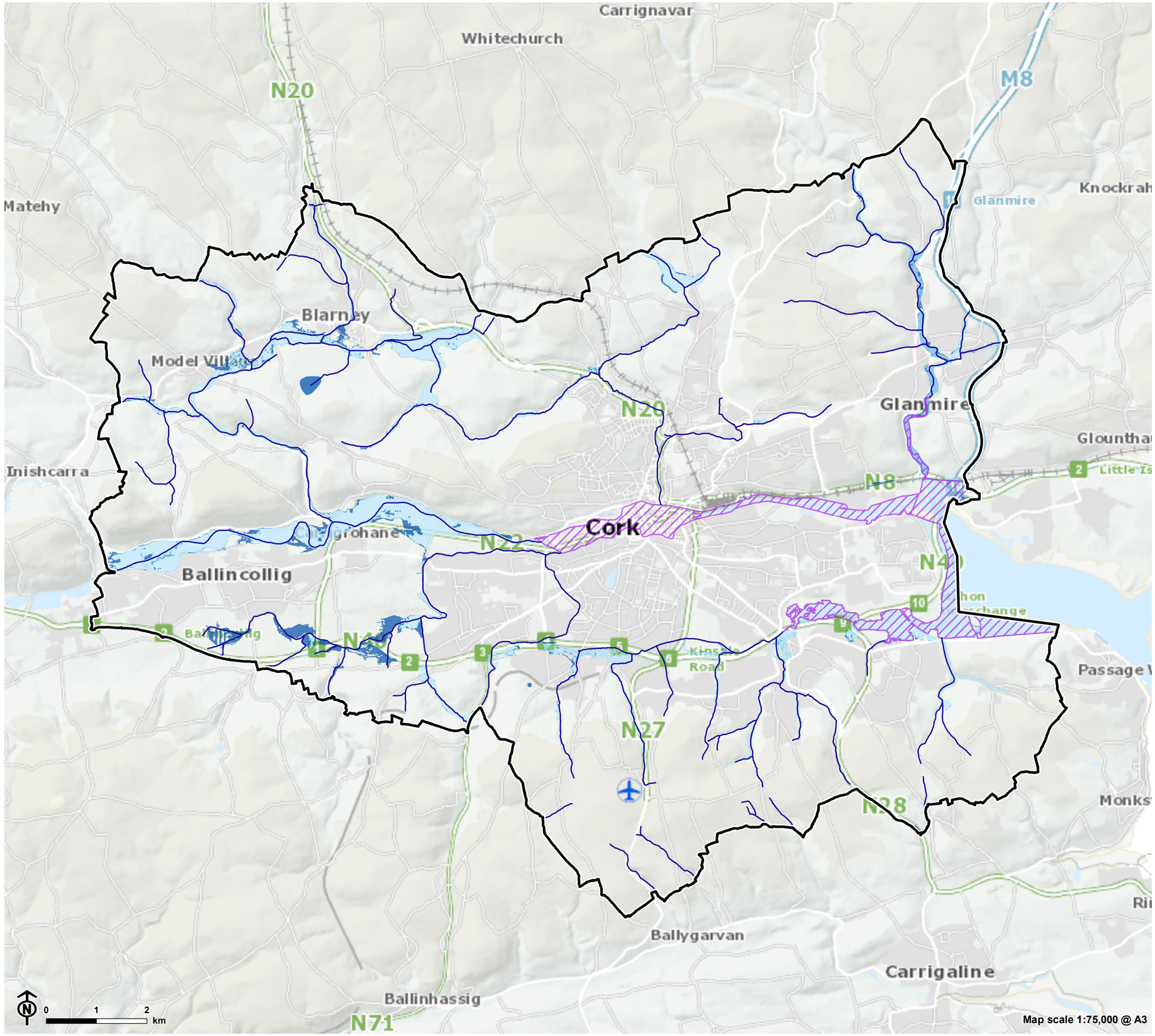
Cork City Council

LUC

Figure 6.1: Blue infrastucture



Cork City Council boundary
River
Transitional waterbodies
Flood zone a
Flood zone b

CB:CB EB:llott_J LUC FIGX_11280_r0_BlueInfrastructure_A3L 19/03/2021
Source: CCC, OSI, EPA

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business areas of the city. The primary goal of the scheme is to prevent future major flood events and is designed to protect over 2,100 properties, including 900 homes and 1,200 businesses against the tidal and river flooding. The project will deliver hard engineering solutions, in conjunction with floodplain restoration, to enhance connectivity to the river through the provision of new river walkways. The project forms the largest flood relief investment project ever proposed in Ireland[92].

Key Issues and Opportunities

Climate Change and flooding

6.6 Changes to the climate will result in greater pressure on the water environment. Increased heat and more frequent drought during the summer months may result in reduced water levels within rivers and waterbodies, with potential impacts on water quality and biodiversity. Increasingly frequent flood events associated with sea level rise and extreme weather are also expected along the River Lee, with low-lying coastal and intertidal areas around Cork Harbour at risk (see **Figure 6.2**).

6.7 The effects of flooding may be further exacerbated in the future by pressures for new development on floodplains and lack of incorporation of SuDS[93,94]. Therefore, new development in Cork City should be designed with consideration given to the potential impacts of climate change, and include measures to mitigate against those risks. For example, measures should be incorporated within green space to reduce runoff and intercept pollution which may otherwise reach watercourses.

Poor accessibility

6.8 It is important that open spaces and routes that can be used for recreational and leisure purposes are widely distributed across Cork City to ensure equity and ease of access. Currently, public access to the water environment is identified as a key constraint within the city. Although lengths of the River Lee are accessible to pedestrians (or as proposed as part of indicative route of the Lee to Sea Greenway), access to the water for recreational use such as kayaking or fishing etc. is limited. LLFRS seeks to deliver new public access points to the river for such purposes. As well as improving access to the water, it is important to improve the connectivity of walkways and greenways along watercourses for use by the public. In particular, improved access along minor rivers in the city should be considered. This is recognised within the LLFRS which also seeks to provide 1km of new walkways as part of project delivery.

[92] Ibid.
[93] Cork City Council (2008) Cork City Landscape Study. [online] Available at: https://www.corkcity.ie/en/media-folder/planning/cork-city-landscape-study-2008.pdf
[94] Cork County Council (2007) Cork County Draft Landscape Strategy. [online] Available at: http://corkcocoplans.ie/wp-content/uploads/bsk-pdf-manager/2016/07/Draft-Landscape-Strategy-2007.pdf

Hydromorphological conditions

6.9 Modifications to the morphology of the river channel due to inputs of excess fine sediment and alterations to the alignment of the river channel pose significant risks to habitat conditions in the Lee-Cork Harbour catchment. A number of sub-catchments are also subject to extensive modification due to channelisation.

6.10 The implementation of river and field drainage schemes, clear-felling forestry activities, and discharge from quarries form significant pressures in Cork City. These activities contribute to the incremental silting of water courses. Greater understanding and improvements in land use practices are required to address these issues in the wider catchment. Elevated nutrient levels, including excess phosphate leading to eutrophication, are also a concern in several water bodies within the city. Run-off from roads, in combination with seepage into groundwater from developed landscapes, contributes to diffuse pollution and requires a strategic catchment based solution.

Population growth

6.11 The ambitious growth targets set out in the Project Ireland 2040 NPF, Regional Spatial and Economic Strategy for the Southern Region (RSES) and upcoming Cork City Development Plan 2022 – 2028 are likely to put greater pressure on water recourses in Cork City. This will likely be due to increased water abstraction and wastewater production to meet public demand.

View towards Daly's Bridge across the River Lee

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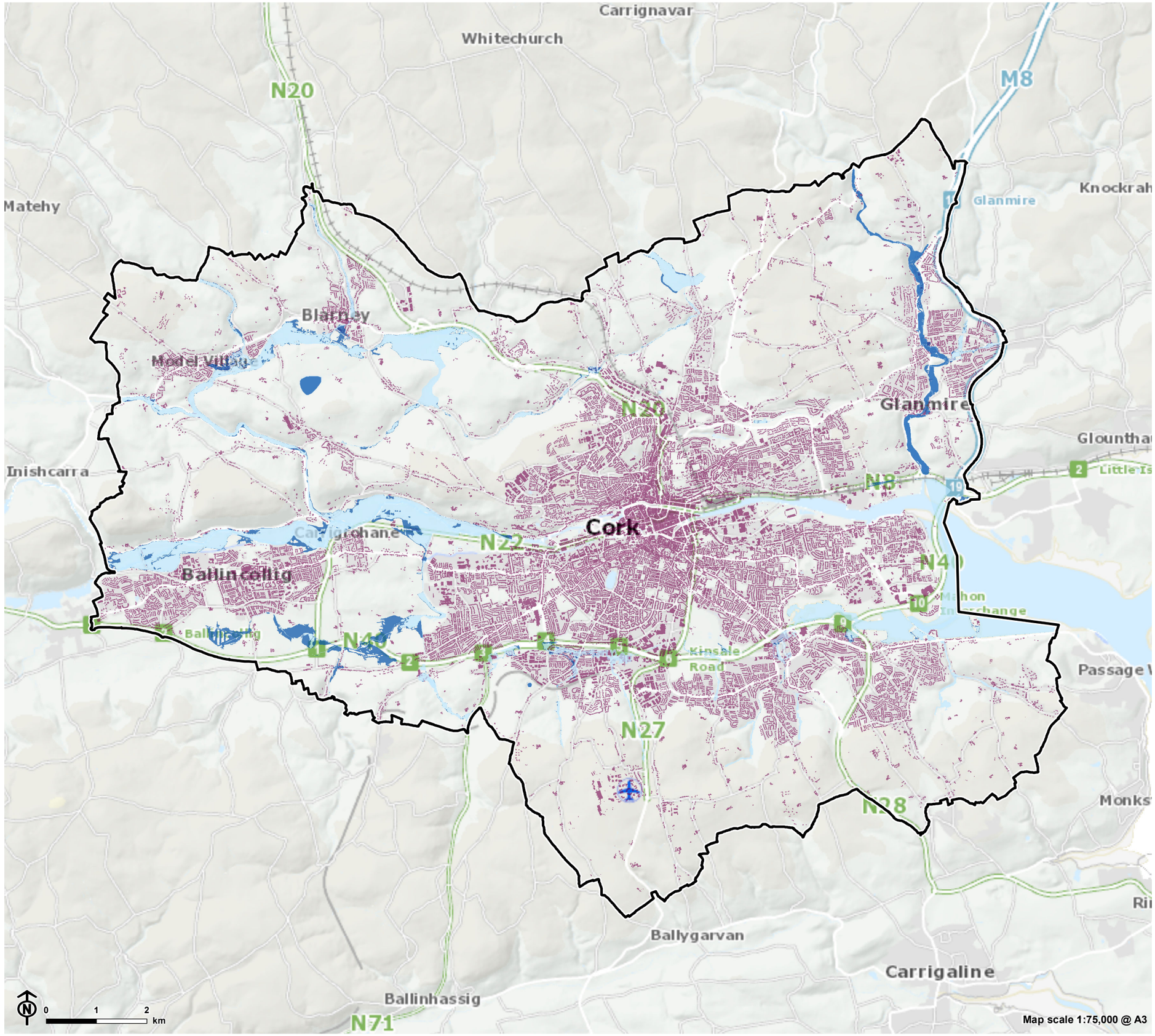
Figure 6.2: Flood risk



Cork City Council boundary
Flood zone b
Flood zone a
Building

CB:CB EB:llott_J LUC FIGX_11280_r0_FloodRisk_A3L 19/03/2021
Source: CCC, OSI

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Recreational pressure

6.12 With the projected growth in population within Cork City, there is predicted to be increased pressure for the provision of open space, including along watercourses and waterbodies. These assets provide important recreational opportunities; including kayaking, sailing, and fishing etc. Furthermore, the banks of watercourses and waterbodies can also provide recreational opportunities for walking and cycling, such as the Lee to Sea Greenway. Increased use of these recreational resources may result in degradation in the quality of the water environment due to greater rates of pollution, trampling of riparian and coastal vegetation, and general disturbance to watercourses and water bodies by the human activity.

Groundwater pollution and elevated nutrient concentrations

6.13 Changes in environmental or biotic conditions and water chemistry will influence the extent and distribution of favourable habitat conditions for flora and fauna. Sources may include agricultural, road or urban runoff which can incur pollution, pesticides, fertiliser or siltation. Hydrological connectivity provides a potential pathway to ecological features at distance from the pollution source and should be considered to determine a holistic solution.

6.14 Recreational activities may result in increased pollution and litter in the water environment. Furthermore, new development to meet the needs of a growing population is likely to result in greater surface water runoff and the transportation of pollutants to nearby watercourses. To mitigate this risk, SuDS should be integral to new development, particularly development proposals in close proximity to rivers and waterbodies. In addition, increased support is needed to prevent pollution from pharmaceutical and dairy plants, agricultural runoff, chemical and pesticide sprays, commercial forestry, sewage and household detergents. Climatic changes are predicted to modify the chemical composition of water in watercourses. For example, increased precipitation in the winter months and warmer waters in the summer may result in algal blooms which significantly reduce the oxygen levels in local waterbodies. Reduced flows in summer could concentrate pollutants.

Consultation findings – key challenges

- Ensure active blue corridors are appropriately managed.
- Reduce future pressure on water infrastructure; including water abstraction, and wastewater treatment plants.
- Prevent invasive species, particularly in relation to the impacts of fisheries on native species.
- Address increased frequency of flood events arising from changing climate, including issues relating to hard-engineering infrastructure and enhancing the provision of natural flood management.
- Respond to potential sources of water pollution and prevent new development from further contributing to pollution in the water environment.
- Address the deficiency in the availability of access to the water environment for recreational purposes within Cork City.
- Resolve the conflicting demands of recreational provision and biodiversity within the water environment.

Potential GBI Opportunities and Existing Interventions

6.15 A list of potential GBI opportunities and existing interventions are listed below in **Table 6.1.** The existing GBI baseline within this theme is summarised visually in **Figure 6.3.**

Table 6.1: A summary of GBI opportunities / existing initiatives / delivery partners

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
Address flood risk at the catchment scale (see Chapter 8)	✓	✓	✓	Integrate measures to offset peak flood flows through development of the following projects: ■ Nature based solutions and slow-the-flow initiatives; ■ Incorporation of SuDS to limit runoff from existing and new development; and ■ Wetland enhancement on the floodplain of the River Lee. ■ Provision of an integrated River Basin Management Plan for	The Council Office of Public Works Climate Action Regional Offices (CARO) Irish Water Cork County Council	✓	✓		 Biodiversity  Economic Value and Land Management  Climate Change and the Environment

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				the River Lee catchment. Introduce a programme of 'strategic SuDS' as a public sector led initiative to slow run-off and enhance the management of water within urban green spaces.					
Integrate river enhancement works	✓	✓		The opportunity exists to incorporate river enhancement works to help naturalise the channel of the River Lee. Sections of the watercourse have been subject to heavy engineering works over time. The city was originally made up of 13 islands which were joined by the filling in of smaller channels, and two dams were constructed to regulate flow. Potential interventions to enhance the river channel are outlined below: ■ Centre channel pools;	The Council Office of Public Works Inland Fisheries Ireland (IFI) Local Authority Waters Programme EPA Waterways Ireland Cork Environmental Forum	✓			 People, Communities, Health and Wellbeing  Biodiversity  Climate Change and the Environment

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				■ Lateral scour pools; ■ Gravel placement; ■ Spawning gravel; ■ Rubble mats; ■ Paired stone deflectors; ■ Alternating stone deflectors; ■ Vortex stone weirs; and ■ Introduction and improvement of fish passages. Due to constraints regarding the existing built environment and the potential to impact flood risk locally, some of these measures may have limited suitability. River enhancement works may be most applicable upstream of the City Centre where there are fewer sensitive receptors in terms	Cork County Council				

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				of vulnerability to flood risk. Consideration should also be given to the Martin River and River Bride Areas for Action.					
Introduce a programme of weir restoration	✓			Restoration works may be of benefit to a number of weirs on the River Lee, notably: ■ Ballincollig Regional Park; and ■ River Split Weir (also known as the Sluice) downstream of Lee Fields. Improvement works could result in associated benefits to the local ecosystem, and also for potential recreational users.	The Council Office of Public Works IFI Local Authority Waters Programme EPA Waterways Ireland	✓			 People, Communities, Health and Wellbeing  Landscape and the Harbour  Biodiversity  Tourism, Culture, Recreation and Leisure

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
Opportunity to highlight and increase usage of existing bridges as crossing opportunities along the River Lee	✓			There are over 30 bridges crossing the River Lee in Cork City, along with a number of weirs. The potential exists to improve the awareness of these features as part of active travel corridors which provide linkages to facilities on each side of the river. The bridges themselves could also serve as local history features along walking and cycling routes.	The Council Cork Healthy Cities Transport Infrastructure Ireland Cork County Council	✓			 People, Communities, Health and Wellbeing  Access and Connectivity  Landscape and the Harbour
Promotion of Cork City as a destination for water-based recreation	✓	✓	✓	The River Lee boasts a wide variety of established water sports clubs (kayaking, canoeing, rowing, fishing), albeit availability of access to the water forms a significant issue. The opportunity exists for Fitzgerald Park to be used as a potential green starting	Cork Healthy Cities River Lee Placemaking Group Cork Sports Partnership Sport Ireland / Urban Outdoor	✓	✓		 People, Communities, Health and Wellbeing  Landscape and the Harbour

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				and landing point for blue recreation. Through the establishment of new trails and enhancement of the Lee to Sea Greenway, the scope exists to develop and improve localised access points (in conjunction with local stakeholders).	Initiative Project Cork Harbour Festival Marine Institute				 Tourism, Culture, Recreation and Leisure  Access and Connectivity
Introduce a network of riparian buffer corridors (see Chapter 8)	✓	✓	✓	Implement GBI proposals in accordance with the recommended buffer zones defined by the IFI in order to protect the riparian section of rivers and streams. Potential interventions include the following: ■ Protection of the streamside zone, (no construction / within 15m of riverbanks; ■ Minimal disturbance of the corridor 15-30m	The Council Private Developers Environment Protection Agency National Parks and Wildlife Service Local landowners Cork County Council	✓			 People, Communities, Health and Wellbeing  Landscape and the Harbour  Biodiversity

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				from the river. Explore the opportunity to use this land for local amenity; ■ Utilisation of outer riparian buffer zone (>8m) for treatment and reduction of stormflow runoff from development and transport (SuDS). Furthermore, riparian buffer strips on agricultural land should be encouraged.					 Tourism, Culture, Recreation and Leisure  Climate Change and the Environment
Encourage the integration of GBI in new development to protect and enhance the water environment (see	✓			The development of the LLFRS presents a number of opportunities to shape new GBI through the following initiatives: ■ New/improved access to be provided to the river for recreational users; and	The Council Private Developers Environment Protection Agency National Parks and Wildlife Service	✓	✓		 Landscape and the Harbour  Biodiversity

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
Chapters 7, 11, 12 and 13)				■ Linkage between the river recreational routes along watercourses. In addition, GBI should be promoted in all new developments, including: ■ Green roofs; ■ Rainwater harvesting such as at Patrick Hanley Buildings, Grattan Street and by using rainwater boxes; ■ Natural banks, water dykes and water squares; and ■ SuDS and natural flood management techniques.	Local landowners Cork County Council				 Climate Change and the Environment  People, Communities, Health and Wellbeing  Access and Connectivity  Tourism, Culture, Recreation and Leisure

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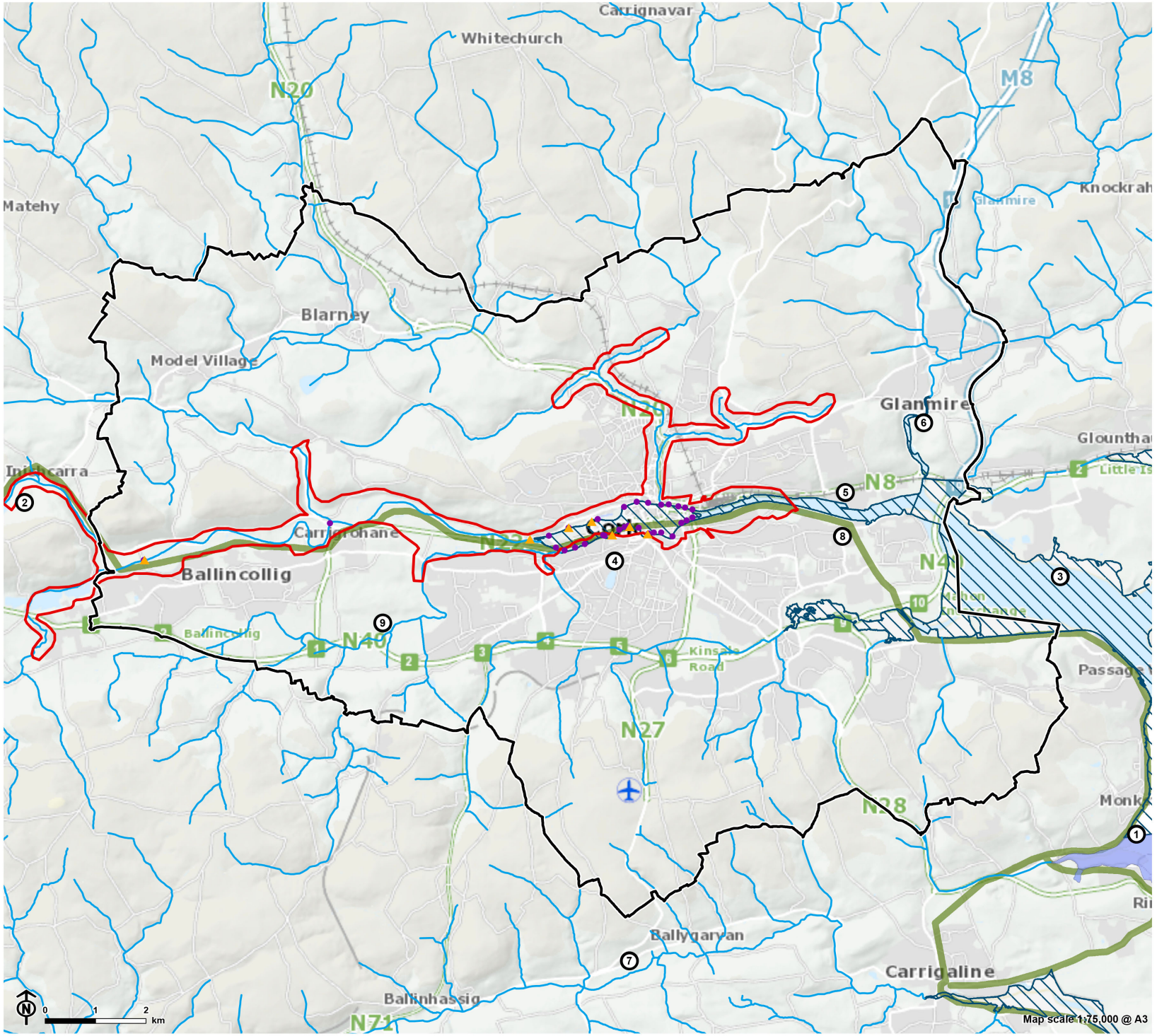
Figure 6.3: Current baseline of GBI in Cork City – The Water Environment



- Cork City Council boundary
- Transitional waterbody
- Coastal waterbodies
- Lower Lee flood relief scheme
- Lee to Sea greenway
- River
- Bridge crossing River Lee
- Weir associated with the River Lee
- 1: Cork Harbour
- 2: Iniscarra Reservoir
- 3: Lough Mahon
- 4: Glen Fitzgerald Park
- 5: River Lee
- 6: Glashaboy River
- 7: River Owenabue
- 8: Atlantic Pond
- 9: River Curaheen

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CB:JI EB:Willshear_R LUC FIGX_11280_r0_Baseline_TheWaterEnv_A3L 09/04/2021
Source: LUC, CCC, OSI

Chapter 7
Theme 2: Landscape and the Harbour

Why is this theme relevant to GBI?

Climate Change

Unique landscapes and heritage assets are inherently sensitive to the impacts of climate change. A well-planned GBI network considers those assets most at risk and seeks to ameliorate detrimental impacts, ensuring the assets unique to an area continue to provide the valuable ecosystem services for which they are known.

Wellbeing and Social Inclusion

The identification of GBI opportunities aims to conserve and enhance the enjoyment of the environment as well as increase the accessibility of these assets to residents and visitors. Urban and rural sites, as well as the broader historic environment make an important contribution to sense of place, time depth, local identity and distinctiveness. These assets also contribute to quality of life parameters and support healthy access to the outdoors by promoting access to all.

Environmental Factors

GBI contributes to the wider setting of open spaces; helping to restore areas of degraded landscape character,

enhancing the condition and setting of landscape features and promoting a sense of place. A large component of Cork City's identity relates to the interaction between the land and water environment, providing important areas of interest which require thought when considering the wider GBI network.

Key GBI Assets

Landscape Character

7.1 Cork City is bounded by distinctive ridgelines and topography to the north and south, which reach highs of between 140-150m Above Ordnance Datum (AOD) and 70-80m AOD, respectively. The ridgeline to the north is formed by the lower ranges of the Boggeragh Mountains to the north west and the Nagle Mountains to the north, whilst the southern ridges form part of the Shehy Mountains. The City Centre itself grew on lower-lying ground (<10m AOD), with the core of the city on islands within the River Lee which flows towards Lough Mahon and Cork Harbour in the east. The general topography of the city was largely influenced by the movement of glaciers which carved out the Lee Valley.

7.2 The River Lee is a dominant feature within the city, with the harbour and estuary forming a picturesque and open setting to the east of the city. These features are supplemented by a range of public open spaces and parks which form a natural backdrop to the built up part of the city. Industrial areas are primarily located on the north and south docklands, to the east of the City Centre, whilst residential development is found to the north and south of the River Lee.

7.3 Cork City features a wide range of landscapes, including wetlands, shingle beaches, reedbeds and wet grassland in the harbour area, broad valleys with agricultural fields bound by broadleaf trees and hedgerows, and transitional slopes between rugged hills and flatter farmland. Beyond the built up area of the city, and nearby settlements (e.g. Blarney and Ballincollig), the predominant land use is agriculture, with a mosaic of medium-sized fields interspersed with tracts of forestry.

National Landscape Character Assessment

7.4 Ireland currently does not have a National Landscape Character Assessment. However, the National Landscape Strategy for Ireland 2015-2025[95] outlines a key objective to include the development of a National Landscape Character Assessment.

[95] Department of Arts, Heritage and the Gaeltacht (2015) National Landscape Strategy for Ireland 2015-2025 (online) Available at: https://www.irish-shop.de/dokumente/01311-nat.-landscape-strategy_2015-2015.pdf

Local Landscape Character Assessment

7.5 A Landscape Strategy of County Cork outlines the landscape character types surrounding the urban centre. As indicated in **Figure 7.1**, the landscape character of Cork City is encompassed within three LCTs as identified within the landscape character assessment:

- **LCT 1 – City Harbour and Estuary** extending across extensive areas of the city
- **LCT 6a – Broad Fertile Lowland Valleys** in the western half of the Cork City area and along the southern boundary.
- **LCT 10b – Fissured Fertile Middleground (Rylane east to Waterford)** covering a small area to the north-east of the City Centre.

7.6 The majority of the landscape in Cork City lies within LCT 1 and LCT 6a.

7.7 LCT 1 City Harbour and Estuary is characterised by a mix of rural and intensely urban areas, combined with a large expansive harbour. The city docks, to the west of the harbour are characterised by major industrial development whilst port facilities and related industries form the dominant land use to the south of the city. The harbour itself is typified by a wealth of natural heritage, including wetlands of international importance, and a variety of other protected habitats such as tidal mudflats, saltmarsh, shingle beaches, reedbeds and wet grassland. The LCT exhibits a rural quality, comprising agricultural land use, with belts of deciduous forestry. Due to competing land use for agricultural purposes, the LCT is characterised by limited commercial forestry. Rural areas now feature infrastructure such as roads, power lines and some urban sprawl. Due to the pattern of population growth within Cork City, there is an increasing number of isolated dwellings in the rural countryside, and new developments on the edges of settlements.

7.8 The landscape character assessment identifies this LCT as having very high value and sensitivity, and identifies it as being of national importance.

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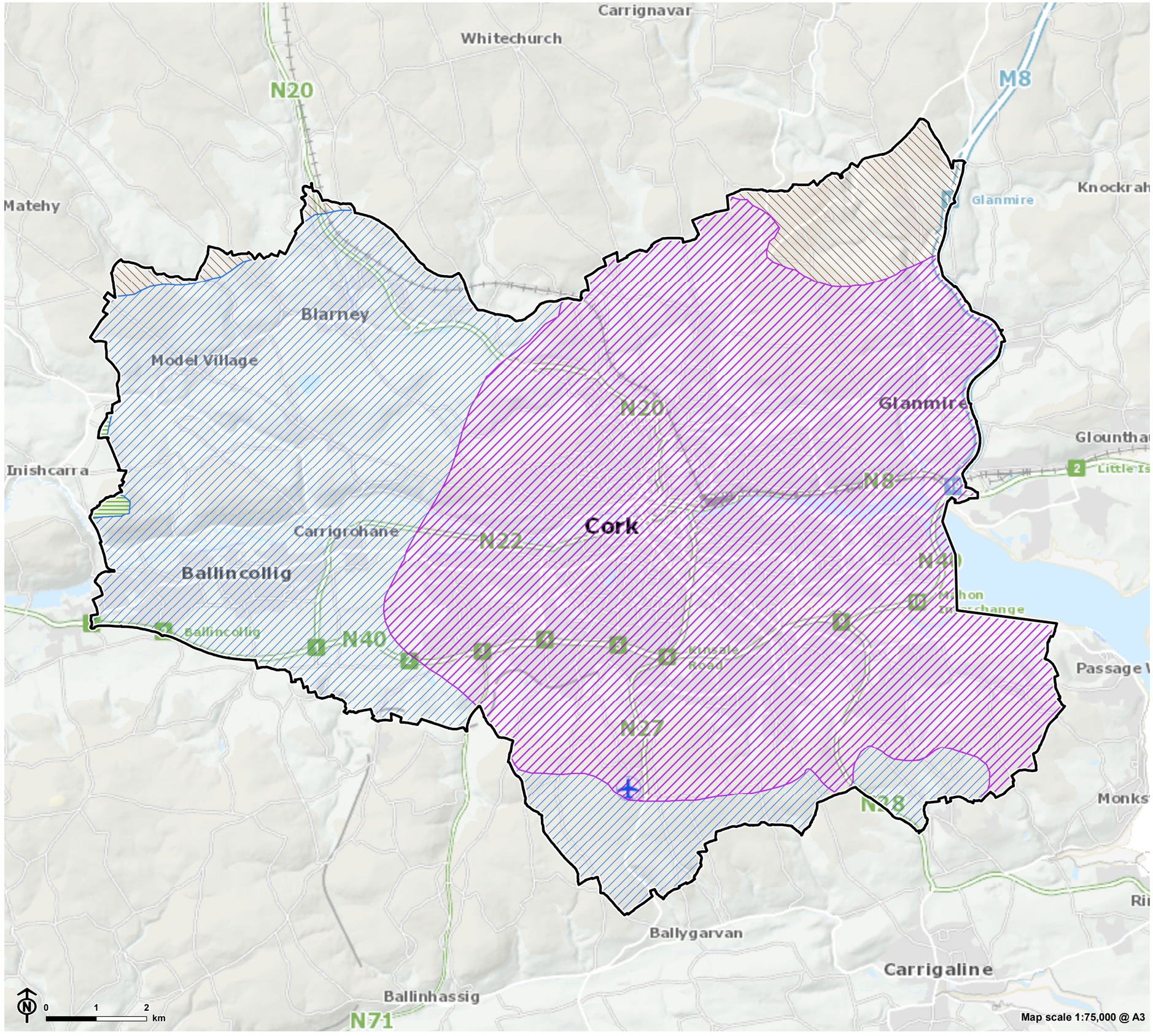
Figure 7.1: Landscape character



Cork City Council boundary

Landscape character types

- Broad fertile lowland valleys
- City harbour and estuary
- Fissured fertile middleground
- Hilly River and Reservoir Valleys

CB:CB EB:llott_J LUC FIGX_11280_r0_LandscapeCharacter_A3L 19/03/2021
Source: CCC, OSI

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7.9 LCT 6a Broad Fertile Lowland Valleys stretches to the east of Cork City. The LCT is characterised by shallow and flat winding valleys of the River Lee and River Bandon, which are west-east oriented. The valleys are surrounded by well-spaced ridges. Landcover across this LCT is dominated by a mosaic of regularly shaped, medium-sized fields which are typically enclosed by broadleaf hedgerows. The landscape is generally highly fertile, owing to the brown podzolic soils, and extensive areas of alluvial floodplain. Broadleaf shelterbelts punctuate the landscape. The LCT includes some of the larger settlements to the west of Cork City, notably Ballincollig and Blarney. In general, settlements in the area exhibit a strong character reflecting the historic agricultural wealth of the area. However, incongruous homogenous housing estates on the fringes of settlements are becoming more common, as are isolated dwellings in the countryside.

7.10 The landscape character assessment identifies this LCT as having high value and sensitivity, and identifies it as being of county importance.

7.11 The Cork City Landscape Study 2008 was commissioned by the Council to establish principles and provide the framework for protection and enhancement of the natural environment. The document plans positively for change, as well as providing the context within which the design of developments can take place in an appropriate manner. The landscape character assessment within this study identifies eight Landscape Character Areas (LCAs) within the city, as shown on **Figure 7.2**. The LCAs included within the city include:

- Estuarine / Riverine
- Natural harbour
- Historic urban core
- Fine-grained inner-city residential
- Suburban residential
- Urban sylvan character
- Urban industrial / commercial, and
- Rural agricultural.

Landscape Designations

7.12 Cork County Council has designated much of Cork Harbour, which has broadly similar extents to LCT 1, as an area of High Value Landscape. Whilst this does not encompass Cork City Centre, it borders this area to the north and south. Additionally, the Council has designated 40 distinct areas within the city as Areas of High Landscape Value (AHLV) (see **Figure 7.3**). These typically combine one of the primary landscape features (topography, river corridor, tree cover etc.) with other landscape assets. The AHLVs display an intrinsic landscape character and a special amenity value.

Urban Greening

7.13 Urban greening in the form of street trees, green roofs and vertical greening provide many benefits to the local

environment. The presence of vegetation in built-up environments can deliver a host of benefits; including shading, filtering of air pollutants, habitat creation for biodiversity (including pollinators) and a contribution towards local landscape character enhancements.

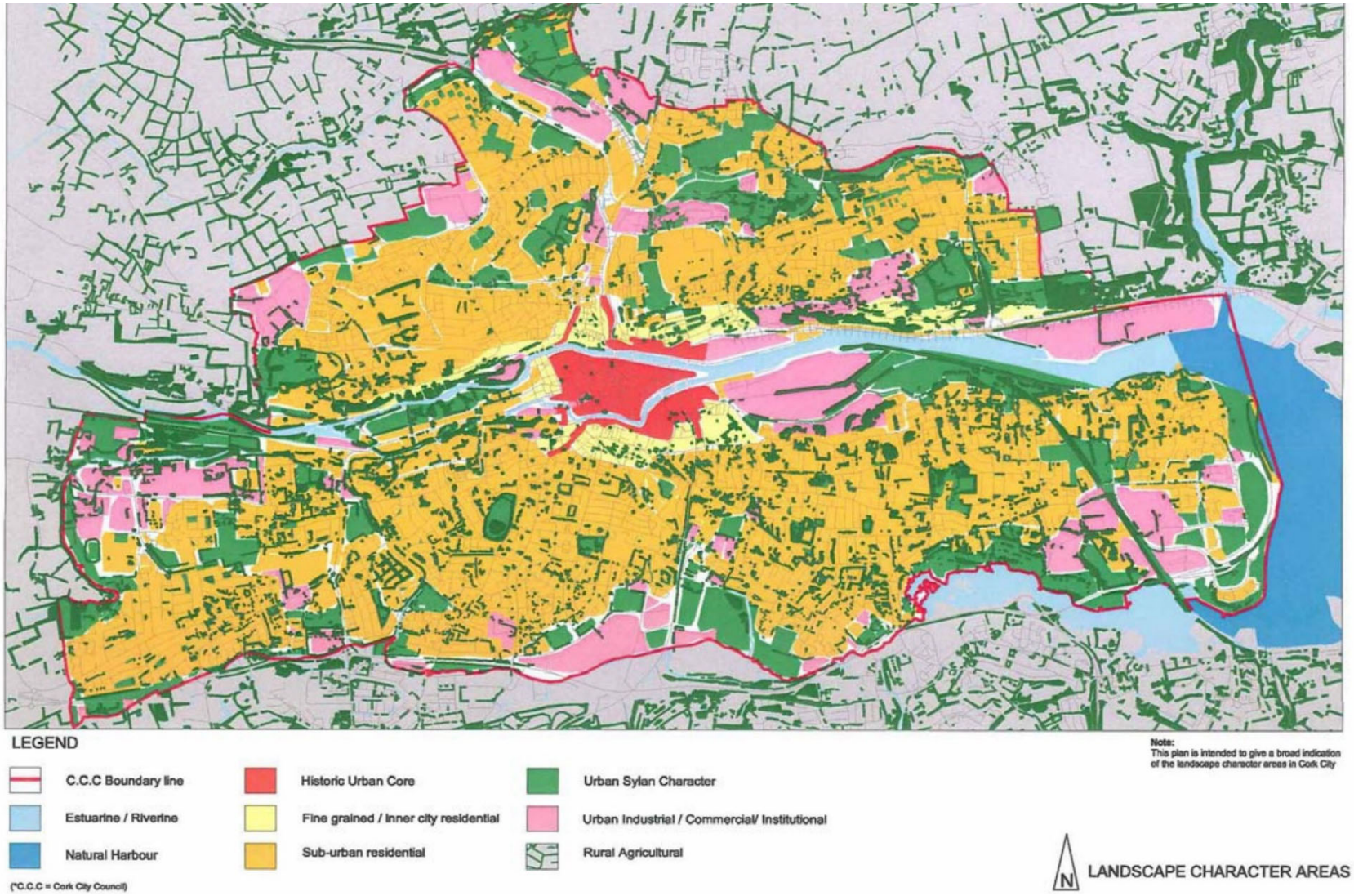
7.14 Examples of urban greening are already evident within Cork City. Street trees and areas of open space are found throughout the city, and more innovative forms of urban greening are becoming more common. For example, the Cork Rooftop Farm[96] has converted an unused flat roof above a large warehouse to a sustainable urban farm to be used by the community. Other projects in development include the installation of City Trees[97] which use mosses to filter air pollutants and cool the nearby air.

[96] https://www.corkrooftopfarm.ie/about-us/

[97] https://greencitysolutions.de/en/products/citytree/

Cork Rooftop Farm

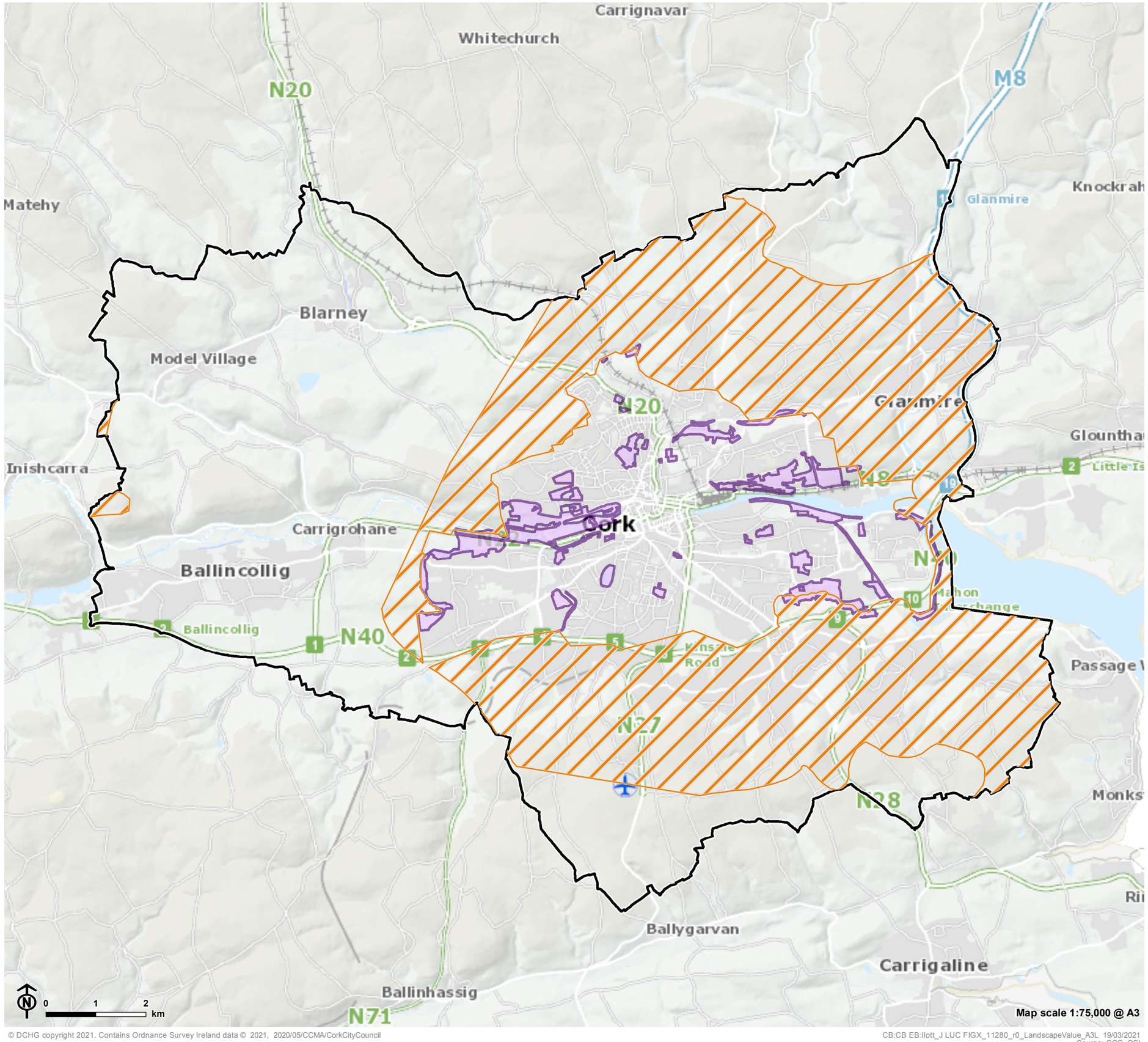
Figure 7.2: LCAs identified in the Cork City Landscape Study (2008)



Green and Blue Infrastructure Study
Cork City Council

LUC

Figure 7.3: Landscape value



Cork City Council boundary
High value landscape
Areas of high landscape value

CB:CB EB:llott_J LUC FIGX_11280_r0_LandscapeValue_A3L 19/03/2021
Source: CCC, OSI

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Key Issues and Opportunities

Climate change

7.15 Changes to the climate will put greater pressure on the landscape. Increased heat and drought in summer, sea level rise, and wetter winters will all present a direct risk to landscape character and quality in Cork City[98].

7.16 More frequent flood events associated with sea level rise and extreme weather are expected along the River Lee, with low-lying coastal areas around Cork Harbour also expected to be affected. Such flood events have drastically altered the landscape and townscape of Cork City in the past and are likely to continue to do so in the future. The effects of flooding may be further exacerbated by pressures for new development on floodplains, and lack of incorporation of SuDS[99,100]. Furthermore, a changing climate could result in increased risk of pests and diseases affecting trees and vegetation[101], and greater risk of wildfire[102]. Additionally, alternating periods of extreme weather, including drought and precipitation may put greater stress on vegetation.

7.17 New development should seek to include greening measures to help mitigate against the effects of climate change. For example, the provision of green space and trees within and around new developments helps to deliver shading and cooling within the hotter summer months, whilst minimising surface water runoff and flood risk in the wet winter months. Such measures may increase carbon sequestration and also positively contribute towards the local landscape, by incorporating natural features into built-up environments.

7.18 In addition, opportunities should be sought to harness areas of green and blue space as a source of clean energy[103], for example, through use of ground source heat pumps, small-scale hydropower schemes, and solar panels on built development. This may be particularly useful in densely populated areas where there is greater demand for energy.

Habitat fragmentation

7.19 An increasing demand for new development could result in the reductions in the size of, and increased fragmentation of semi-natural greenspace and priority habitats. These habitats not only provide benefits for biodiversity, but are integral to defining the local landscape character. Development which results in the loss of defining features such as trees, hedgerows, and semi-natural or natural greenspace, therefore, may alter the landscape character of the city.

7.20 Where possible, new development should seek to maintain habitat connections, or provide new linkages to

[98] http://corkcocoplans.ie/wp-content/uploads/bsk-pdf-manager/2016/07/Draft-Landscape-Strategy-2007.pdf
[99] https://www.corkcity.ie/en/media-folder/planning/cork-city-landscape-study-2008.pdf
[100] http://corkcocoplans.ie/wp-content/uploads/bsk-pdf-manager/2016/07/Draft-Landscape-Strategy-2007.pdf
[101] https://www.epa.ie/irelandsenvironment/environmentandwellbeing/
[102] Ibid
[103] https://www.greenspacescotland.org.uk/pages/category/energy

nearby areas of habitat. If direct improvements to the connectivity of the ecological network are not feasible on site, off-site compensation, including landscape enhancement should be sought.

Recreational pressure

7.21 With the projected growth in population within Cork City, there is likely to be increased pressure for provision of recreational facilities in the form of open green space, routes and formal sports facilities[104]. Additionally, there may be an added burden placed on existing facilities and GBI. As such, the quality of these existing areas may degrade and deteriorate, and their contribution to the local landscape character diminish. To avoid these issues, it is vital that:

- Important elements of the existing GBI network are protected,
- Management of existing GBI is improved to reflect increased demand; and
- New development includes provision for new GBI resources.

7.22 The development of new housing and infrastructure to meet the needs of the population may result in the loss of existing areas of open space, which provide recreational opportunities and contribute towards the character and quality of the landscape. Furthermore, development of new sports facilities may also result in the loss of existing open space.

Future development pressures and population growth

7.23 To meet the requirements of a growing population, there will be an associated need for growth in the economy to accommodate enterprise and employment, housing, infrastructure and transport. Such development is likely to put greater pressure on the landscape, particularly in the rural fringes of the city, where urban sprawl is already being experienced and is expected to continue to rise[105]. The landscape study for Cork City[106] highlights that urban sprawl on the edges of the city may result in subsequent encroachment to the ridge-lines and agricultural lands enclosing the city.

7.24 Additionally, the Landscape Strategy for County Cork also identifies that ribbon development along approach roads to settlements and clusters of residential development is evident in most parts of the rural landscape surrounding Cork City. Demand for housing is high in and around the city, and increased population growth is likely to accelerate ribbon development in the rural fringes.

7.25 In addition to an increase in housing within the urban fringe and rural areas of the city, there may be increased pressure for supporting infrastructure and services for these

[104] Ibid.
[105] http://corkcocoplans.ie/wp-content/uploads/bsk-pdf-manager/2016/07/Draft-Landscape-Strategy-2007.pdf
[106] https://www.corkcity.ie/en/media-folder/planning/cork-city-landscape-study-2008.pdf

developments, such as upgraded roads, power and water infrastructure. These supporting developments are likely to also contribute towards changes and degradation of landscape character and quality. It is important to ensure that new development, where possible, incorporates urban greening and/or green space whilst balancing the priorities and needs of future communities. This could include enhancements to the local landscape and townscape.

Landscape condition

7.26 New development and changes in land use may result in the degradation of the landscape and visual resource, including loss of important views and visual linkages to the natural and built environment. Development should be sensitively designed to fit with the local vernacular, and where necessary utilise landscape mitigation to screen development and maintain important vistas within the landscape. High quality design and siting is also required to fit development into the landscape so it offers a positive contribution to the character and quality of the area.

Consultation findings – key challenges

- Increase support to protect rich natural habitats and the Green Belt which are at risk from urban sprawl and predicted growth.
- Consider land uses where conflicts exist between private interests and public good.
- Address the importance of landscape value and the need for alignment of objectives of the Development Plan with key landscape priorities.
- Adopt a balanced approach to residential and commercial land uses, including enhanced management of multiple uses and competing demands.
- Increase support to ensure permeability of new urban development to allow access to open green and blue environments.
- Address the aspiration for sustainable regeneration of Cork Port, with specific emphasis placed on the promotion of transport connectivity at the harbour. The consideration of impacts from commercial shipping was also emphasised.
- Consider the importance of blue ways and the impact of flooding reduction measures on access to the river.
- Address the conflicting aims of port development and protection of biodiversity resources.

Potential GBI Opportunities and Existing Interventions

7.27 A list of potential GBI opportunities and existing interventions are listed below in **Table 7.1**. The existing GBI baseline within this theme is summarised visually in **Figure 7.4.**

Table 7.1: Summary of potential GBI opportunities / existing initiatives / delivery partners

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
Support the development and enhancement of two regional parks (see Chapter 11)			✓	Support the commitment listed in the Climate Change Adaptation Strategy to develop two new regional parks at the following locations within Cork City: ■ North West Regional Park; and, ■ North East Regional Park. The proposals should Utilise GBI to enhance the urban context as well as provide a range of opportunities for recreation within the north east and north west areas of the city. Following the success	The Council EU Development Fund Cork Healthy Cities Cork Green Spaces for Health Cork Environmental Forum	✓	✓		 Tourism, Culture, Recreation and Leisure  People, Communities, Health and Wellbeing

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				of the recently opened Tramore Valley Park, investment in two regional parks affords the opportunity to utilise GBI to enhance the urban context as well as provide a range of opportunities for recreation.					
Maintain and enhance existing open space provision (see Chapter 11)			✓	Ensure new development in the Hinterland addresses open space, play, sport and recreational needs as part of site design and layout. This may include improvements to surrounding open space, creation of pocket parks and high-quality public realm, including as part of the LLFRS.	Cork Healthy Cities Cork Green Spaces for Health The Council Tidy Towns Cork Environmental Forum	✓			 Tourism, Culture, Recreation and Leisure  Climate Change and the Environment

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
Utilise GBI to connect the existing network of green spaces (see Chapters 8, 11, 12 and 13)	✓	✓	✓	Provide pedestrian and open space connections to link existing green space, including: ■ In areas around St Fin Barrer's Cathedral; ■ Improving access to the River Lee; ■ Pedestrian access across the bridge to Blarney; ■ Between north and south Glanmire via the Crestfield shopping centre; ■ New routes based on desire lines in Glanmire ■ Upgrading the greenways between the Marina and N40 overpass (Mahon); ■ Investigate the potential to deliver high value open spaces by extending the Glen	National Transport Authority (NTA) The Council Cork County Council Coillte Failte Ireland Dept of Education Dept of Housing and Planning Cork Chamber Cork Business Association (CBA) Land Development Agency (LDA)	✓	✓		 Biodiversity  The Water Environment  Climate Change and the Environment  Access and Connectivity

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				River Park along the North Ring Road to Tinker's Cross public space to provide a continuous riverside amenity route; ■ Tramore Valley Park to Mount Vernon Link; ■ City Centre to Docklands Park 8 Scheme; ■ Implementation of all phases of the wider Passage Railway Greenway Project and utilise disused railway tracks, particularly the route north of Cork Kent Station (currently vacant land) which could be linked with the playground on O'Mahoney's Avenue and open green space	Ireland Strategic Investment Fund (ISIF) Crestfield Shopping Centre Cork Cycling Campaign Lee to Sea Greenway Group				

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				to the north of O'Mahoney's Avenue; ■ New park located immediately north of Blarney Woollen Mills and establishment of a link with the existing Waterloo Amenity Walk in Blarney; ■ Enhancing the Lee to Sea Greenway from Inniscarra to Crosshaven via Ballincollig and Cork City Centre, including providing a strategic link between Ballingcollig Regional Park; Lee Fields, Fitzgerald's Park, and Marina Park. ■ Quaker House – Greening for nature;					

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				■ Delivering access to Tramore Park via Grange Frankfield; ■ Linking the three parks in Shandon; ■ Link Sally Brook, Glanmire and Riverstown to Vienna Woods and Mayfield; ■ Improve connectivity between Ballincollig Regional Park and the city centre as part of the LLFRS; and, ■ Enhance Natural Heritage Areas, recognising their importance for recreational and amenity purposes.					

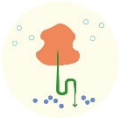
Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
Ensure that GBI assets are resilient and play a role in adapting to climate change	✓	✓	✓	■ Identify and manage habitats and landscape features under threat from climate change (e.g. intertidal habitats squeezed by rising sea levels); ■ Select species suited to projected future changes in the climate; ■ Guard against the risk of increased pests and disease by regular monitoring and adopting the principles of diversity in new planting; ■ Integrate measures to manage surface water into greenspaces and streetscapes – wetlands, swales, dry river channels, rain gardens; ■ Design urban greenspaces to	The Council Cork Healthy Cities CARO Energy Cork Local Enterprise Office Cork Chamber CBA Sustainable Energy Authority of Ireland Coillte	✓			 Biodiversity  The Water Environment  Climate Change and the Environment

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				maximise future shade and cooling effect; ■ Identify opportunities to increase carbon sequestration and storage within greenspaces; ■ Explore the potential of urban greenspaces to provide a source of clean energy; ■ Manage woodland and scrub to minimise the risk of wildfire;Use Cork City's GBI assets to raise awareness of, and action on climate change.					
Integrate GBI standards for new development and regeneration	✓	✓		Incorporate GBI into new development and regeneration projects within Cork City, notably: ■ Tivoli Docklands regeneration project;	Developers The Council Cork Environmental Forum	✓	✓		Biodiversity

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
projects (see Chapters 6, 11, 12 and 13)				■ Custom House Quay development; and, ■ New and existing quarry developments, particularly in relation to the restoration plans. In relation to new development, proposals should: ■ Respect the existing character of the local environment, particularly in smaller settlements in rural locations; ■ Avoid ribbon development and urban sprawl; ■ Have regard to the rich and diverse natural heritage in the landscape and NHA's that are designated for protection;					 People, Communities, Health and Wellbeing  The Water Environment  Climate Change and the Environment

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				■ Protect existing GBI assets; ■ Provide new GBI as an integral part of the development; and, ■ Where appropriate, provide off-site compensation and enhancement.					
Enhance the water environment within Cork City (see Chapter 6)	✓	✓	✓	Seek opportunities to improve the quality of the water environment, including the riverside of the Lee and Cork Harbour. Opportunities include: ■ Improving access to the River Lee; ■ Opening up existing culverts and avoid new culverts to restore natural stream and river courses; ■ Incorporating nature based sustainable	Developers The Council EPA Waterways Ireland Irish Water Port of Cork Company (PoCC)	✓			 Biodiversity  Climate Change and the Environment  The Water Environment

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				surface water drainage; ■ Creating riparian woodlands / corridors; ■ Exploring NbS depending on the type/scale of development; ■ Incorporate natural flooding solutions such as the designation of upstream washlands, as identified in the LLFRS; ■ Moving the Port from the River Lee to the harbour/sea, including consideration given to how GBI can support the regeneration of the former site; and ■ Promoting existing promontories and the use of Spike Island.					 Economic Value and Land Management

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
Support compact growth within the Cork City (see Chapter 12 and 13)	✓	✓	✓	Support sustainable growth within the city by encouraging compact growth and development, including utilising brownfield land and incorporating GBI elements into development. Encourage support within: ■ Local Area Plans; ■ Strategic Development Zones; and ■ Masterplans.	The Council Developers Cork Environmental Forum Tidy Towns	✓			 Access and Connectivity  Biodiversity  Economic Value and Land Management
Provide greater support for GBI in local planning	✓	✓	✓	Seek to enhance the landscape by ensuring GBI in Cork City is complimented by: ■ A wider metropolitan open space, recreation and green belt strategy; and ■ Adopting a living standards framework that takes account of	The Council Cork County Council	✓			 Biodiversity  Climate Change and the Environment

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				nature and the environment in planning spending and development. ■ Delivery of an updated analysis of the varying landscapes within Cork City. The Development Plan should include policies which support the: ■ Protection of existing GBI assets; and, ■ Provision of GBI in new developments, including those which contribute towards improving access and connectivity, biodiversity, health and wellbeing, promote recreation and leisure, and help adapt to the effects of climate change.					 People, Communities, Health and Wellbeing

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
Protect and enhance important views within Cork City		✓	✓	Protect and enhance the important views of the landscape in and around Cork City, through sensitive development design and use, particularly for medium and large-scale development. Landscaping should be used where necessary. Notable views of importance include: ■ The enclosing ridgelines to the north and south of the city; ■ Along linear sections of the River Lee Valley, especially its open flood plains when viewed from scenic routes; and ■ Cork Harbour. Additionally, key views and viewpoint should be identified and protected	The Council Developers Utilities companies (Gas Networks Ireland, Eirgrid, ESB)	✓			 Biodiversity  Climate Change and the Environment

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				through the Development Plan.					
Enhance the landscape quality and value of existing sites	✓	✓		Support the enhancement and improvement of existing sites within the city. The Cork Landscape Study identified 17 sites with potential for significant upgrades and enhancement, including: ■ Lee Corridor – as part of the LLFRS, including, West Mardyke and Lee Fields; ■ St. Anne's Hospital , Shanakiel Panorama; ■ Knocknaheeny Reservoir; ■ Presbyterian Brothers at Sunday's Well; ■ Glen Valley; ■ Bells Field / Patrick's Hill / Bruce's College; ■ Montenotte Ridges;	The Council Cork Environmental Forum Tidy Towns EPA Public Participation Network (PPN) Coillte National Park and Wildlife Service	✓			 Biodiversity  The Water Environment  Access and Connectivity  Climate Change and the Environment

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				■ Blackpool Valley / St. Finbarr's; ■ Lower Glanmire Road; ■ Elizabeth's Fort; ■ East Island including South Mall (Morrison's Island); ■ Municipal Landfill; ■ Cork Heritage Park, Bessboro Farm and the Convent; ■ Mahon Low Density Housing Complex; ■ Farranferris Ridge / Mardyke Walk; ■ North Docklands; and, ■ Port of Cork.					 People, Communities, Health and Wellbeing
Support urban greening initiatives (see Chapter 8 and 10)	✓			Encourage the implementation of urban greening initiatives within the city to enhance the local landscape and streetscape, by:	The Council Cork Environmental Forum Tidy Towns CARO Cork Chamber CBA	✓	✓		 Economic Value and Land Management

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				■ Promoting green roofs and vertical greening; and ■ Installing City Trees within close proximity to Cork Library and French Church Street/St. Patricks Street.	Local Community Development Committee (LCDC) PPN				 Climate Change and the Environment  Biodiversity
Promote the importance of landscape value in development planning			✓	Explore the opportunity to rationalise the existing county and city scale landscape value designations within the emerging Development Plan. Adoption of a consolidated approach should aim to differentiate between the scale and rural / urban focus of the two existing designations.	The Council Cork County Council	✓			 People, Communities, Health and Wellbeing

Green and Blue Infrastructure Study
Cork City Council

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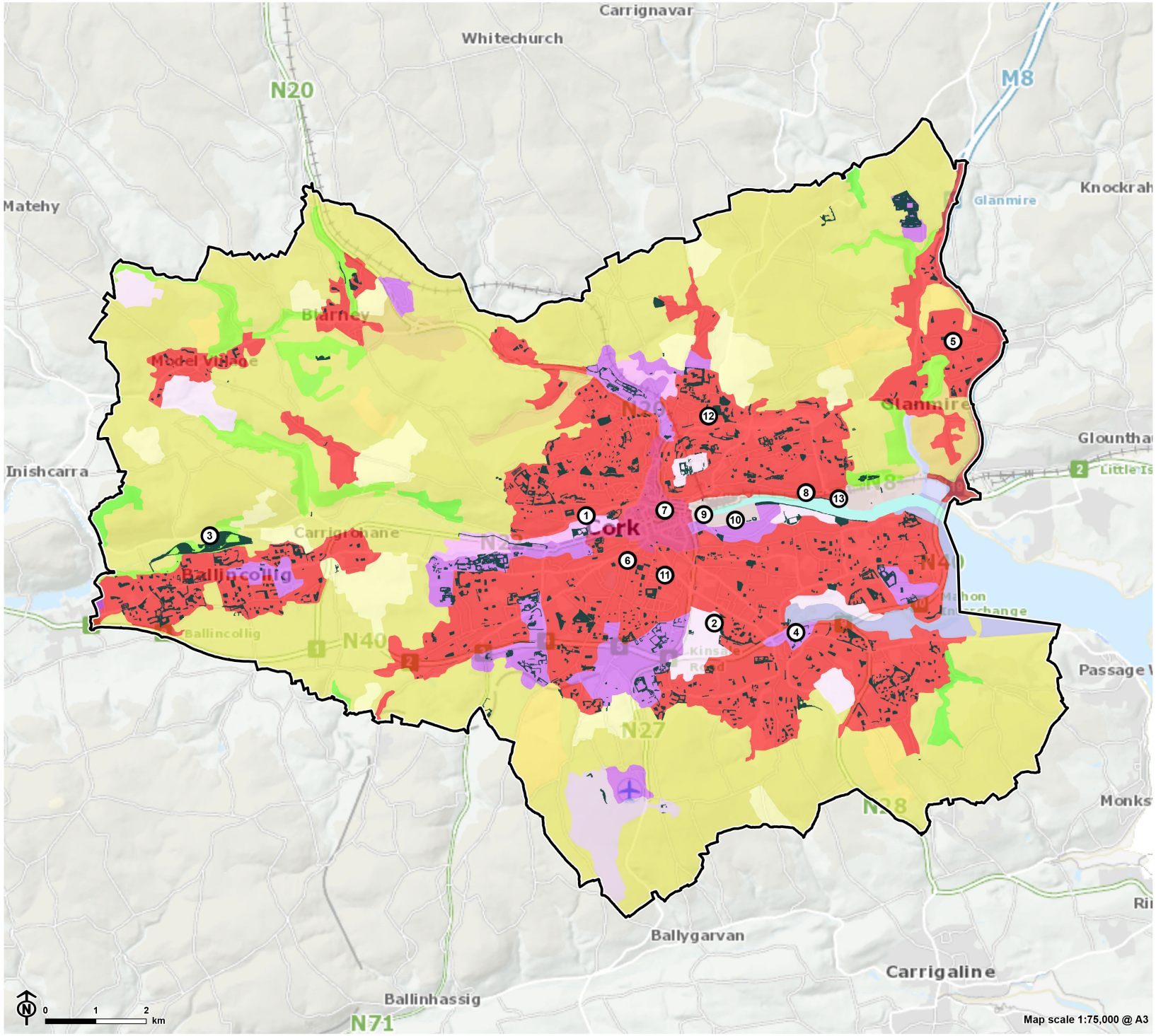
Figure 7.4: Current baseline of GBI in Cork City – Landscape and the Harbour



- Cork City Council boundary
- Green space

Corine 2018

- 111: Continuous urban fabric
- 112: Discontinuous urban fabric
- 121: Industrial or commercial units
- 122: Road and rail networks and associated land
- 123: Port areas
- 124: Airports
- 131: Mineral extraction sites
- 141: Green urban areas
- 142: Sport and leisure facilities
- 211: Non-irrigated arable land
- 231: Pastures
- 242: Complex cultivation patterns
- 243: Land principally occupied by agriculture, with significant areas of natural vegetation
- 311: Broad-leaved forest
- 313: Mixed forest
- 421: Salt marshes
- 423: Intertidal flats
- 522: Estuaries

1: Fitzgerald's Park
2: Tramore Valley Park
3: Ballincollig Regional Park
4: Douglas Park
5: John O' Callaghan Park
6: The Lough
7: Bishop Lucey Park
8: Atlantic Pond and Mahon Walkway
9: Shalom (Peace) Park
10: Kennedy Park
11: Tory Top Park
12: The Glen River Park
13: Marina Park

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CB:JI EB:Willshear_R LUC FIGX_11280_r0_Baseline_LandscapeHarbour_A3L 09/04/2021
Source: LUC, CCC, OSI

Chapter 8
Theme 3: Biodiversity

What is biodiversity?

Biodiversity, an abbreviation of **biological diversity** is:

The variability among living sources from all sources including, inter alia, terrestrial marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and ecosystems.

Convention on Biological Diversity (1992)

Why is this theme relevant to GBI?

Inherent value

The Council declared a biodiversity emergency in June 2019, alongside that of climate change, and since then has committed to clear strategy action to recover thriving wildlife. The urban city is inherently linked to the rural hinterland and to the tidal estuary; biodiversity is a connected collective resource throughout these landscapes.

The EU Biodiversity Strategy for 2030107 sets commitment to protect at least 30% of EU land and seas, and to integrate 'agroecology' into the agricultural sector, to plant 3 billion trees (EU-wide) and to promote GI and NbS. Member states are asked to designate new protected zones and ecological corridors by 2023 (note that clarification on 'protected status' is awaited). A complimentary Strategy for marine ecosystems is anticipated in 2021 and, in due course, should be reflected in the aspirations of the council and neighbouring authorities.

Climate change resilience

Biodiversity is itself susceptible to the effects of climate change, such as the loss habitat, inability of species to disperse or migrate, change in species range, spread of pests and disease, and the mismatch between elements of the food chain emerging or coming into bud in synchrony. Measures to maximise resilience to climate change, in general terms, reflect the principles of habitats being larger, better connected and suitably diverse. An optimal habitat mosaic can support the dispersal, foraging and breeding of species which are diverse, distinct and locally representative[108].

Biodiversity can also serve to mitigate the effects of climate change, for example, helping to slow the infiltration of rainfall, accommodate tidal flooding, regulate rising temperatures, and through carbon sequestration. Providing for biodiversity within GBI provides increased resilience for natural habitats to withstand long-term climatic changes and shorter-term extreme weather events, thereby and avoid the total collapse of a system. The habitat network along river corridors, woodlands and hedgerows, peatlands, grasslands, urban parks and open water all contribute to Cork becoming a climate resilient city.

Key GBI Assets

8.1 Biodiversity is inextricably linked to each of the GBI themes – environmental, societal and economic. Biodiversity arises from our soils, water environment and landscape. It supports our physical and mental health, not only through regulating cleaner air and water but by providing connection to nature and a sense of place. 'Nature, Natural Resources and Cultural Infrastructure' is captured as one of seven themes for action in the Cork City Council Climate Change Adaptation Strategy 2019-2024[109].

[107] https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal/actions-being-taken-eu/EU-biodiversity-strategy-2030_en

[108] Local significance criteria are listed in the County Cork BAP 2009-201, Appendix 7. Available: http://www.askaboutireland.ie/enfo/irelands-environment/county-focus/cork/biodiversity-conservation/biodiversity-plan.pdf

[109] https://consult.corkcity.ie/en/consultation/cork-city-council-draft-climate-change-adaptation-strategy-2019-2024

8.2 The National Biodiversity Action Plan (BAP)[110] recognises the role of GBI as a strategically planned and coherent network to deliver biodiversity recovery alongside the ecosystem services it contributes to.

> "*Humans need green, and humans need wild*".
>
> - Cork City Council Heritage Officer

8.3 The societal value of access to nature is widely acknowledged. To enable this, there is an overriding need to maintain the 'wildness' of nature in order to allow it to thrive with pockets undisturbed, and to maintain the 'wild' quality which underpins its value to our health and wellbeing.

8.4 The principal nature conservation designations of Cork relate to the Harbour and Estuary, but a range of woodland, peatland and riverine habitats are also recognised as proposed National Heritage Areas (pNHA). **Figure 8.1** illustrates the designated nature conservation sites across the city area.

Wetland habitats

8.5 Cork City spans three catchments – that of the River Lee, Cork Harbour & the wider Youghal Bay. The settlement of Cork was established on reclaimed marsh and fen; river habitats and flood cycles are therefore an inherent part of its ecological character. Wetland biodiversity is described by broad habitat type.

Coastal and tidal

8.6 Cork Harbour Special Protection Area (SPA) is located on the eastern boundary of the city. Of European importance, the SPA is designated for a large number of wetland bird species which use the area in both summer and winter. The SPA is linked with the Great Island Channel Special Area of Conservation (SAC), which overlaps the SPA and extends north and east. Also of European importance, the SAC is designated for its mudflats, sandflats and salt meadow habitats.

8.7 The condition report for Cork Harbour SPA is favourable for only three of the 22 bird species which utilise the SPA[111], i.e. populations are in decline for the remaining 19 species. The report recognises that a single wetland site is unlikely to meet all of the ecological requirements of a diverse assemblage of waterbirds, which will at times also rely on surrounding habitats as alternative roosts, for foraging or as ecological corridors. Identification and review of 'functionally linked habitats' which supports the SPA conservation objectives through the on-going waterbird survey programme, require recognition and protection as 'ecological corridors'

[110] https://www.npws.ie/legislation/national-biodiversity-plan

[111] https://www.npws.ie/sites/default/files/publications/pdf/Cork%20Harbour%20SPA%20(004030)%20Conservation%20objectives%20supporting%20document%20-%20[Version%201].pdf

LUC

Figure 8.1: Designated nature conservation sites

Cork City Council boundary
Special Area of Conservation
Special Protection Area
Proposed Natural Heritage Area

Carrignavar
Whitechurch
N20
M8
Matehy
Glanmire
Knockrah
Blarney
Model Village
N20
Glanmire
Glountha
Inishcarra
N8
Carrigrohane
Cork
N22
N
Ballincollig
Ballincollig
N40
Kinsale Road
Passage W
N27
N28
Monks
Ri
Ballygarvan
Carrigaline
Ballinhassig
N71
0 1 2 km
Map scale 1:75,000 @ A3
© Ordnance Survey Ireland

CB:CB EB:llott_J LUC FIGX_11280_r0_DesignatedNatureCon_A3L 19/03/2021
Source: CCC, OSI, DCHG

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8.8 within the Local Development Plan. The requirement for additional buffer zones around or between the designation and its functionally linked habitat should be informed by the annual monitoring of qualifying bird populations. Appropriate sensitive farming practices may include limiting stock levels, and ploughing and/or cropping at less sensitive times of year to accommodate key periods in the lapwing lifecycle.

8.9 Great Island Channel SAC lies east of the city area, overlying the SPA bird life designation, to recognises specifically the salt marsh (Atlantic salt meadow) habitats. The conservation status of the SAC mudflats and sandflats, and the Atlantic salt meadows is recorded to be unfavourable. Both were however listed as possible to recover. Principal issues for mudflats and sandflats included pollution and *Spartina* invasion, and for the salt meadows, coastal squeeze, erosion and *Spartina* invasion[112].

8.10 Lough Mahon is considered to be the second most valuable bird habitat in the harbour[113]. However, as the estuary is adjacent to a major urban and industrial centre, with the shipping channel to the Port of Cork passing through, water quality is variable and subject to risk of pollution.

Rivers

8.11 The River Lee flows into the SPA from the west. Principal tributaries include the River Bride and River Glashaboy from the north, and the River Curraheen and River Glasheen from the south. The River Douglas flows farther south of the Lee, into the SPA at Rochestown. Principal tributaries include the River Tramore. The intertidal flats on the Douglas River Estuary are designated a proposed Natural Heritage Area (pNHA) contain salt marsh and reed beds not found elsewhere in the city. Both the Rivers Lee and Douglas flow into Lough Mahon.

8.12 The river corridors of the city area provide aquatic and flanking terrestrial habitat for wildlife, spanning the higher rural landscape to the lower tidal plain. River water quality is classed as 'Moderate to Good' at all testing points across the city area[114]; the river network supports strong populations of dipper and otter. Good quality rivers rely on good quality riparian habitat. The Lee Valley pNHA, for example, lies on the north bank of the Lee. This wet grassland lies forms part of the Lee corridor.

8.13 The River Lee is noted as a site of particular biodiversity importance, providing a continuous corridor for wildlife to disperse through the centre of Cork. This habitat supports a number of important species including bats, otter, seals, birds

[112] https://www.npws.ie/sites/default/files/publications/pdf/Cork%20Harbour%20SPA%20(004030)%20Conservation%20objectives%20supporting%20document%20-%20[Version%201].pdf

[113] The Central and Regional Fisheries Boards (2008) Sampling Fish for the Water Framework Directive – Transitional Waters 2008. Available at: http://www.wfdfish.ie/wp-content/uploads/2009/09/Lough-Mahon1.pdf

[114] https://gis.epa.ie/EPAMaps/Water

and invertebrates. Water quality is important to maintain to these species and their prey.

8.14 The natural flood cycles of the River Lee have become exacerbated by the narrowing effects of built development, the increase in intense rain events and the progressive rise in sea level. The resulting increase in flood risk affects harbour towns, city centre districts and rural upstream agriculture. To maintain the vital natural tidal flow, the LLFRS[115] introduces open, vegetated, 'soft-engineered' landscapes as part of the suite of measures to provide capacity and increase infiltration. Interventions are proposed in the city (Penrose Quay and Lapps Quay), out to Inchigaggin and farther west at Ballincollig. Management of land open to public access as flood waters recede must allow time for ground flora and tree roots to fully recover before being subject again to the erosive and churning action of footfall. The design and management of soft-engineered landscape may be prioritised by zones based principally on flood zones A and B (see **Theme 4: The Water Environment**).

Other wetland types

8.15 Whilst EPA water quality monitoring of rivers reads relatively positively, it is recognised that a number of waterbodies measure less favourably against WFD objectives. Of the 92 waterbodies across the city area, 22 are at risk of not meeting their WFD objectives, including the three lakes. Artificial channelisation of banks and substrate is recognised to be an issue and future threat, incurring habitat loss, changing flow and increasing risk of siltation.

8.16 Cork Lough pNHA is an important site of wet woodland for birds (particularly wintering) and green space for people in an otherwise predominantly residential area. High levels of recreational access to the lough incur damage to the bankside habitats and disturbance of the resident wildlife. Management of the site to accommodate 'wild' areas of bank, marginal and open water habitat is recommended to allow the biodiversity to thrive whilst maintaining 'access to nature' for the local community. Delineated access routes should be complemented with education features to discourage feeding of the birds which (via high levels of guano) is reported to have contributed to the growth of toxic microorganisms.

8.17 The proposed 32ha Marina Park lies below the escarpment in the natural Lee Estuary and will be managed in part as floodplain. Located within the South Docklands, between Shandon Boat Club and Blackrock Harbour, it will comprise natural heritage and recreational assets.

8.18 Further areas of wet woodland, wet grassland and ponds are principally found at Glen River Park and Recreation Areas (in the north of the city), Distillery Fields (north bank of the River Lee, one of the last notable expanse of greenery on the banks of the Lee before the river enters the centre of the city)

[115] https://www.floodinfo.ie/frs/en/lower-lee/home/ Phase 1 scheduled for construction in 2022.

and Murphy's Farm (south western edge of the city). Marsh habitats are of restricted distribution in the city, typically associated with the river corridor network. These small but diverse wetland mosaics provide important habitat for wildlife within the urban environs, despite intensive use by the public.

Peatland habitats

8.19 Peat is prized not only for its rich and rare biodiversity but also the high carbon storage; both make this habitat type a priority to protect and restore for the council.

8.20 The principal area of natural peat habitat is Blarney Bog – 288ha in the west of the city area, less than 1km east of Blarney Castle and associated fragments of wider peatland habitat. Nationally, the peat resource is under significant pressure as a result of habitat loss and degradation resulting from drainage, overgrazing, eutrophication (pollution of ground water), afforestation and invasive plants. Sources of damage and of threat to Blarney Bog principally relate to the road network[116]. It is not currently listed to benefit from a management plan, restoration plan or public interpretation.

8.21 Re-wetting of Carroll's Bog within Tramore Valley Park, is proposed for late summer 2021, informed by on-going hydrological monitoring. 2ha of the original 72ha fen peatland remains, with the proposed re-wetting to cover an additional 1ha. Restoration of this EU and Irish priority habitat type is ambitious but made possible as part of a managed and monitored recreational site.

Woodland, trees and hedgerows

8.22 Larger areas of woodland are generally found outside the urban centres (see **Figure 8.3**). Broadleaved woodland can be found at Rochestown, Lota, around Coolymurraghue, Ballincollig and around Blarney. Ancient long-established woodland is found almost completely in the west of the county; centred around Ballincollig, along the R618 north of Ballincollig and at Blarney Castle. Ancient woodland in these areas is also native woodland, further highlighting their importance. Native woodland can support a greater range of increasingly rare species. This is of benefit both to species assemblage and to ecosystem resilience.

8.23 Across the rural hinterland, woodland typically follows the course of rivers such as the Lee, Shournagh and Martin. Strengthening the wooded riparian corridors, and associated grassland and hedgerow mosaic, would benefit flood alleviation, water quality and river shading as well as habitat diversity and connectivity. Flooding in the city has primarily been attributed to high tides but also results from surface water flooding. Planting to improved water retention upstream may be delivered in the rural hinterland, through the city fringes and within the cityscape 'upstream' or 'upslope' of the

[116] http://www.ipcc.ie/wp/wp-content/uploads/2012/04/2020ROIsitelist1.pdf Extract from: Malone, S. & O'Connell, C. (2009) Ireland's Peatland Conservation Action Plan 2020 – halting the loss of peatland biodiversity. Irish Peatland Conservation Council, Kildare

main river channel. Species selection should reflect the ground conditions and, together with the grasslands or other habitats in which they stand, anticipated frequency of inundation.

8.24 The National BAP Review (February 2020)[117] recommends expansion of native woodland to ensure functioning natural woodland across the landscape. Locally-appropriate target assemblages may reflect those of the local BAP where soil and topography permit. Integration of species recognised to be resilience to fluctuating temperatures and periods of drought or flood (as associated with climate change) should also be considered.

8.25 The Strategy for Native Woodlands in Ireland 2016-2020[118] promotes the strategic creation of protective native woodlands on sites adjoining watercourses and to manage the woodlands using continuous-cover forestry techniques. It highlights the need to integrate ecosystem services of native woodlands (both timber and non-timber) into woodland planning and management. such services include biodiversity and habitat networks, protection of water quality and flood control, carbon storage, eco-tourism and health benefits. Resilience to climate change and the risk of invasive species spread are also to be taken into account in native woodland policy, legislation, planning and management.

8.26 Within the city environs, small areas of woodland include Glanmire Woods pNHA, Garryduff Woods, Beaumont Quarry, Ballybrack Woods and Glen River Park. Though relatively small these areas act as important wildlife refuges, providing habitats to birds, insects and plants. Beaumont Quarry also supports calcareous grassland, a rare habitat in Ireland and contains numerous important plant species such as the rare plant 'Little Robin'. These 'oasis' in the city serve as habitat 'stepping stones', the connectivity between and from which can usefully form a framework from which wider urban greening can be grown.

8.27 Maintenance of a complete and comprehensive woodland structure is important to maintaining thriving biodiversity. 'Vertical' (canopy, understorey, shrub and ground flora layers) and 'horizontal' (closed-canopy, open glades and woodland edge) components all contribute. Where lacking – for example in a woodland subject to high recreational access where the shrub layer is diminished and ground flora trampled – associated species suffer not only habitat loss but disturbance and indirect harm. Identification of three distinct access areas can address this, not only for the planning and delivery of GBI but in the practical management of public greenspaces:

[117] https://www.npws.ie/sites/default/files/files/Interim%20Review%20of%20the%20Implementation%20of%20the%20National%20Biodiversity%20Action%20Plan%202017%20-%202021.pdf

[118] Woodlands of Ireland (2016) A Strategy for Native Woodlands in Ireland 2016 – 2020. Available at: http://npf.ie/wp-content/uploads/2017/09/0608-Woodlands-of-Ireland.compressed.pdf

- Active areas – including disability, push-chair and cycle access;
- Nature exploration areas – encouraging the sense of exploration into 'wild' nature;
- Undisturbed areas – reserved for wildlife to breed, feed and shelter away from recreational disturbance.

8.28 The topography of the city has largely determined tree distribution. Dense canopy cover is mapped to the north of the city, reflecting the steep slopes and ridgelines. Beyond the city centre and suburbs, the pattern of tree distribution – focused along field boundaries and river corridors with occasional copses across low hillsides – reflects the rural and agricultural land use.

8.29 Nationally, Ireland has a low level of natural woodland remaining. Hedgerows – estimated to cover approximately 450,000ha across Ireland119 – serve as important supplementary habitat as well as offering their own inherent value. Hedgerows provide and connect between habitat for a range of fauna, notably pollinators and predators of agricultural pest species, as well as sequestering carbon and preventing soil erosion.

8.30 The hedgerow network extends across the agricultural pasture and arable fields, which account for the majority of land outside the urban environs of the city. Mapping across Blarney and Carrigaline (see **Figure 8.4**) records approximately 1,400 km of hedgerow outside of the City Centre and Urban Towns. Hedgerows are also found along roadsides and through residential areas of the rural hinterland. The large number of hedges in the county appear to be well-connected, although the condition of these is not recorded. Where mapping exists, it appears that hedgerows provide links between urban areas and surrounding farmland and provide potential (though not necessarily complete) corridors for wildlife to disperse through otherwise intensively managed and inhospitable land.

8.31 Hedgerows play an important part in the provision of food and shelter for a range of pollinators and pest control species. The All-Ireland Pollinator Plan[120] advises on practical management options for farmers, councils, communities, businesses and faith groups to encourage pollinator populations. This standard guidance is useful to encourage common management across neighbouring land parcels to create a larger good quality habitat unit. Examples include use of complimentary cutting rotations to accommodate bi-annual flowering plants.

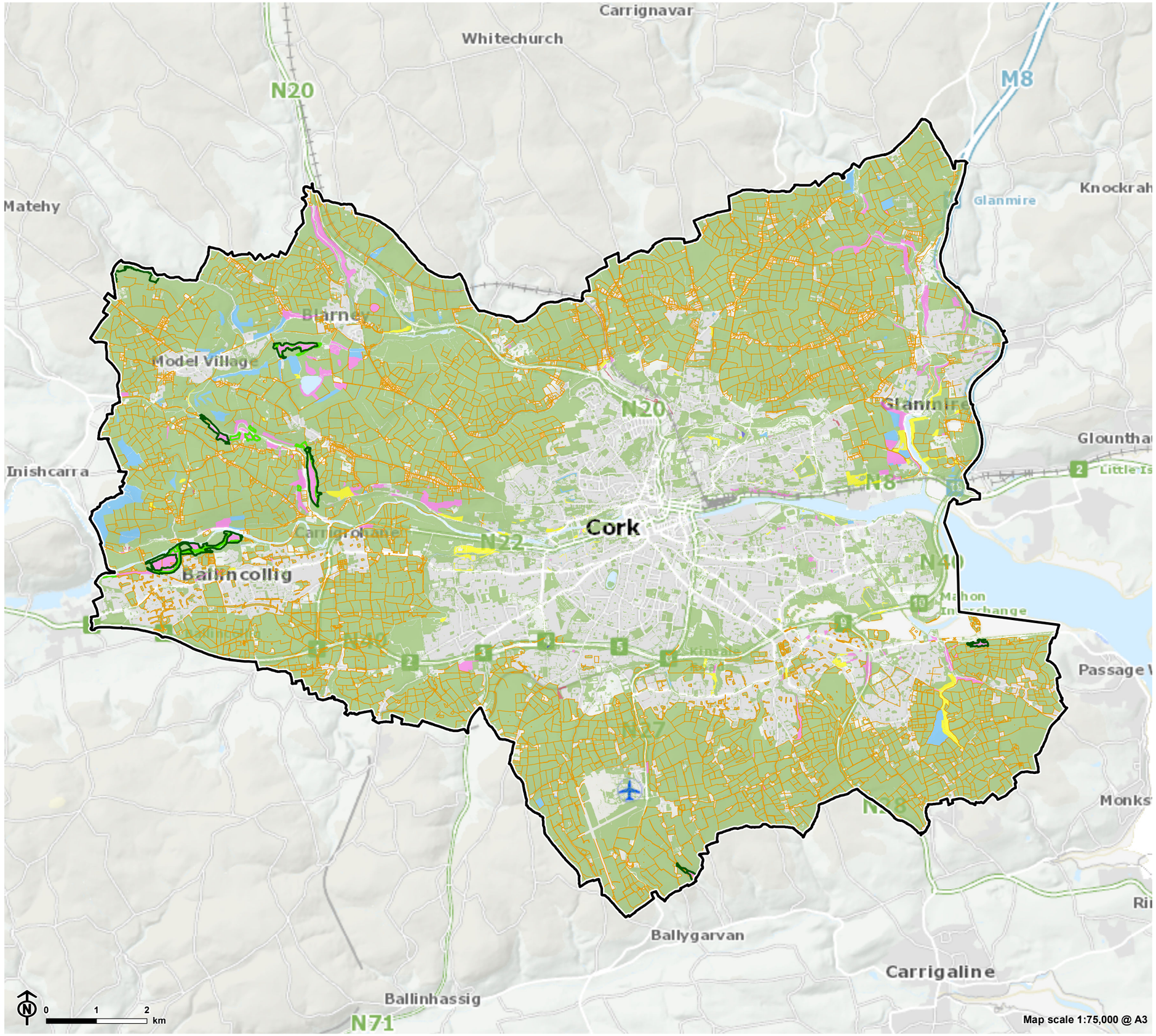
[119] http://www.irishenvironment.com/iepedia/hedgerows/

[120] https://pollinators.ie/

Ballybrack Woods

LUC

Figure 8.2: Notable and priorty habitats: Terrestrial



- Cork City Council boundary
- National survey native woodland
- Ancient long established woodland
- Hedgerow
- Grass/clay surface
- Marsh
- Scrub
- Woodland coniferous
- Woodland deciduous
- Woodland mixed

CB:CB EB:llott_J LUC FIGX_11280_r0_Habitats_Terrestrial_A3L 19/03/2021
Source: CCC, OSI, DCHG

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Farmland

8.32 Farmland dominates the landscape of the Hinterland. Much of the farmland is improved grassland which generally offers little in the way of floral or structural diversity; hence, holds low ecological value.

8.33 The 2020 National BAP Review recommends the development of a National GI Strategy to include agricultural landscapes. This is particularly relevant to Cork (GBI themes including climate change, land use management, tourism and recreation), given the extent of agricultural land use within the city area. The 2020 Review also recommends introduction of *"new farming models to aid the diversification of agriculture and appropriate reduction in intensification in some areas".* The aspirations of the EU Biodiversity Strategy for 2030 aim to integrate 'agroecology' into the agricultural sector and deliver high numbers of tree planting; both of which may be used to complement biodiversity, and optimise ecosystem services such as flood alleviation and soil stability, all as part of viable agricultural land management.

8.34 Such practices may be implemented at a range of scales – from strategically planned landscape-scale habitat creation to field-scale interventions which complement a wider-reaching mosaic. Sensitive management of ditches and broad bank-top habitats, creation grass verges along hedgerows, and tree planting in field corners may incur minimal loss to productive land and are appliable at farms, crofts and orchards. The range of pilot and establishing agri-environment schemes underway across Ireland provide strong sources of inspiration and learning transferable to the city area.

Parks, gardens and urban greening

8.35 Cork contains a large number of public parks and greenspaces throughout the city, in Blarney and in Ballincollig. Many are mapped as amenity grassland which, whilst typically of low ecological value, offers opportunity for ecological enhancement through habitat creation, enhancement and relaxation of intensive management regimes. The University of Cork College, for example, has created wildflower meadow on campus, managed at low intensity with mown paths, which has attracted pollinators and members of the public[121]. Within the highways and council housing soft estate, tree planting may be used in combination with wildflower grasslands or with rewilding to create a more diverse habitat mosaic. At Parkowen, formerly St. John's Cemetery, native trees and a native hedgerow have been planted and a third of the park dedicated to a rewilding management regime. Rewilding requires monitoring and some on-going work to ensure the target state is maintained, particularly for grasslands which may otherwise become rank or dominated by scrub. Greenspaces within the flood zone may offer particular benefit if managed as ephemerally wet habitats, both alongside the estuary and the river network.

[121] https://greencampus.ucc.ie/landscape-heritage-and-natural-resources/all-ireland-pollinator-plan/

Agricultural land use in the Hinterland

LUC

Figure 8.3: Notable and priority habitats: Blarney

Cork City Council boundary

Habitats (Blarney)

- (Mixed) broadleaved woodland
- (Mixed) conifer woodland
- Amenity grassland (improved)
- Buildings and artificial surfaces
- Conifer plantation
- Cultivated land
- Dense bracken
- Depositing / lowland rivers
- Dry calcareous and neutral grassland
- Dry meadows and grassy verges
- Dry meadows and grassy verges / Scrub
- Immature woodland
- Improved agricultural grassland
- Marsh
- Mixed broadleaved / conifer woodland
- Mud shores
- Muddy sand shores
- Oak-ash-hazel woodland
- Oak-birch-holly woodland
- Oak-birch-holly/Oak-ash-hazel woodland
- Ornamental / non-native shrub
- Other artificial lakes and ponds
- Poor fen and flush
- Recolonising bare ground
- Reed and large sedge swamps
- Riparian woodland
- Scrub
- Spoil and bare ground
- Tall-herb swamps
- Tidal rivers
- Wet grassland
- Wet pedunculate oak-ash woodland
- Wet willow-alder-ash woodland

Map scale 1:75,000 @ A3

CB:CB EB:llott_J LUC FIGX_11280_r0_Habitats_Blarney_A4L 19/03/2021
Source: CCC, OSI

8.36 Ballincollig Regional Park is the most recent large park creation, comprising 54ha south of the Lee, to the west of Cork City. Principally managed for recreation, the site captures the network of sluices and canals surrounding the Gunpowder Mills complex, as well as woodland and grassland habitats.

8.37 Cemeteries also provide large areas of greenspace which are protected from development. Habitat diversification typically needs to be accompanied by community or congregation initiatives to foster buy-in to the less formal appearance of taller grasslands and wildflowers. For this reason, trees – at a range of age-classes – and shrub planting may offer, initially, more readily achieved benefit to biodiversity.

8.38 Urban greenspaces are of elevated importance in otherwise depleted environs. Increases in connectivity – both direct and as 'stepping stones' – may be achieved through street tree planting, green roofs and vertical greening, raingardens, planting as part of traffic calming or delineation, play streets and multi-modal streets.

8.39 Street tree planting as an urban greening intervention can be used at a range of scales – from short avenues or small clusters to delineate gateways or character 'quarters' within urban areas, to more abundant use including a range of age-classes as part of strong place-making at new or refurbished civic squares.

8.40 Green architecture can deliver habitat creation at height and through the vertical plane to benefit biodiversity in areas that are seemingly spatially constrained. Carefully sited, these can complement (as foraging habitat) urban species which nest on built structures, such as swifts and house sparrow. Green architecture offers benefit not only to biodiversity but also energy efficiency and to appease the urban heat island effect.

8.41 Cork City Heritage Plan (2015 – 2020) highlights the importance of gardens of suburban houses, in addition to public spaces, as providing urban habitats within the urban setting. Gardens are widespread across almost every area of the city and as such represent a potentially important wildlife refuge of animals and insects. In particular foxes have been observed within private gardens. Support to homeowners in creating wildlife-friendly gardens can be optimised by coupling through increased awareness in local schools and, as aforementioned, churches.

8.42 A list of completed actions from the superseded Heritage Plan 2007 – 2012 are included within Appendix 1 of the Cork City Heritage Plan (2015-2020). The actions which reference biodiversity and the natural environment are listed below:

- Prepare and implement a Biodiversity Plan incorporating the following elements:
  - Establish a biodiversity plan working group;
  - Identify and collate existing research and publications relating to natural heritage and biodiversity;
  - Identify gaps in the research and make recommendations for further research;

  - Carry out a habitat and species survey of the city;
  - Establish priorities and targets for biodiversity; and
- Carry out a survey of trees in the city in a phased manner, to identify those suitable for protection e.g. Tree Preservation Order (TPO);

Key Issues and Opportunities

8.43 Each of the broad habitat types described above are presented in the context of their importance, spatial extent, weaknesses (e.g. in condition, connectivity or susceptibility to climate change) and principles for protection or enhancement.

8.44 During the COVID-19 pandemic, high levels of recreational access to greenspaces have resulted as local communities increase their time in and appreciation of nature. The resulting impact of erosion and churning can be observed on footpaths, grasslands, woodlands and riverbanks nationally. The impacts of acute and pronged access, particularly during the typically wetter winter months, highlights the need to balance recreational need with the imperative to maintain healthy ecosystems. This requires areas of GBI with contrasting functions – potentially reflecting and building local character – and sufficient capacity to deliver in the long-term.

Consultation findings – key challenges

- Place greater focus on protecting biodiversity, as transport infrastructure or other developments often crosscut through habitats or lead to a removal of natural features that do not get replaced. There is an urgent need to deliver 'no-net-loss' approach to biodiversity in planning.
- Address the need to protect non-designated biodiversity areas and delivery of up-to-date biodiversity plans.
- Provide additional support for the current biodiversity designations (e.g. only 2.3% of the Cork Harbour area is designated missing the 10% target for 2020).
- Provide enhanced management and maintenance of existing ecological networks and expansion of the green corridors to preserve permeability and connectivity for species (both on land and in water) and to mitigate against flooding.
- Ensure additional support to preserve nature folklore from Cork City.
- Provide increased support to tackle invasive species within Cork City.

- Tackle issues linked with pesticides use, particularly glyphosate.
- Increase support to preserve pollinators (pollinator plans) and the extension of 'wooded eastern catchment'.
- Progress existing biodiversity projects such as the North West Regional Park, the Cork Nature Network's Beaumont Quarry project, and actions such as school garden network, tidy town groups, allotments, pollinator friendly planting for seasonal bedding displays and Cork Sky Friendly campaign.
- Provide greater support needed for resources for education, raising awareness (also on Natura 2000 sites), protection of nature and presenting the whole scope of biodiversity.
- Tackle public perceptions regarding 'tidiness' (e.g. lawn versus wild area) and the importance of 'weeds'.
- Address the deficiency of funding for biodiversity projects, specifically for National Parks and Wildlife Service, other biodiversity agencies and NGOs.

- Tackle the lack of biodiversity data within Cork City.
- Address the deficiency in access to green space.
- Promote the need for tree surveys and tree preservation along notable sections of watercourses.
- Address the need for more vacancies within the Council focusing on biodiversity (currently only two, the Biodiversity officer and the Tree officer).
- Address issues linked with light pollution.
- Tackle decreasing diversity in agricultural fields and bird populations.
- Promote the need for an up-to-date and comprehensive habitat mapping and Ecosystem Services Mapping given the extension of the city's boundary.
- Increased support needed to address issues linked with change in land use and flooding that lead to deterioration of habitats and species.
- Enhanced support needed to protect lichens, mosses, liverworts, ferns, bats and coastal seaweeds and intertidal invertebrates.

8.45 Following recent revision of the city boundary, key is the integration of agricultural hinterland to the city strategy, and prioritisation of cross-boundary catchment-scale opportunities.

8.46 Identification of functionally linked land and, where appropriate, supporting buffer zones surrounding the European designations of the SPA and SAC would be informed by the continued monitoring of qualifying features at the sites and through liaison with the NPWS. Designations and key habitat areas, such as woodland and wetland, and the need to ensure these maintained in favourable condition, are recognised in the GBI opportunity areas.

8.47 In support of the designated site network, identification of 'Ecological Corridors' to capture linear habitats of local important and the interconnecting land required to support thriving biodiversity. Corridors may also capture areas of relatively importance within districts which are otherwise highly impoverished, and/or offer a foci for enhancement. These should align with cross-boundary opportunities identified with neighbouring authorities. Some linear ecological corridor mapping[122] has been carried out across the rural hinterland, at Blarney, Kilcully, Banduff, Glanmire, which relate to watercourses. With respect to corridors and linear features, GBI opportunity areas principally capture the river network. There is also recognition of the hedgerow network which, at finer scale, provides opportunity for linear habitat connectivity through the agricultural hinterland, and a framework for introduction of sensitive land management.

8.48 Ecological Corridors should be recognised within local planning policy and subject to appropriate protection within the local development plan (cross-compatible to the commitments of the Draft CCA Strategy 2019-2024 Action 9.3b and the EU Biodiversity Strategy for 2030), with the objective to deliver no net loss.

8.49 Identify supporting 'Buffer Zones' where designated sites or Ecological Corridors are in unfavourable condition or of insufficient capacity to support thriving ecology. Buffer Zones may form the foci for habitat expansion, enhancement and additional GBI capacity.

8.50 Strengthening of the river corridors, both in terms of continuous linear connectivity but also the richness of habitat structure therein, accommodating aquatic, marginal and bank side habitats, and/or creating diverse woodland structure.

8.51 Building from the 'soft-engineered' landscapes of the River Lee, identify areas suitable for natural surface-level SUDS (cross-complimentary to the Draft CCA Strategy 2019-2024 Actions 10.4a & b). This may be prioritised by those within flood zones A and B. Woodland planting in, around and upstream of mapped flood zones should avoid peat soils or valued grasslands but may otherwise be informed by discussions with land owners to refine suitable siting. SuDS may include extensive low-lying grassland areas with sward

[122] Dataset dated 2016

able to withstand inundation at the frequency predicted within each flood zone. More widely, integration of rain gardens to all bus lane, cycleway, school entrance, highways, etc upgrades would provide collective benefit to both biodiversity and surface flood alleviation. A 'guide design' rain garden may be devised for the city as part of planning requirements for new development.

8.52 Extension of the habitat mosaic from the river arteries, such as the hedgerow network, permitting natural colonisation of scrub and creation of species-rich grasslands. Habitat creation should distinguish and delineate local character or settlements, thereby increasing the reach of biodiversity around and between urban areas, both existing and proposed future growth.

8.53 Strengthening the peatland habitat network should protect favourable ground conditions and management for all existing areas, ensure designated sites have a management plan including appropriate restoration and interpretation in place, identify buffer zones where appropriate (e.g. to ensure adjacent land management or hydrological conditions support favourable condition). Opportunities to extend creation of all peatland habitat types should be explored as part of a landscape-scale mosaic with fens and wet grasslands, suiting each to local topography, geology and land use. This would be informed by consistent habitat mapping (see later).

Garryduff Woods

8.54 Expansion of native woodland to ensure a well-functioning and resilient network across the landscape (cross-compatible with the 2020 National BAP Review). Woodland must be appropriately sited, notably avoiding peat soils of ecological or potential ecological value. The mosaic may include new planting and natural recolonisation (rewilding), which together provide new sites, extensions or connecting shelter belts to link existing copses or along transport infrastructure. The tree and hedgerow network can optimise linear or 'stepping stone' connectivity from woodland into the wider urban or farmed landscape.

8.55 Collectively the highways and housing soft estates offer an extensive area available for habitat enhancement. Once best practice techniques to create and maintain biodiverse habitats are established, consistent delivery in the long-term can be achieved. Recognised guidance for this includes the National Biodiversity Data Centre's Pollinator- friendly management of transport Corridors[123]. This forms part of Target 1.2.2: Create linking areas of flower-rich habitat along transport routes, in the All Ireland Pollinator Plan[124]. Urban greening opportunities potentially apply to Cork City – associated with individual buildings, civic buildings, transport hubs and streets or squares. The 'Heart of Urban Greening' opportunity area is identified as a foci for interventions as retrofit and part of redevelopment, showcasing best practice.

8.56 Delineation of recreational access to encourage people's enjoyment and appreciation of nature, whilst ensuring sufficient space remains undisturbed for wildlife to thrive. Identification of 'active areas', 'nature exploration areas' and 'undisturbed areas' can be delivered at the local park or landscape scale. Both active and nature exploration areas should be supported by clear signage (within and between sites) and educational information to encourage a sense of ownership and right behaviour.

8.57 To support resilience to climate change, new planting and sowing must consider species tolerant of drought and flood conditions, alongside those 'traditionally' considered as locally-representative to allow for those which are 'locally-appropriate'. Some particularly sensitive habitats, such as peatland restoration, may require stricter adherence to traditional assemblages but urban street planting or wildflower mixes may be more flexible. Wider species diversity can offer some resilience to the threat of incoming pests and diseases.

8.58 The concept of rewilding may be applied to river corridors, areas within urban parks or the periphery of sports and school pitches. Essentially reference to the removal of

[123] National Biodiversity Data Centre (2019) *Pollinator-friendly management of: Transport Corridors.* In *All-Ireland Pollinator Plan, Guidelines 9. National Biodiversity Data Centre Series No. 20, Waterford.*

[124] Pollinators.ie (2015) *All-Ireland Pollinator Plan 2015 – 2020.* in *National Biodiversity Data Series 3*.

intensive management interventions, rewilding may be undertaken at a range of scales.

8.59 Strategic delivery of, and support for, agri-environment interventions to aid the diversification of the agricultural landscape and encourage the return of farmland biodiversity and support the transition to more sustainable farming practices less reliant on pesticide use and supportive of native pollinators. It is recognised that council land-ownership across the rural hinterland is modest and that a strategic approach would need to be devised with local landowners and tenants. Again, opportunity for cross-boundary working would be particularly beneficial to foster engagement as well as to deliver landscape-scale benefit to biodiversity. Opportunity areas have been selected to include foci to progress agri-environment uptake which benefit local natural assets.

8.60 It is recognised that consistent mapping of habitats across the city area is required to inform land management decision-making (cross-compatible with the objectives of the Cork County BAP). This is anticipated as part of the BAP review cycles and any targeted ecological study, e.g. to identify the Ecological Corridors. It is recommended that the database of designated sites (nationally held and updated) and priority habitats be made available within the council, across all departments, to inform policy and land-management decisions. The database will provide a framework to be augmented by additional field work and/or remote mapping, logged by date and standard method.

8.61 The database may usefully log mitigation and enhancement measures committed to as part of planning applications; submission in standard digital format forming a planning requirement. The objective would be to safeguard conservation commitments and ensure 'joined-up' land use planning.

8.62 A further key challenge affecting the Council is the absence of a Biodiversity Officer. This leads to a lack of investment, time and expertise to ensure biodiversity within the Cork City is reaching its full potential.

Potential GBI Opportunities and Existing Interventions

8.63 A list of potential GBI opportunities and existing interventions are listed below in **Table 8.1**. The existing GBI baseline within this theme is summarised visually in **Figure 8.4.**

Table 8.1: Summary of potential GBI opportunities / existing initiatives / delivery partners

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
Identification of functionally linked land and, where appropriate, supporting buffer zones surrounding the European designations of the SPA and SAC	✓	✓	✓	Land surrounding the SPA and SAC, prioritising that within 5km. Greater distances may be appropriate for qualifying wetland and wildfowl species with wider ranging behaviour. Informed by the continued monitoring of qualifying features at the sites and through liaison with the NPWS. Held within a database accessible across all council departments for consideration in land management decision-making.	NPWS BirdLife Ireland Neighbouring Councils	✓	✓		 Climate Change and the Environment  The Water Environment

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
Identification of 'Ecological Corridors'			✓	Integration of agricultural hinterland to the city strategy, and prioritisation of cross-boundary catchment-scale opportunities. Align with cross-boundary opportunities identified with neighbouring authorities. Expansion of completed 'linear ecological corridor mapping' of watercourses through Blarney, Kilhully, Banduff, Glanmire. Recognition of the hedgerow network as a framework for introduction of sensitive land management.	The Council Neighbouring Councils Waterways Ireland NPWS		✓	✓	 Climate Change and the Environment  The Water Environment

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
Identification of 'Buffer Zones'			✓	To ensure designated sites and Ecological corridors are in favourable condition and of sufficient capacity to support thriving wildlife. Informed by habitat mapping and the completion of an Ecosystems Services Guide and NbS Implementation Guide.	NPWS The Council Neighbouring Councils BirdLife Ireland EPA	✓	✓		 Climate Change and the Environment
Strengthen river corridor network to optimise both biodiversity and flood alleviation (see Chapter 6)	✓	✓	✓	Optimise both continuous linear connectivity and the richness of habitat structure therein - aquatic, marginal and bank side habitats. Identify areas suitable for natural surface-level SUDS within the 'soft-engineered' landscapes of the River Lee, prioritising	EPA Waterways Ireland NPWS CARO Cork Environmental Forum	✓	✓		 Climate Change and the Environment  The Water Environment

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				those within or draining into flood zones A and B. Habitat creation in and upstream of mapped flood zones to include woodland and grassland habitat types. Roll out of rain gardens as part of highways and active transport network delivery. Examples include Lee Fields and associated wetlands.					
Extension of the habitat mosaic from river arteries	✓	✓	✓	Habitat creation as extension of and connection between existing features, expanding from the river corridor network. Opportunities may be prioritised in areas around and between proposed urban growth.	Waterways Ireland Irish Environmental Network Landowners Tidy Towns UCC	✓			 Climate Change and the Environment  The Water Environment

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
					Cork Environmental Forum				
Strengthen the peatland habitat network (see Chapter 10)	✓	✓	✓	Protect favourable ground conditions and management for all existing areas, ensure designated sites have a management plan including appropriate restoration and interpretation in place, identify buffer zones where appropriate. Opportunities to extend creation of all peatland habitat types should be explored as part of a landscape-scale mosaic with fens and wet grasslands.	NPWS EPA Neighbouring Councils Cork Environmental Forum	✓	✓		 Climate Change and the Environment  The Water Environment

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
Expansion of native woodland and hedgerows	✓	✓	✓	The mosaic may include new planting and natural recolonisation (rewilding), which together provide new sites, extensions or connections to shelter belts. The potential also exists to work with CARO to identify potential afforestation projects on greenfield, brownfield and disused landfill sites.	Landowners Coillte CARO Neighbouring Councils Cork Environmental Forum Irish Environmental Network Cork Healthy Cities	✓			 Climate Change and the Environment  The Water Environment  People, Communities, Health and Wellbeing
Diversification of the highways soft estate	✓	✓		Detailed review of opportunities for biodiverse SUDS within the soft estate, reflecting the recommendation of Theme 1: Water Environment, alongside grassland sowing and tree planting.	The Council (inter-departmental) Developers	✓			 The Water Environment  Climate Change and the Environment

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				Establish best practice techniques for standard inclusion within the highways maintenance and construction teams.					
Diversification of the housing soft estate	✓	✓		Review open land within the council owned housing estate to identify potential areas for enhancement i.e. not intended for expansion of the housing stock. Benefits to biodiversity selected to also deliver benefits to local food growing, natural play and health and well-being.	The Council (inter-departmental)	✓			 People, Communities, Health and Wellbeing  Climate Change and the Environment
Urban greening (see Chapter 7 and 10)	✓	✓		The suite of interventions available for retrofit and integration with redevelopment capture individual buildings, civic	Developers (independent, consortium and community) Landowners	✓	✓		 People, Communities, Health and Wellbeing

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				buildings, transport hubs and streets or squares. Cross-compatible with the opportunities identified above for provision of naturalised SUDS, for roll out of rain gardens, and for diversification of the highways soft estate. Redevelopment at the Tivoli River area provides a good example in progress. The city centre has been identified as an opportunity area for 'The Heart of Urban Greening'.	Cork Environmental Forum Irish Wildlife Trust Cork Healthy Cities				 The Water Environment  Climate Change and the Environment  Tourism, Culture, Recreation and Leisure  Economic Value and Land Management
Delineation of recreational access	✓	✓		Identification of 'active areas', 'nature exploration areas' and 'undisturbed areas', supported by clear signage (within and	The Council NPWS Cork Environmental Forum	✓			 Access and Connectivity

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				between sites) and educational information.	Higher Education Institutes (HEIs)				 Tourism, Culture, Recreation and Leisure
Locally-appropriate species to bolster resilience to climate change (see Chapter 7)	✓	✓		Review of appropriate species to include within habitat creation and management plans, to consider those tolerant of the effects of climate change such as intermittent drought, etc. Examples include the range of street trees thriving in parts of Mediterranean Europe. Applicable to trees, shrubs, ground flora and climbers. Vigorous species which may pose a risk of invasive growth will not be considered. Recognition that this broader approach to	NPWS The Council Neighbouring Councils Birdlife Ireland Plantlife Coillte	✓			 Climate Change and the Environment

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				'locally-appropriate-species will not be applicable to all habitats, such as those of high distinctiveness and rarity.					
Diversification of greenspaces	✓	✓		Diversification of urban greenspaces to optimise the habitat structure and species-richness able to support thriving wildlife. To include terrestrial, marginal and aquatic habitats, applied at a range of scales. Inclusion of locally-appropriate species (see above). Value to clear air, flood alleviation and to the health and well-being of local communities to be optimised alongside the benefit to biodiversity.	Cork Environmental Forum CARO Irish Environmental Network	✓			 Tourism, Culture, Recreation and Leisure  People, Communities, Health and Wellbeing  Climate Change and the Environment

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				Examples include the urban forest in Ballincollig and the Ballincollig Regional Park.					
Strategic delivery of, and support for, agri-environment interventions	✓	✓	✓	Acknowledging the potential for widespread delivery, review foci for agri-environment identified as opportunity areas. Access the 'learning networks' i.e. conservation bodies, landowners and tenant farmers successfully delivering schemes within Ireland. Relevant education and training resources already available to be identified. Discussion with local landowners, farmers and farming bodies to be progressed with a view	The Council Neighbouring Councils Irish Farmers Association Landowners HEIs	✓			 Climate Change and the Environment  The Water Environment

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				for collective landscape-scale delivery. Local public, private and charity-managed sites should be considered for suitability, thereby helping to deliver the collective vision.					

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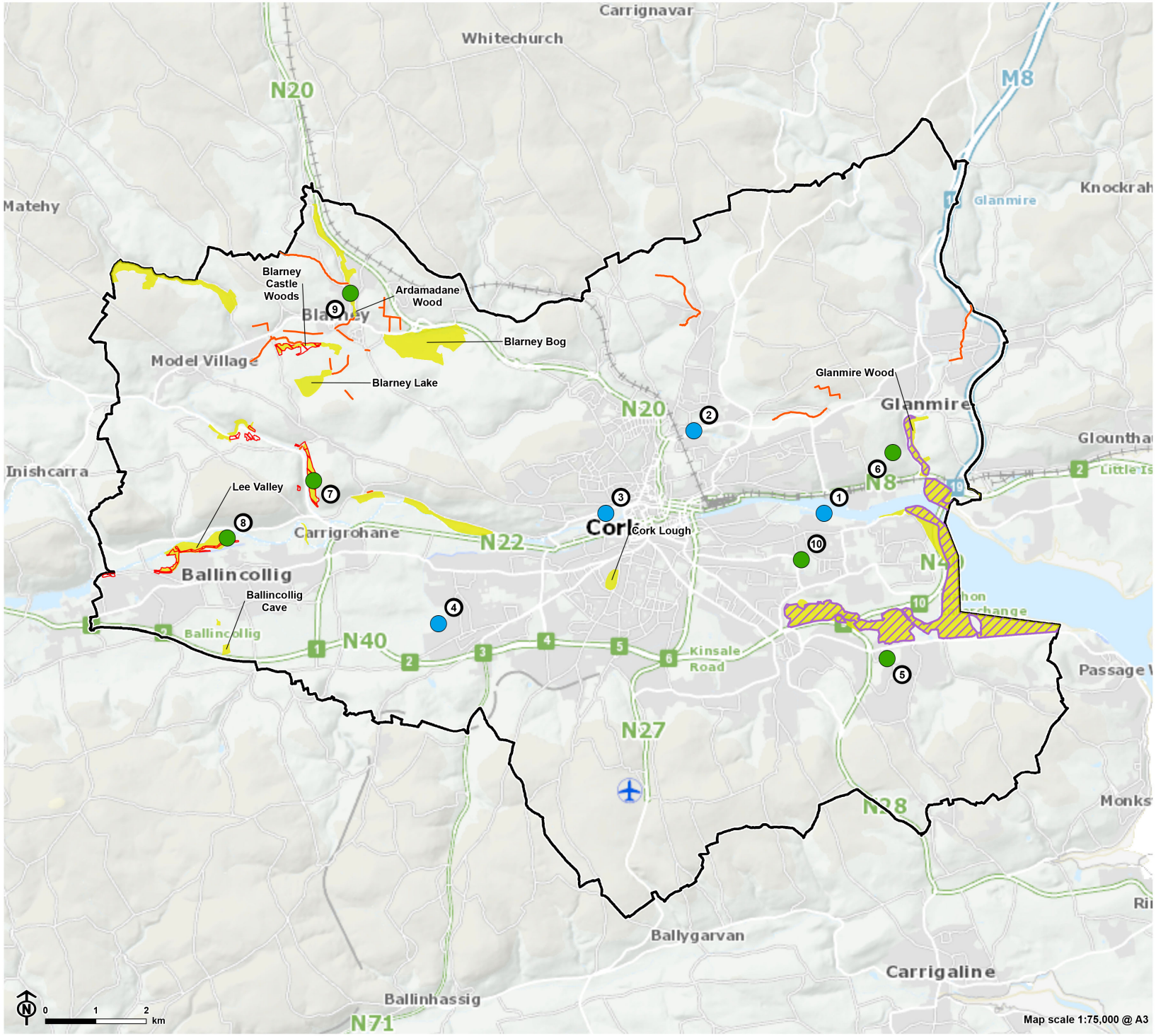
Figure 8.4: Current baseline of GBI in Cork City – Biodiversity



- Cork City Council boundary
- Ancient Long Established Woodland
- Special Protection Area
- Proposed Natural Heritage Area
- Linear ecological corridor
- Non-designated broadleaved woodland sites
- Non-designated wetland sites
  - 1: Marina Park
  - 2: Glen River Park
  - 3: Distillery Fields
  - 4: Murphy's Farm
  - 5: Rochestown
  - 6: Lota
  - 7: Coolymurraghue
  - 8: Ballincollig
  - 9: Blarney
  - 10: Beaumont Quarry

CB:JI EB:Willshear_R LUC FIGX_11280_r0_Baseline_Biodiversity_A3L 09/04/2021
Source: LUC, CCC, OSI

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Chapter 9
Theme 4: Access and Connectivity

Why is this theme relevant to GBI?

Climate Change

The implementation of active travel corridors across Cork City has the potential to reduce car use; easing congestion and improving air quality. GBI plays a crucial role in the adoption of sustainable lifestyles, with public transport and active travel routes forming low-carbon transport methods which can effectively reduce carbon emissions. Furthermore, GBI can make an important contribution at the local level to the creation of attractive, walkable neighbourhoods.

Wellbeing and Social inclusion

Well-connected networks of GBI support connectivity across Cork City, enhancing the natural environment and positively impacting human health through the promotion of physical activity. The provision and promotion of safe active travel routes, be it through walking, running or cycling, can maximise the benefits provided by open spaces, especially in areas where they are small or few in number.

Environmental Factors

A reduction in car use can effectively improve air quality, ease congestion and reduce noise pollution. Improved air quality can have positive effects on human health, especially on chronic respiratory diseases. Such environmental benefits are notable where active travel routes are used by commuters and if they replace car journeys that are often made to visit larger, more distant open spaces.

Key GBI assets

Public transport and roads

9.1 Cork City is traversed by several major arterial routes; including the N8, N20, N22, N27, N28, N40 and N71. There is great reliance on these routes for national, regional and local connectivity. The local road network includes few orbital routes, resulting in many journeys routing through the City Centre or redirecting to the national road network. Cork City also has direct links to several international transport gateways, notably Cork International Airport and the Port of Cork.

9.2 In terms of public transport, bus routes within Cork City encompass much of the built up area. As with local roads, the majority of bus services operate across the city and radiate out from the City Centre. Although well served by bus routes, only five operate at a high frequency (every 10-20 minutes) including the 202, 205, 206, 208 and 215. There are also very limited bus connections between the City Centre and White's Cross, Sallybrook and Upper Glanmire to the north east of the city, and to Ballincollig to the West.

9.3 Rail infrastructure within Cork City is centred on Kent Station and serviced by lines connecting settlements within County Cork; including Cobh, Rushbrooke, Carrigaloe, Fota Island, Midleton, Carrigtwohill, Glounthaune and Little Island. Additionally, Iarnrod Eireann's railway linking Dublin and Cork County crosses Cork City, approaching from the north before continuing eastwards to Midleton. The route accommodates hourly services to Dublin and is considered the top performing InterCity line in the country, based on passenger numbers.

9.4 Despite being relatively well-served by public transport, travel by private car is still the dominant mode of transport for daily commuters in Cork City, accounting for 74% of journeys. The electoral divisions with the greatest proportions of travel by car, motorcycle or scooter in 2016 were Mahon C (50.8%), Tramore A (50.0%), Ballinlough C (48.2%), Tivoli B (47.8%) and Browningstown (47.7%). The lowest rates were found in Shandon B (9.5%), Centre B (11.4%), Gillabbey C (12.0%), Gillabbey B (12.1%), and Gillabbey A (12.4%)[125].

[125] Cork City Council (2018) Cork City Profile 2018: Environment. [online] Available at: https://corkhealthycities.com/wp-content/uploads/2019/01/Chapter-7-The-Environment.pdf

9.5 Public transport accounts for only 7% of commuter journeys in Cork City[126], which equates to less than 10% of all trips[127]. However, the use of public transport has increased with passengers travelling on Bus Éireann services increasing by 19.5% between 2013 and 2016, and those travelling on Iarnród Éireann Cork Commuter increasing by 29.2% over the same period[128]. In 2015 and 2016, Kent Station was the fifth busiest station in Ireland for persons boarding and the seventh busiest for persons alighting. Between 2015 and 2016, daily passenger numbers increased by 13% and 17% for people travelling east / south bound (Cork – Middleton – Cobh) and west / north bound (Cork – Mallow – Tralee), respectively[129]. **Figure 9.1** indicates the distribution of existing public transport infrastructure in Cork City.

Planned Improvements

9.6 The CMATS 2040 outlines a programme of delivery to improve the road network and public transport over the short, medium and long term. Many of these are also highlighted in Theme 3: Travel within the draft Air Quality Strategy[130]. The document identifies key priorities for improvements to the road, bus and rail networks as outlined below:

- Road Network and Parking
  - Provision of Park and Ride at Dunkettle and other sites, as well as bus connections (BusConnects) to and from Park and Ride Facilities;
  - Completion of the Dunkettle Interchange Upgrade to enable higher volumes of passengers;
  - Implementation of residential parking zones across Cork City and provision of sustainable access routes to development lands;
  - Completion of the Cork City Centre Movement Strategy (CCMS) to advance the public transport priority measures outlined within CMATS (see **Figure 9.2**);
  - Appraisal and development of the Northern and Southern Distributor Roads and the Northern Ring Road (NRR) as part of N/M20 Cork-Limerick Road; and
  - Provision of a bridge access for walking, cycling, public transport and traffic access to Cork South Docklands.

[126] National Transport Authority; Cork City Council; Cork County Council (2020) Cork Metropolitan Area: Transport Strategy 2040. [online] Available at: https://www.nationaltransport.ie/wp-content/uploads/2020/04/Cork_Met_Area_Transport_Stategy_web.pdf
[127] Cork City Walking Strategy 2013-2018
[128] Cork City Council (2018) Cork City Profile 2018: Environment. [online] Available at: https://corkhealthycities.com/wp-content/uploads/2019/01/Chapter-7-The-Environment.pdf
[129] Ibid.
[130] Cork City Council (2021) *Cork City Council Air Quality Strategy 2021 – 2026*. Draft

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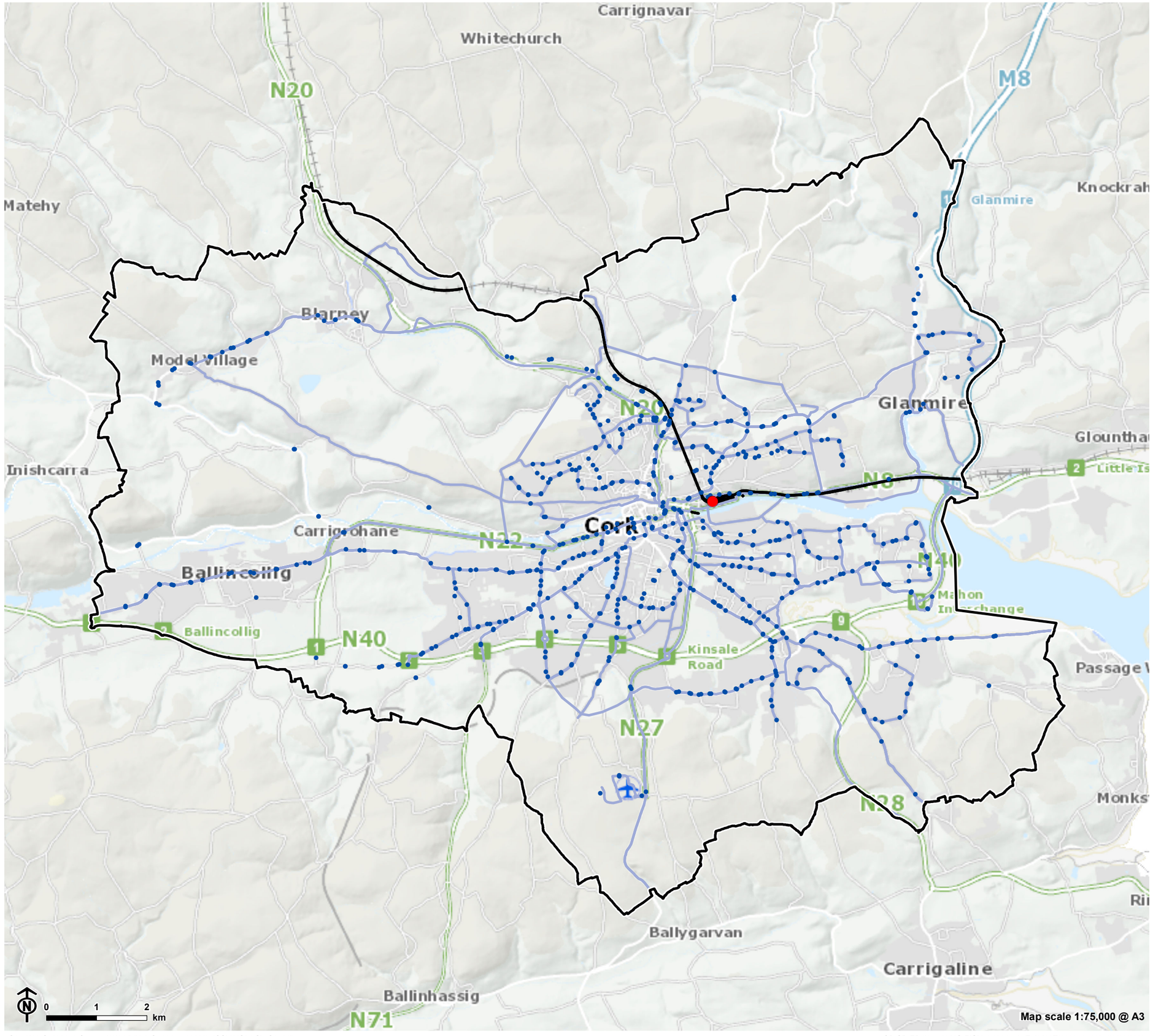
Figure 9.1: Existing transport infrastructure



- Cork City Council boundary
- Bus stop
- Railway station
- Bus connection route
- Railway

CB:CB EB:llott_J LUC FIGX_11280_r0_ExistingTransport_A3L 19/03/2021
Source: LUC, CCC, OSI

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- Bus Network
  - Completion of the Cork City based BusConnects network (€200million investment), including radial, cross-city and orbital bus services;
  - Prioritisation of the following bus network corridors: East-West interim bus corridor, Douglas Road and South Douglas Road Corridor; N20 Mallow Road Corridor; Summerhill North / Ballyhooly Road Corridor; Hollyhill (Apple Campus) to City Centre; and Dunkettle to City Centre; and
  - The air quality strategy proposes new bus lanes should be provided at Leitrim, Cathedral Walk, Coburg St, Devonshire St, Bridge St and St. Patricks Bridge, as part of the MacCurtain Street Public Transport Improvement Scheme[131].
- Rail Network
  - Provision of suburban rail services connecting Kent Station with East Cork and Mallow as well as development of new stations and platform improvements;
  - Delivery of a review of the Suburban Rail Network to determine upgrades and new stations required, including an additional platform and improved signalling at Kent Station;
  - Increased number of commuter services between Kent Station and Midleton, Cobh, and Mallow, based on demand;
  - Further additions to number of commuter services between both Midleton and Cobh, and Kent Station;
  - Consideration of electrification of commuter rail lines between Mallow, Cobh and Midleton;
  - Design, planning and implementation of interim high frequency bus service routes and bus corridor priority measures along the alignment of Light Rail to serve the East-West Corridor in the short to medium term;
  - Provision of walking, cycling, public transport bridge near Mill Road to link South Docks and Kent Station; and
  - Investigation of the potential phased implementation of the Light Rail system with Kent Station, Pairc Úi Chaoimh, and Cork Institute of Technology as potential phased termination points.

[131] Cork City Council (2020) *MacCurtain Street Public Transport Improvement Scheme*. [Online] Available: https://consult.corkcity.ie/en/consultation/maccurtain-street-public-transport-improvement-scheme

Cycling and walking

9.7 Cork City Centre benefits from a well-established pedestrian network. However, the quality of the pedestrian environment is variable across the city as a consequence of land use planning, changing movement and place priorities as well as community severance caused by physical barriers (e.g. watercourses, railways and main roads).

9.8 In terms of cycling infrastructure, Cork City accommodates approximately 240km of greenways and cycle lanes. However, these route alignments are dispersed throughout Cork City and do not currently form coherent connections to a wider cycle network. Beyond the immediate City Centre, cycling infrastructure is often segregated and of variable quality.

9.9 Over recent years, improvements to the cycle infrastructure within the City Centre have been undertaken, including the introduction of with-flow and contra-flow cycling facilities. Due to the high number of one-way streets within the City Centre, the introduction of contra-flow cycling lanes has significantly improved accessibility for cyclists within the urban context.

Consultation findings – key challenges

- Promote the need for improvements to pedestrian infrastructure, including provision of additional cycle parking, introduction of lighting provision along walking / cycle routes, decluttering of the streetscape and prioritisation of pedestrians and cyclists at traffic lights.
- Tackle the lack of segregated and coherent active travel infrastructure, with greater focus needed on public consultation at the design stage.
- Address the deficiency in access to active travel routes for disabled users.
- Tackle the high reliance on the use of private vehicles for commuting, coupled with a lack of park and ride facilities.
- Address the lack of permeability through existing and new developments, including the presence of physical barriers which also reduce access and connectivity.
- Respond to the lack of water transport connectivity, including the limited recreational access to the riverside and Cork Harbour.
- Integrate initiatives aimed at encouraging the delivery of water transport options along the River Lee and within Cork Harbour

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Figure 9.2: CMATS transport infrastructure proposals

- Cork City Council boundary
- City centre boundary
- Proposed rail station
- Proposed Cork rail line
- Greenway
- Interurban
- LRT
- Secondary cycle lanes

Carrignavar
Whitechurch
N20
M8
Matehy
Knockrah
Glanmire
Blarney
Model Village
N20
Glanmire
Glountha
Inishcarra
N8
Little Is
Carrigrohane
Cork
N22
Ballincollig
N40
N40
Mahon
Interchange
Passage W
N27
N28
Monks
Ri
Ballygarvan
Carrigaline
Ballinhassig
N71
0 1 2 km
Map scale 1:75,000 @ A3

CB:CB EB:llott_J LUC FIGX_11280_r0_CMATStransport_A3L 19/03/2021
Source: LUC, CCC, OSI

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9.10 Additionally, the introduction of the Coca-Cola Zero bike scheme has been a positive addition, encouraging people to make journeys by bicycle. Currently, the scheme comprises 330 bikes across 32 stations within the City Centre. BMX provision is also provided within Tramore Valley Park.

9.11 Active travel is somewhat limited in the north of the city, largely due to the challenges of topographical variation. Existing cycling facilities are generally clustered in the Hollyhill industrial area, comprising a mixture of good quality segregated cycling tracks and on-road advisory cycle lanes. However, the infrastructure itself (including tracks and on-road cycle lanes) is often disjointed and lacks connection to other areas of the city.

9.12 Although travel by private vehicle is the dominant mode of transport for commuting, 20% of trips to work are undertaken by walking, whilst only 1% by cycling[132]. Overall, cycling accounts for just over 3% of all trips within the city, whilst rates of walking vary amongst wards. The South Central ward has the highest percentage of walking at 70% of all trips, whilst South East ward is 34%[133].

9.13 Rates of walking and cycling are highest amongst students within the city, with 50.1% of students cycling or walking to college in 2016[134]. Unsurprisingly, the areas closest to the colleges of UCC and MTU (previously CIT), including Gillabbey, Bishopstown and Glasheen, are those with the highest proportions of walkers and/or cyclists.

Planned Improvements

9.14 The CMATS 2040 outlines a programme of delivery to improve the cycling and walking network over the short, medium and long term. The Strategy identifies the following key priorities for improvements:

- Cycle Network
  - Development and completion of the primary and inter-city cycle network, including the flagship 'Lee to Sea Greenway' from Ballincollig to Crosshaven and of the secondary greenway cycle network;
  - Delivery of an audit of cycling infrastructure throughout the city with the aim of aligning the cycling network with the BusConnects network;
  - Increased provision of cycle parking throughout Cork City; and
  - Implementation of the Cork Cycle Network Plan which proposes upgrades to the Passage Railway Greenway and the provision of a cycle track from Blarney to the north via a segregated cycle track off-road and within the N20 corridor.

[132] National Transport Authority; Cork City Council; Cork County Council (2020) Cork Metropolitan Area: Transport Strategy 2040. [online] Available at: https://www.nationaltransport.ie/wp-content/uploads/2020/04/Cork_Met_Area_Transport_Stategy_web.pdf

[133] Cork City Walking Strategy 2013-2018

[134] Cork City Council (2018) Cork City Profile 2018: Environment. [online] Available at: https://corkhealthycities.com/wp-content/uploads/2019/01/Chapter-7-The-Environment.pdf

Tramore Valley Park

- Walking Network
  - Walkability audit of Cork City and ongoing maintenance and renewal of footpaths, urban realm improvements and walking network provision; and
  - Delivery of improvements to the walking network with the implementation of the BusConnects network.
- Additionally, the Council are planning improvements to the Passage Railway Greenway to provide the best quality and most direct route for pedestrians and cyclists between the City Centre and Mahon. Improvement measures include widening of the existing route, provision of lighting and improvement of access to the greenway. The project aims to increase usage of the route as an active travel corridor as well as enhance the greenway's function as an avenue for biodiversity and setting for heritage assets.

9.15 The air quality strategy[135] highlights the importance of expanding non-motorised travel in reducing air pollution. To promote cycling, this includes increasing the accessibility of cycle routes and introducing more bicycle bays for both pedal and electric bikes. This strategy also suggests widening footpaths and narrowing roadways to make walking safer and more enjoyable. In addition, the Council aims to support schemes to promote walking and cycling, such as Mobility Management initiatives, Bike Week and European Mobility Week.

Key Issues and Opportunities

Population growth

9.16 In accordance with the Project Ireland 2040 NPF, Regional Spatial and Economic Strategy for the Southern Region (RSES) and upcoming Cork City Development Plan 2022 – 2028, Cork City is projected to form the fastest growing city in Ireland. This substantial increase in population is anticipated to lead to a subsequent rise in demand for travel linked to employment and education.

9.17 Increased pressure for development on the outskirts of the city and in the Hinterland to accommodate this population growth is also likely to lead to increased car dependency. Therefore, ensuring that all consented developments are well-linked to public transport and active travel routes is fundamental to future land use planning. In particular, urban development and brownfield land should be utilised to create walkable neighbourhoods with open spaces and good quality walking and cycling infrastructure.

9.18 Although the COVID-19 pandemic increased the public's appreciation of green spaces and encouraged a greater update of walking and cycling as recreational pursuits, it resulted in greater use of private transport for everyday journeys. This

[135] Cork City Council (2021) *Cork City Council Air Quality Strategy 2021 – 2026*. Draft

was due to the perception that car travel was deemed safer as opposed to the use of public transport[136].

Traffic congestion

9.19 Currently, there is a lack of a strategic orbital corridor to the north of Cork City. This results in heavy traffic and HGV movements from the N20 routing through the City Centre which adds to congestion, noise and pollution. The Dunkettle Interchange and sections of the N40 are also noted as key locations for traffic congestion. In addition, the medieval street patten in the City Centre is not conducive to high volumes of peak time vehicular traffic.

Cycle infrastructure

9.20 There is relatively limited (albeit improving) dedicated cycle infrastructure within Cork City, including signage, lighting and parking. However, the requirement exists for enhanced cycle way connections and links with other transport modes to allow for multi-modal journeys.

Public transport

9.21 Bus travel within Cork City is generally limited to a number of high frequency services. Journey times are often long, largely as a consequence of the one-way road system within the City Centre and lack of orbital bus routes. The rail network also exhibits a number of constraints which limit the frequency of services and overall capacity at Kent station. Furthermore, concerns exist that future public transport provision in Cork City is insufficient to cater for an increasingly millennial and car-free workforce.

Topographical constraints

9.22 The hilly nature of the landscape of the City Suburbs form a significant constraint to the promotion of active travel. This issue is especially prevalent in the North Inner City. In addition, physical barriers such as waterways, railways and the strategic road network (notably the N22, N27 and N40) result in community severance and further hinder pedestrian and cycle movements.

Equality of access

9.23 There is a need to provide equitable transport accessibility to essential services, education and employment to help tackle deprivation within Cork City. Moreover, it is important to ensure that green and open spaces are accessible for people of all ages and abilities, including those with a range of health issues.

[136] IEA (2020), Changes in transport behaviour during the COVID-19 crisis, IEA, Paris. [online] Available at: https://www.iea.org/articles/changes-in-transport-behaviour-during-the-covid-19-crisis [Accessed on 21/01/2021]

Change in lifestyle

9.24 There is a need to change mindsets to reduce the reliance and use of cars within the city. For example, in the active recreation survey[137], 80% of respondents answered that they felt there were adequate footpaths, cycleways and roads for safe access. However, 78% of respondents stated that they travelled predominantly by car. This suggests that the reliance on cars goes further than there being specific access or provision issues for certain routes.

[137] Turley (on behalf of Cork City Council) (2021) *Active Recreation Infrastructure Study, Cork City: Survey Report.*

Potential GBI Opportunities and Existing Interventions

9.25 A list of potential GBI opportunities and existing interventions are listed below in **Table 9.1**. The existing GBI baseline within this theme is summarised visually in **Figure 9.3.**

Table 9.1: Summary of potential GBI opportunities / existing initiatives / delivery partners

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
Enhance and promote connectivity improvements to the cycle network (see Chapter 11 and 13)	✓	✓	✓	Support the delivery of Cork City's cycle network. Increased emphasis should be placed on improving connectivity, by delivering new cycle routes including: ■ Cork to Kinsale along disused railway lines; ■ Cork to the Viaduct, via Bishopstown; ■ Ballincollig to Cork, including connections to Ballincollig Regional Park, Lee Fields, Fitzgerald Park and Marina Park; ■ Dunkettle to Cork City Centre;	The Council Cork County Council NTA Private companies Transport Infrastructure Ireland OPW Cork Cycling Campaign HEIs	✓	✓		 Climate Change and the Environment  People, Communities, Health and Wellbeing  Tourism, Culture, Recreation and Leisure

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				■ Middleton to Cork City; ■ Tivoli to Cork City Centre; ■ A cycleway connecting educational facilities such as Cork Institute of Technology, Cork University Hospital, and University College Cork; ■ Lee to Sea Greenway; ■ Parallel the M20 transport corridor; and ■ Segregated cycle route along Rochestown Road. In addition to the delivery of new cycle routes, improvements to the network include: ■ Providing increased cycle parking and e-bikes within Cork City, as well as delivery of a policy in the emerging					

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				Development Plan requiring the minimum provision of cycle parking within new developments; ■ Promoting and delivering a dockless e-bike scheme; ■ Improving signage within the City Centre; ■ The relocation of Washington Street taxi rank and creation of a cycle lane; ■ Providing secure bike parking and showering facilities at places of work; ■ Bike parks and bike schemes co-located with river transport; and ■ Promoting active travel through Safer Cycling,					

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				Sofa to Saddle, Learn to Cycle Programmes, and Cork Community Bikes Workshops.					
Address barriers to access along the River Lee	✓	✓		Provide additional access points across the River Lee which separate the north of the city from the south, such as a small pedestrian bridge adjacent Angler's Rest and the bridge from Lee Fields to the Old Cork Waterworks Experience.	The Council NTA Transport Infrastructure Ireland	✓			 People, Communities, Health and Wellbeing  Tourism, Culture, Recreation and Leisure
Enhance connectivity within the walking network (see Chapter 11 and 13)	✓	✓	✓	Support the delivery of Cork City's walking and greenway network. Deliver and promote the use of: ■ wild walks; ■ tree trails; ■ orienteering trails in parks;	The Council Waterways Ireland OPW	✓	✓		 Climate Change and the Environment  Biodiversity

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				■ Blackrock Walkway; ■ South Channel Walk; ■ walkway from Grange Road to Turners Cross via Tramore Valley Park; ■ continuous greenways and tree corridors from Ballincollig to Blackrock, via Lee Fields, Fitzgerald Park and Marina Park; ■ city street art trail; ■ parks and parklet trail; ■ Lee to Sea riverside trail; ■ Mahon to Ballincollig otter trail; and ■ Nash's Boreen loop walk, with potential link to Glen River Park. Additionally, focus improvements on creating					 People, Communities, Health and Wellbeing  Tourism, Culture, Recreation and Leisure

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				connections between local neighbourhoods and green routes, such as Mount Oval Village, providing green space at Lota More to link Glanmire to the City Centre, and providing segregated pedestrian routes along Rochestown Road. Furthermore, promote the use of active travel through initiatives such as: ■ Get Cork Walking; ■ Get Ireland Walking; ■ Wayfinder scheme which aims to improve visitor orientation; and ■ Ensuring opportunities to incorporate urban greening and enhancement are maximised through appropriate design.					

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
Improve access to water transport along the River Lee and in the harbour (see Chapters 6, 11, 12 and 13)	✓	✓		Support the delivery of water transport, including: ■ Delivery of river transport initiatives with co-located bike parks and schemes; ■ Promotion of Corkumnavigation (Meitheal Mara); ■ Development of a blueway from Cork City to Crosshaven; and ■ Promoting the boat route from Blackrock Harbour to Glanmire via Glashaboy River.	The Council Irish Water Marine Institute Waterways Ireland Transport Infrastructure Ireland PoCC NTA	✓			 The Water Environment  People, Communities, Health and Recreation
Continue the promotion of cycling and walking to support a greater uptake of	✓	✓	✓	Continue to support Mobility Management Initiatives and other projects which support greater use of walking, cycling and public transport. These schemes include Bike Week,	The Council Cork County Council River Lee Placemaking Group	✓	✓		 People, Communities, Health and Recreation

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
active travel within Cork City				European Mobility Week and other related initiatives.	Cork Healthy Cities Cork Cycling Campaign CARO PPN				 Climate Change and the Environment  Tourism, Culture, Recreation and Leisure
Introduce improvements to the public transport network		✓		Enhance and integrate public transport including bus, rail and light rail within Cork City, encouraging their use over private transport. Promote and deliver park and ride facilities which link to active travel and public transport routes, particularly in the City Suburbs, along the M20 corridor, and in the north of the city. Provide additional 24/7 bus services across Cork City	The Council Iarnród Éireann (Irish Rail) Bus Eireann NTA Cork Airport PoCC	✓			 Climate Change and the Environment  People, Communities, Health and Wellbeing  Economic Value and Land Management

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				and deliver a new rail station at Blackpool, providing links to the City Centre. Retrofit public transport infrastructure, including bus stops and train stations with GBI such as green roofs, rain gardens and bioswales.					

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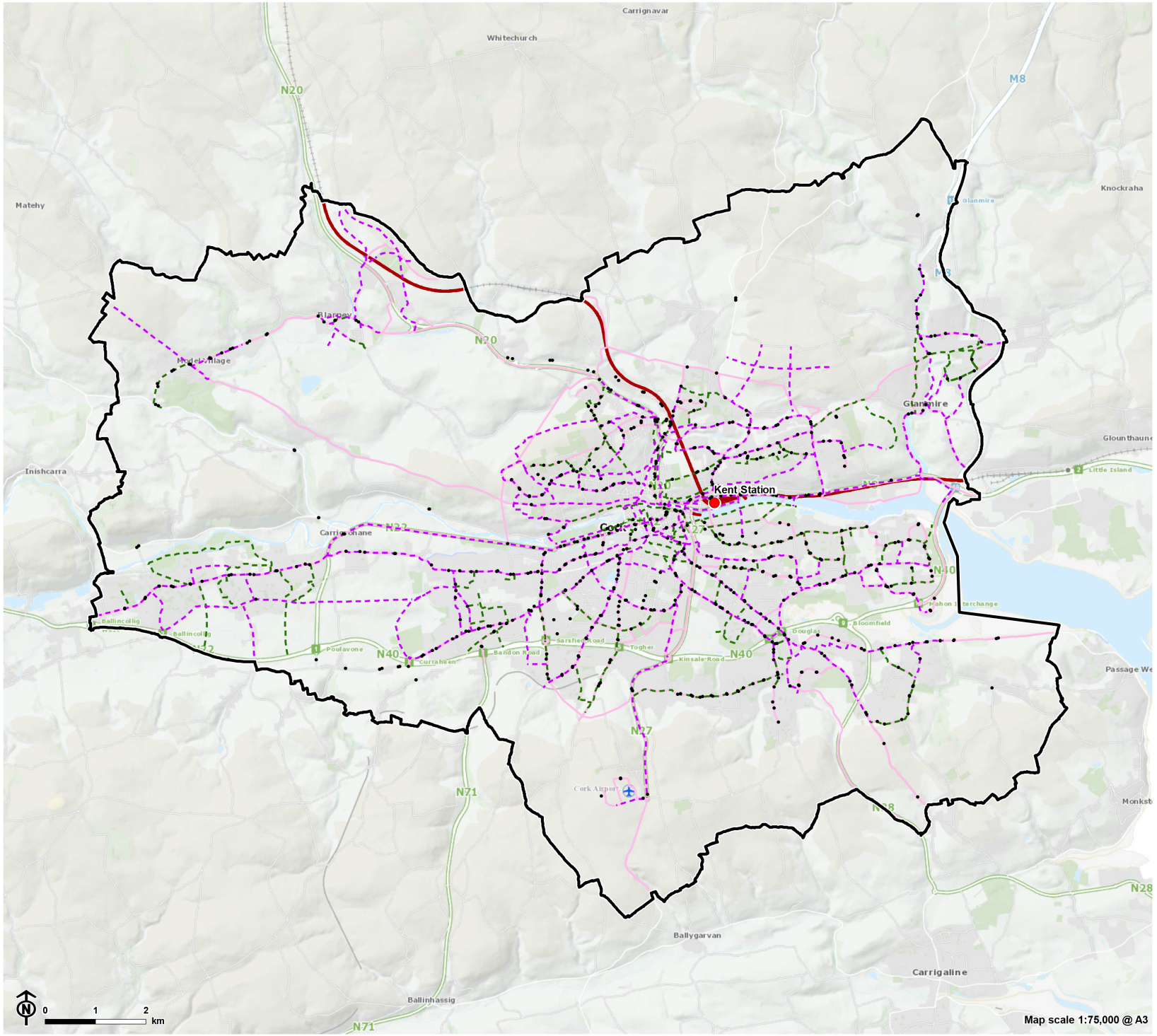
Figure 9.3: Current baseline of GBI in Cork City – Access and Connectivity



- Cork City Council boundary
- Primary cycle lane
- Secondary cycle lane
- Railway
- Bus connection route
- Railway station
- Bus stop

CB:JI EB:Chamberlain_K LUC FIGX_11280_r0_Baseline_AccessConnectivity_A3L 07/04/2021
Source: LUC, CCC, OSI

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Chapter 10
Theme 5: Climate Change and the Environment

Why is this theme relevant to GBI?

Climate Change

GBI assets that mitigate and adapt to climate change are themselves at risk from climatic changes. A well-planned GBI network considers the assets most at risk from climate change and seeks to reduce detrimental impacts, ensuring the assets unique to an area continue to provide valuable ecosystem services. The delivery of GBI allows the provision and retrofitting of climate adaptation measures, strengthening the resilience of the environment to the impacts of climate change.

Wellbeing and Social Inclusion

GBI assets tailored to climate change adaptation afford multiple health, wellbeing and social inclusion benefits. The potential exists for increased resilience to climatic risks (including drought, flooding and storm surge) to result in environmental improvements and the increased ability of the GBI network to support healthy communities.

Environmental Factors

As climatic conditions becomes more unpredictable and environmental processes less reliable in the future,

adaptation mechanisms which increase the resilience to the impacts of climate change will become increasingly critical. In addition, mechanisms to optimise carbon sequestration and storage that can be delivered through GBI also bring benefits to environmental quality, such as improved air quality, enhanced biodiversity and urban greening.

Key GBI Assets

Soil

10.1 The dominant soil type in Cork City is acid brown earths / brown podzolics. Characterised by relatively high fertility with a good mineral and organic content, the soil type supports a range of agricultural functions. Pockets of thinner lithosol/regosol soils and wetter gleysol soils also exist, following the meandering routes of river corridors in the city.

10.2 The presence of peat is particularly important for the identification of areas which offer climate change opportunities for both climate adaptation and mitigation. Peatlands are the most carbon dense habitat type and are highly significant in global efforts to combat climate change and the achievement of wider sustainable development goals. Peatland soils occur in the southern area of Cork City, located at Carroll's Bog and Tramore Valley Park. However, only 2 ha is still remaining, with a potential for 1 ha to be restored. These fen peat deposits lie predominantly to the east of the Urban Town of Blarney.

Tree coverage

10.3 Trees act as a fundamental building block of any GBI network. Prepared by Bluesky International, the National Tree Map (NTM) of Ireland captures the location, estimated height and canopy coverage of all trees within the Republic of Ireland. All trees within Cork City which exceed three metres in height have been recorded, through a combination of 3D height models and remote sensing data. Cross refenced with detailed aerial photography, the data includes three vector map layers and an attribute table for each crown feature.

10.4 Tree canopy coverage within Cork City is estimated at 14%, associated primarily with canopy infrastructure corridors, watercourses and field boundaries. Although Cork City has a significant tree population, there is a disparity in their abundance across the city, as seen in **Figure 10.1**. In general, tree canopy cover is most extensive in the City Centre, City Suburbs and Urban Towns. Despite its rural character, the Hinterland is typified by a reduced % canopy cover in comparison with the wider city.

10.5 Pockets of street tree deficit exist across Cork City and in many cases mirror the pattern of deprivation. It is generally within these areas where other issues such as surface water flooding, air pollution and a lack of biodiversity provisions are prevalent, and therefore the addition of greening would be most beneficial. Within the dense urban and industrial fabric of these areas, street tree planting may not be the most appropriate solution for greening due to conflict with infrastructure and services. Therefore, carefully planned urban

greening solutions should be retrofitted or designed into new development.

10.6 Trees form an important asset for climate change mitigation due to their role in carbon sequestration. Coniferous species are fast growing and able to absorb additional carbon in the short term. However, broadleaf species such as sycamore and oak afford greater potential in the long term and are effective at storing carbon in both the tree and soil. In addition, the use of timber as a construction material provides a carbon neutral source of energy, locking up carbon for the lifetime of the building. The success of each tree at absorbing carbon will also be affected by the soil medium in which it is planted. Tree planting locations need to be carefully sited, taking into account soil conditions, otherwise the tree planting will become a net carbon source, rather than sink.

10.7 Trees are also important assets for climate change adaptation as they slow the flow of water, through the interception of rainfall which reduces peak flow during storms and the likelihood of a flood event. Canopy coverage is also important in the provision of urban shading and cooling during hot weather. The woodland habitat in Cork City is predominantly located in the north west of the city, within the Hinterland, Tower and Blarney, and along the eastern edge of the city boundary at Glanmire and Rochestown. The woodland coverage comprises deciduous, coniferous and mixed woodland tracts. Within the City Suburbs and City Centre, woodland tends to be smaller and scattered in extent. Linear tree belts are situated, for example along the steep slope lying between the Lower Glanmire Road and Lover's Walk. Additional pockets of woodland exist at Beaumont Quarry, north of Lower Glanmire Road and Glen River Park.

10.8 Ancient woodland comprises sections of the land use in the west of the city, located between the settlements of Blarney, Tower and Ballincollig. Native woodland supports a wide range of species, which can be particularly threatened by changing climates, making the habitats important areas for climate change adaptation. However, native woodland can itself be at risk of changing climate, resulting in changes to canopy, shrub layer and ground flora composition. Management and protection of these assets is important as the changing climate can result in the spread of new pests and diseases This includes *Hymenoscyphus fraxineus*, more commonly known as ash dieback, which threatens European ash trees across the continent. Several of the native woodland habitats within Cork are ash woodlands, and across

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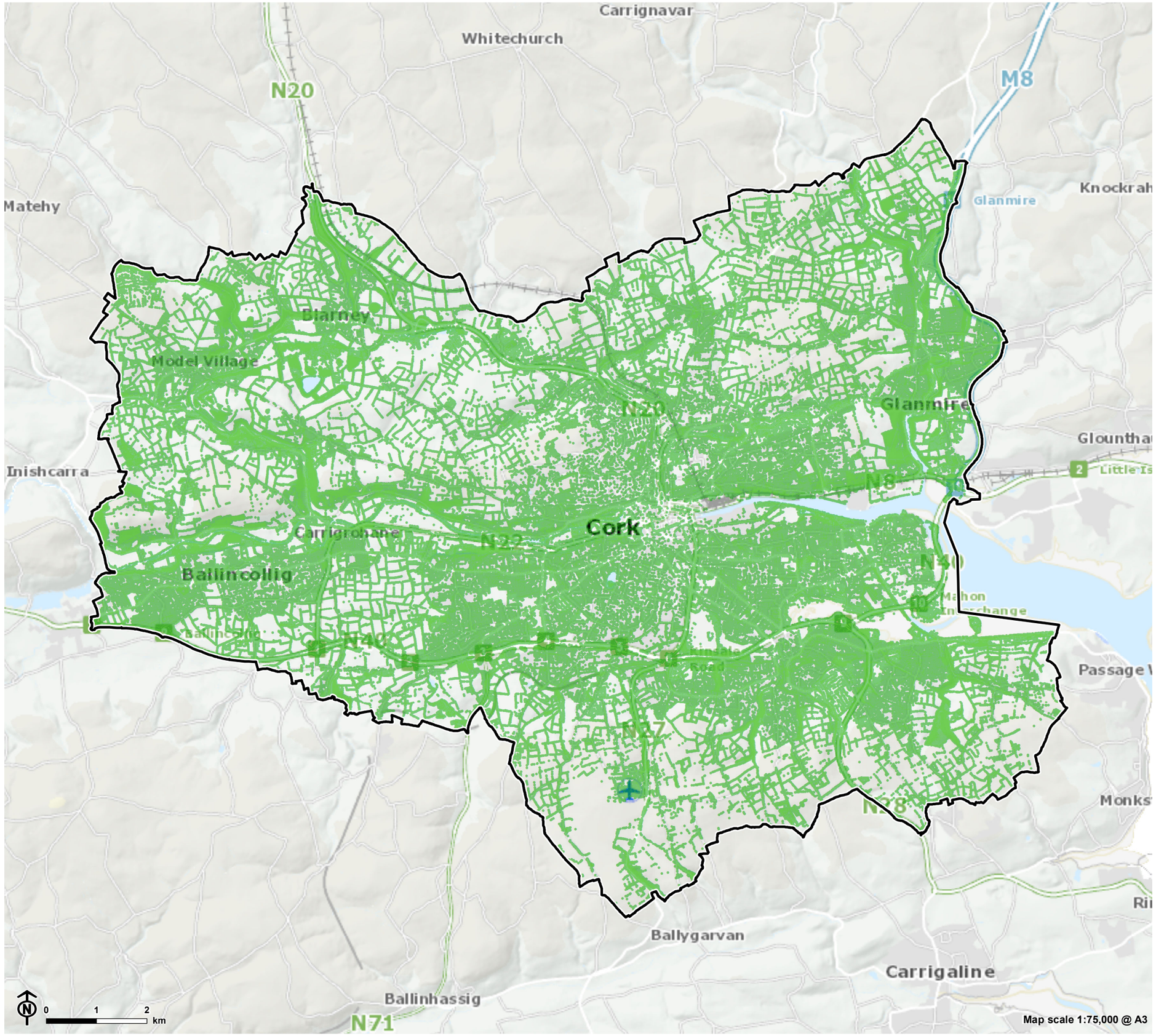
Figure 10.1: Existing canopy coverage



Cork City Council boundary
Tree point
Canopy

CB:CB EB:llott_J LUC FIGX_11280_r0_CanopyCover_A3L 19/03/2021
Source: CCC, OSI

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Figure 10.2: Climate change opportunities

Cork City Council boundary

Soils

- Peaty gleys acidic
- Fen peat
- Canopy

Vegetation

- Marsh
- Scrub
- Woodland coniferous
- Woodland deciduous
- Woodland mixed

Map scale 1:75,000 @ A3

CB:CB EB:Bean_C LUC FIGX_11280_r0_ClimateChangeOpp_A3L 08/04/2021
Source: CCC, OSI

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Ireland this species is the second most dominant hedgerow species[138].The opportunity exists to enhance the species and age diversity of woodland within the city to increase climate resilience.

10.9 A network of good quality green space allows species to migrate more easily to suitable habitats as climates change. Although the woodland habitats are generally isolated, scattered parkland trees, hedgerows, and street trees form an important component of tree coverage in Cork City and provide an important role in the connection of habitats (see **Figure 10.2**). Additional information on the importance of this network for biodiversity is highlighted in **Chapter 8.**

Wetlands

10.10 Wetlands form an important asset which aid climate change mitigation by sequestering and storing carbon. Characterised by permanently or ephemerally wet habitat, wetlands also form effective water storage assets. Wetlands therefore play an important role in climate change mitigation as they have the capacity to store and slow the flow of water, thereby reducing flood risk to cities, towns and infrastructure. Moreover, wetlands also accumulate peat, due to their flooded nature, and act as carbon sinks. Effective management of wetlands can enhance carbon sequestration and help society to tackle the impacts of climate change. Consequently, the requirement exists to address the effects of drought in summer and high water flows/ erosion during periods of wetter weather.

10.11 Marshes and fens form the historic land use in Cork City. However, sections of the landscape were systematically drained to allow for construction of new settlement. The North and South Channels of the River Lee form the remnants of much of the marshland habitat. Tracts of marshland also exists at the city's margins along the Lee Road and at Douglas Estuary. Other wetland habitats include wet woodland and wet grassland at Murphy's Farm, the Glen River Park, the Lee Fields and the Distillery Fields.

10.12 Cork Harbour SPA is located on the eastern boundary of Cork City and is designated in recognition of its large number of wetland bird species which use the area in both summer and winter. The SPA is linked with the Great Island Channel SAC which is characterised by mudflat and sea meadow habitats. The effects of climatic change pose a risk to these habitats due to 'coastal squeeze'. Engineered flood defences constructed in response to rising sea levels may jeopardise the future of these important intertidal habitats. The potential impact of abnormally high tides on habitats along tidal sections of the river is also recognised. However, the opportunity exists to incorporate managed realignment projects to help intertidal habitats to migrate inland.

[138] McCracken, A., Douglas, G., Ryan, C., Desteganis, M and Cooke, L. (year) Ash dieback on the island of Ireland. In: Vasaitis, R. and Enderle, R. (eds) Dieback of European Ash (Fraxinus spp.) – Consequences and Guidelines for Sustainable Management. (https://www.teagasc.ie/media/website/crops/forestry/research/Ash-Dieback-on-the-island-of-Ireland.pdf)

10.13 The Lough also forms an important site of wet woodland at the south east of the city. Glen River Park in the north of the city offers a diverse wetland habitat including ponds and wet woodland which provide habitats to insects and birds. The area is also heavily used by the public for recreation and amenity purposes. On the northern banks of the River Lee lies the Distillery Fields which hosts wet woodland and supports a number of birds and mammals. Further north, the Lee Valley is typified by wet grassland, locally designated as a Proposed Natural Heritage Area.

Agriculture

10.14 Farmland dominates the landscape within the Hinterland. Much of the land use is characterised by improved agricultural pastures and offers low ecological value. However, grassland still provides an important role as a carbon sink. The condition of grassland and how it is managed also affects how effectively carbon is sequestered and stored. The integration of GBI within agriculture has benefits for biodiversity through the provision of suitable habitats and corridors which connect these areas. However, climate change is beginning to affect the timing of events such as nesting and budburst. Traditional land management activities such as hedge cutting will therefore need to adapt to avoid future ecological impacts. The potential exists therefore for GBI to enhance the profitability of farming activities and provide extra sources of income for rural communities. Both are important given that the impacts of climate change are expected to affect biodiversity, species movements and agricultural productivity. Forming part of the EU biodiversity strategy, potential GBI opportunities will also need to reflect the emerging EU soil guidance on the preservation of land resources.

Key Issues and Opportunities

Climatic variables

10.15 The Cork Climate Change Adaptation Strategy (2019-2024) highlights a number of climatic variables in Cork City. These are important for informing which parts of the city are more susceptible to climate change and are listed below:

- Hydrologically, Cork City experiences increasingly seasonal climatic patterns, with decreasing river flow in summer and increasing flows in winter. These high winter flows increase the potential for future flood risk, particularly from the River Lee.
- Future rainfall is predicted to become increasingly seasonal. In addition, the magnitude of precipitation events is expected to rise, increasing the likelihood of groundwater, pluvial and fluvial flooding.
- Sea levels are anticipated to increase in all Irish coastal areas, leading to a rise in the likelihood of coastal flooding. This risk will be especially prevalent in densely populated areas such as the Docklands and Mahon, lying within close proximity to Lough Mahon.

Agricultural land use bordering the River Lee in the Hinterland

- In Ireland, sea temperatures have increased at a rate of 0.6°C each decade since 1994, leading to changes in the volume of sea water and additional sea level rise.
- Waves and storm surges pose an ongoing risk, particularly during winter storms.
- Surface air temperatures have increased by approximately 0.8°C in Ireland since 1990, increasing the threat from heat waves with regard to both intensity and duration.

Consultation findings – key challenges

- Apply greater focus on climate mitigation mechanisms as well as adaptation.
- Improve local understanding of coastal erosion and the inability for coastal retreat in an urban environment.
- Promote the implementation of natural flood management initiatives to tackle flood risk, including catchment scale management in conjunction with multiple public bodies and organisations.
- Improve the understanding of the effects of rising levels of CO_2 and global temperatures on pests and diseases in agriculture. Increased support is also needed to prevent detrimental effects on indigenous vegetation due to climate tolerant invasive species.
- Increase support to address water supply shortages.
- Explore the opportunity for the Council to utilise electric vehicles within their fleet to act as a leader in the delivery of sustainable transport targets.
- Encourage the implementation of additional sustainable transport links to reduce the reliance on private transport.
- Increase support to prevent saline intrusion and freeze thaw.

Flood risk

10.16 Within Cork City, flood zones are predominantly associated with the River Lee and its tributaries, as listed below:

- Within the Hinterland west of Model Farm Road and parallel the northern border of Ballincollig;
- Within the City Suburbs, particularly in Togher, Ballyphepahne and Frankfield; and
- Adjacent the Urban Towns of Blarney and Tower to the north west of the city.

10.17 Other flood zones in Cork City occur along the coast, where coastal flooding from Lough Mahon forms a significant risk. This affects areas in Mahon, Rochestown and Douglas.

10.18 Flood risk in Cork City is explored in additional detail in **Chapter 6.**

Energy Use and GHG emissions

10.19 Energy usage within Cork City is primarily associated with private residential properties, which account for 34.2% of total emissions. GBI may assist in the regulation of energy use in buildings, particularly through green roofs and vertical greening. Not only do these support vegetation which can sequester carbon, they also provide insulation and climate regulating services which reduce the need for excessive heating and air conditioning. Transport accounts for 21.25% of GHG emissions in Cork City, with 94.6% of this total sourced from private transport[139]. GBI can help create and improve active travel routes, increasing the potential uptake of active travel within Cork City. The opportunity also exists to explore the potential for GBI assets to provide a source of clean energy for nearby communities through ground and water source heat pumps.

10.20 The concept and increasing awareness of food miles has highlighted the importance of purchasing local produce. Growing food locally enhances climate change adaptation and increases and climate resilience , tackling GHG emissions associated with food miles. Allotments and community gardens can play a role in reducing these emissions. Furthermore, food growing may enhance carbon sequestration, especially when derelict or vacant land is utilised by local communities. Additional information on community food growing initiatives within Cork City can be found in **Chapter 11.** Changes in the management of greenspace assets to increase the coverage of semi-natural grassland, wetland and woodland habitat could also be adopted to increase carbon sequestration at the local level.

Economic and Development Pressure

10.21 Incremental urbanisation and the ambitious growth targets outlined in the Cork City Development Plan 2022-2028

[139] https://www.corkcity.ie/en/media-folder/environment/cork-city-council-secap-final-report.pdf

Issues and Options Paper highlight the need for increased green space to meet the needs of a growing population. As a result, less space intensive solutions such as rooftop gardens and vertical greening are required within the city as part of a wider network of GBI. Additional development pressures also increase the risk of habitat fragmentation within Cork City. Changes in hydrology and habitat loss have given rise to large-scale fragmentation of wetlands, peatlands and green networks across the city[140], resulting in increased vulnerability to future extreme climatic events.

[140]Nature in the City: a guide to Biodiversity in Cork City (2009) [online] Available at: https://www.corkcity.ie/en/media-folder/heritage/nature-in-the-city-1.pdf

Potential GBI Opportunities and Existing Interventions

10.22 A list of potential GBI opportunities and existing interventions are listed below in **Table 10.1**. The existing GBI baseline within this theme is summarised visually in **Figure 10.3.**

Table 10.1: Summary of potential GBI opportunities / existing initiatives / delivery partners

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
Ensure that GBI assets are resilient and play a role in adapting to climate change(see Chapters 7 and 8)	✓	✓	✓	■ Identify and manage habitats and landscape features under threat from climate change (e.g. intertidal habitats squeezed by rising sea levels); ■ Select species suited to projected future changes in the climate. ■ Guard against the risk of increased pests and disease by regular monitoring and adopting the principles of diversity in new planting;	The Council Cork Healthy Cities Cork Environmental Forum CARO Sustainable Energy Authority of Ireland Energy Cork Developers EPA Coillte	✓			 Biodiversity  The Water Environment  Landscape and the Harbour

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				■ Integrate measures to manage surface water into greenspaces and streetscapes – wetlands, swales, dry river channels, rain gardens; ■ Design urban greenspaces to maximise future shade and cooling effect; ■ Identify opportunities to increase carbon sequestration and storage within greenspaces; ■ Explore the potential of urban greenspaces to provide a source of clean energy; ■ Manage woodland and scrub to minimise the risk of wildfire; and					

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				■ Use Cork City's GBI assets to raise awareness of, and action on climate change.					
Use Cork City's GBI assets to raise awareness of climate change	✓			Potential to implement signage within parks to raise awareness of climate change. Where climate change mitigation measures are installed in publicly accessible spaces, signage explaining the purpose of these changes should be introduced to educate the public. Identify a DZ within Cork City which to explore a range of mitigation measures to address local low carbon energy, GHG emissions and climate needs to contribute to	CARO National Parks and Wildlife Service	✓			 People, Communities, Health and Wellbeing

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				national climate action targets;					
Identify and manage habitats and landscape features under threat from climate change (see Chapter 8)			✓	Increase the extent of open space and natural buffer between Cork Harbour and Lough Mahon to prevent the 'squeeze' of intertidal habitats by rising sea levels. The opportunity exists to work in conjunction with land managers to ensure that changes in the timing of ecological events (such as nesting) are reflected in the programming of land management operations.	The Council Cork County Council EPA Irish Water Marine Institute	✓			 Biodiversity
Introduce a network of urban boulevards and design	✓	✓		■ Implement a network of urban greening features including street trees, pocket parks, linear rain	The Council Developers Tidy Towns	✓	✓		 The Water Environment

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
urban space to maximise future microclimatic effects				gardens, raised planters and parklets as a method of greening the city's streets. Routes which are particularly popular with pedestrians and cyclists should be transformed into urban boulevards using GBI. This should encourage the uptake of active travel whilst providing space for biodiversity, improving mental wellbeing, managing surface water and reducing the urban heat island effect.	LCDC PPN Cork Environmental Forum				 Economic Value and Land Management  People, Communities, Health and Wellbeing

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
Implement a network of green roofs and vertical greening as urban greening initiatives (see Chapter 7 and 8)	✓	✓		Retrofit a network of green roof and vertical greening on large retail, employment or public buildings within the City Centre and Urban Towns (Blarney, Tower, Ballincollig, and Glanmire) as a mechanism to reduce the urban heat island effect, minimise storm water runoff and improve air quality. A combination of green roofs and vertical greening would promote a better thermal performance in the building envelope.	The Council Tidy Towns Private developers	✓	✓		 Biodiversity  People, Communities, Health and Wellbeing
Introduce a programme of woodland creation, including the adoption of a			✓	Implement a network of woodland planting schemes at the following locations: ■ Locally elevated locations and within	The Council Cork Environment Network		✓		 Biodiversity

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
target for tree planting and reduction in woodland fragmentation (see Chapter 8)				river catchments will be particularly effective at slowing flows and reducing flooding; ■ Within pockets of derelict land that have the potential to accommodate tree planting, including sites at Sundays Well; ■ Within fertile, deep soils, such as the acid brown earth / brown protozol soil that dominates in the Hinterland; and ■ Steeper slopes of low agricultural value. Develop and adopt a Tree Planting and Management Strategy for the city.	NeighbourWood Scheme (for woodland that will be accessed by the community) Coillte				 Water and the Environment  Landscape and the Harbour

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
Implement measures to re-naturalise sections of the city's river corridors (see Chapter 6,7 and 8)	✓			Work with all relevant stakeholders to identify and deliver projects to naturalise watercourses and develop a coherent ecological network. This could be achieved through the delivery of de-channelising, creation of reedbeds, planting of riparian woodland and allowing natural river profiles to develop.	Waterways Ireland Irish Water CARO IFI Local Authority Waters Programme EPA OPW Cork Environmental Forum	✓			 Water and the Environment  Biodiversity  Landscape and the Harbour
Improve water retention and grey water recycling	✓			Implement a system of SUDs strategies within the city, associated with both new projects and retrofitted on existing developments. Potential locations include:	The Council EPA	✓			 Water Environment

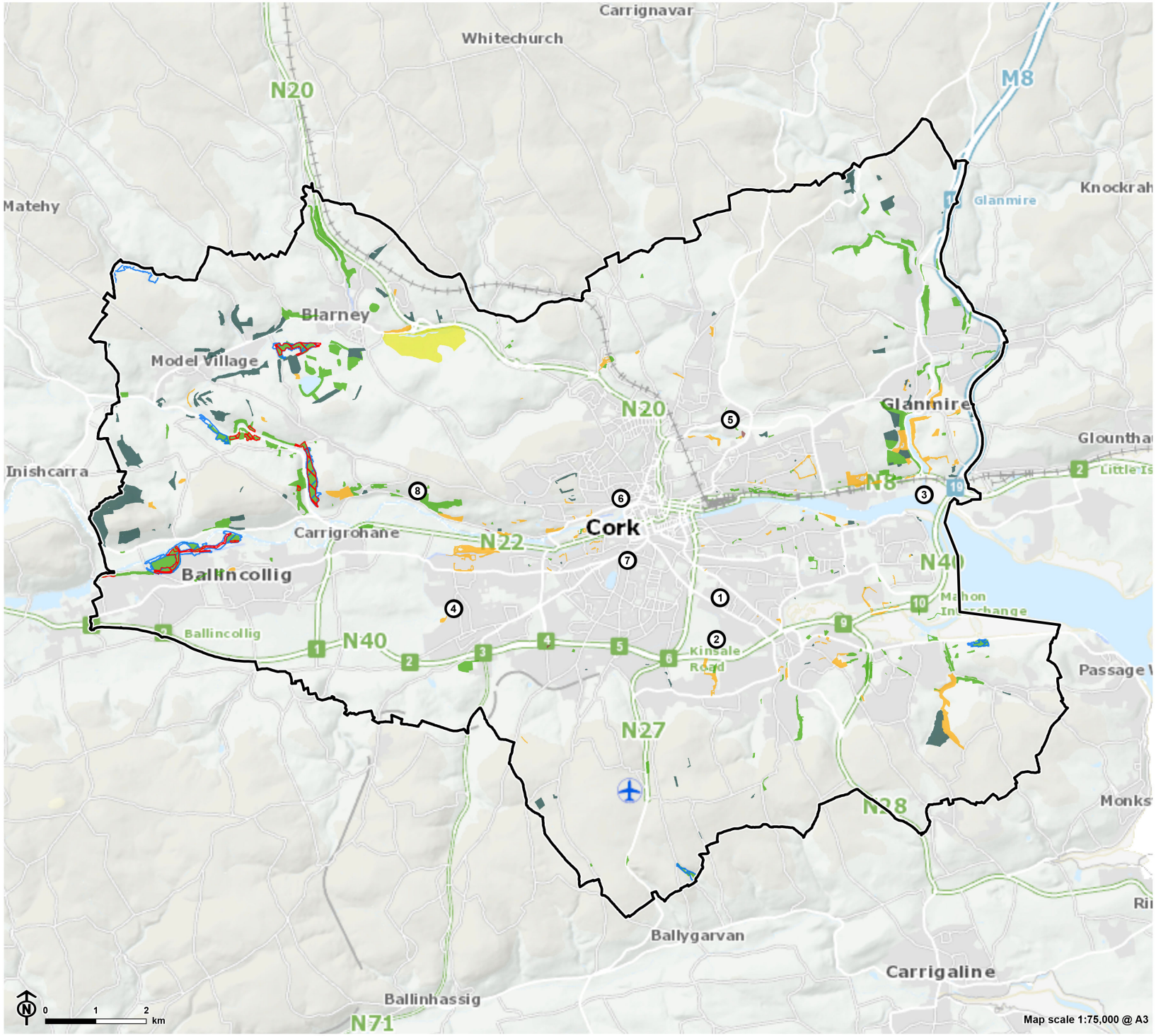
Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				■ The northwest regeneration site in Knocknaheeny; ■ Proposed developments at South Docklands; and ■ Primary Retail Opportunity sites in North Docklands within the City Centre.					 People, Communities, Health and Wellbeing
Explore opportunities to expand peatland rewetting and wetland creation (See Chapter 8)	✓			Create additional opportunities for peatland rewetting and wetland creation at Carroll's Bog and the fenland within close proximity to Blarney.	The Council Local landowners	✓	✓	✓	 Water Environment  Biodiversity
Promote initiatives to increase			✓	Engage with local landowners to increase the carbon sequestration value of agricultural land.	Farming for Nature Irish Farming Association	✓			 Biodiversity

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
carbon sequestration				Example initiatives include: ■ Soil organic carbon sequestration through agricultural management; ■ Winter soil cover; and ■ Modifications to grassland management and reduced tillage. The potential exists to extend this measure to include field boundary trees and hedges within existing farmland. GBI initiatives should link with the emerging EU soil strategy which aims to address soil degradation and preserve land resources.	Local landowners				

Green and Blue Infrastructure Study
Cork City Council

LUC

Figure 10.3: Current baseline of GBI in Cork City – Climate Change and the Environment



Cork City Council boundary
National Survey Native Woodlands
Ancient Long Established Woodland
Marsh
Woodland coniferous
Woodland deciduous
Woodland mixed
1, Carroll's Bog
2, Tramore Valley Park
3, Douglas River Estuary
4, Murphy's Farm
5, Glen Recreation Area
6, Distillery Fields
7, Cork Lough
8, Lee Valley

Soil type

FenPT - Fen peat

CB:JI EB:Willshear_R LUC FIGX_11280_r0_Baseline_ClimateChangeEnv_A3L 09/04/2021
Source: LUC, CCC, OSI

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Chapter 11
Theme 6: People, Communities, Health and Wellbeing

Why is this theme relevant to GBI?

Climate Change

Communities play important roles in tackling climate change in their local area, contributing to a decline in emissions at source. GBI offers the opportunity for individuals to interact with the environment, promoting action to help protect the natural world.

Wellbeing and Social Inclusion

Open space and GBI plays a vital role in improving and maintaining the health and wellbeing of local communities. GBI also provides notable benefits for social interaction and community enterprise. In particular it is important to ensure GBI assets are inclusive and accessible.

Environmental Factors

The creation and management of GBI helps to regulate the environment, reducing health risks posed by noise pollution, traffic emissions and water quality. A strategically planned network of GBI also contributes to the delivery of a wide range of ecosystem services which can improve the quality of life of residents in the city.

Key GBI Assets

11.1 Although all types of GBI asset are multifunctional, some features are more closely aligned with the provision of benefits for people, communities, health and wellbeing. This includes all 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. Allotments, trees and active travel corridors also form important GBI assets and it is important to consider how these assets interact with other factors such as demographics, deprivation, housing type, and health statistics within Cork City.

Park and open spaces

11.2 The importance of good access to high quality open space to the health and wellbeing of communities is well recognised. Parks and green spaces also provide a wealth of socio-economic benefits, including employment creation and the promotion of inward investment across an area by providing a draw and destination for visitors. The Council maintains a total of 2,200 acres of parks, walkways and open spaces within the city. These sites include:

- Fitzgerald's Park;
- Tramore Valley Park;
- Ballincollig Regional Park;
- Douglas Park;
- John O' Callaghan Park;
- The Lough;
- Bishop Lucey Park;
- Atlantic Pond and Mahon Walkway;
- Shalom (Peace) Park;
- Kennedy Park;
- Tory Top Park;
- The Glen River Park; and
- Marina Park.

11.3 Parks are generally recognised as having the highest value to the local community due to the wide range of features, facilities and activities on offer. As part of the wider GBI network it is important to recognise the potential for all sites to be multifunctional and, where well-designed and of a high quality, provide a wide range of social, environmental and economic benefits.

11.4 Such benefits include regulating and mitigating against flooding, carbon storage, temperature regulation, providing space for nature, enhancing landscape character and providing space for social interaction. Some sites are also well placed to act as 'destination' sites and provide opportunities for income generation and a greater offer for visitors travelling into the city.

Analysis of existing open space accessibility and development of a hierarchy

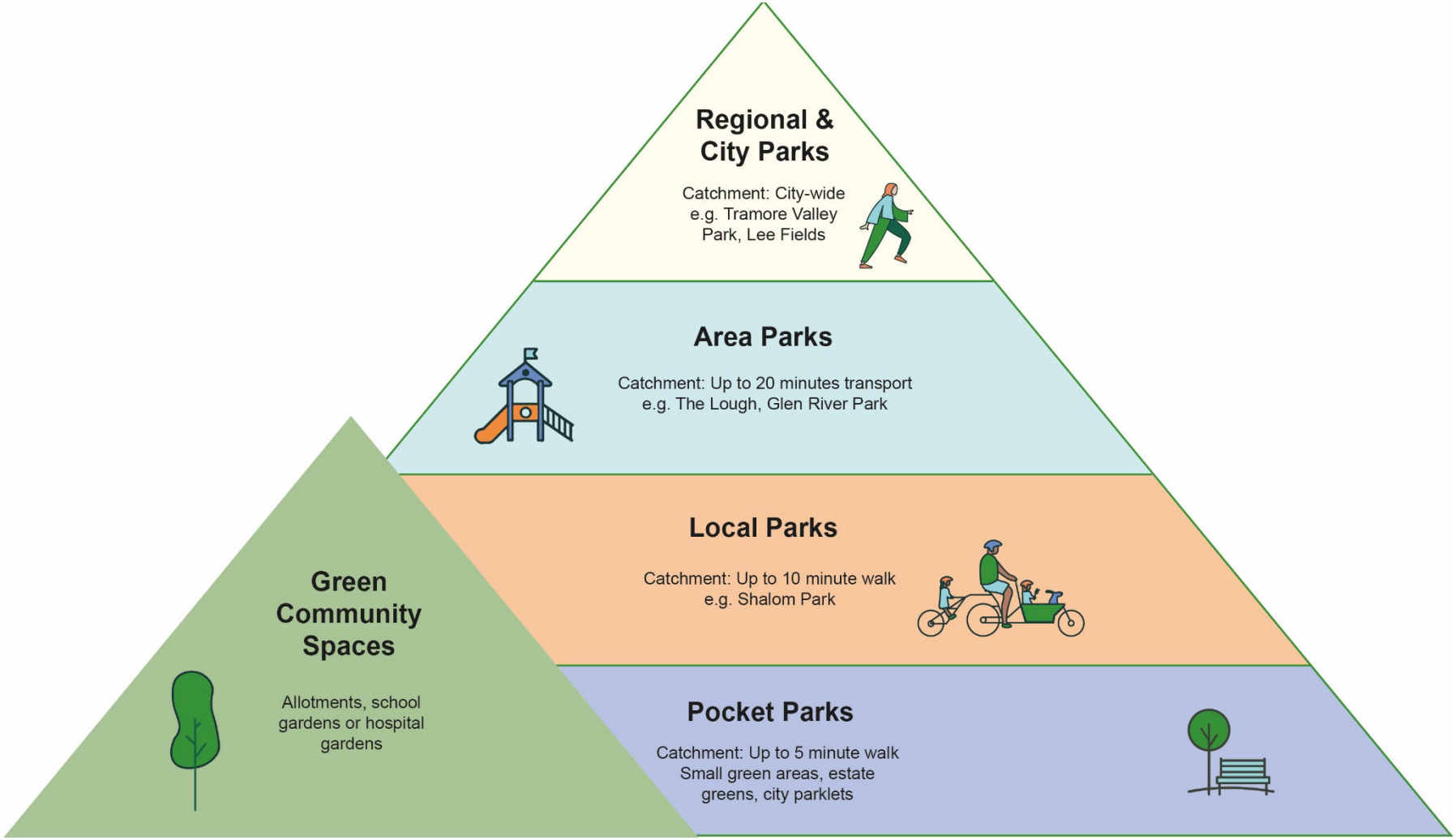
11.5 In order to develop a framework for analysis of existing open space provision, the Council has produced a detailed hierarchy based on the typologies of existing parks and open spaces (see **Figures 11.1 and 11.2**). The hierarchy recognises that open spaces of different sizes are be expected to 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. **Figure 11.3** provides an overview of the functions of each of the typologies forming the hierarchy. Application of the accessibility buffers to the distribution of parks and open spaces within the hierarchy are illustrated in **Figure 11.4**.

11.6 Future management should aim to create a joined up and multi-functional network of publicly accessible open space which is within walking distance of each residential property within the Study Area. Opportunities should be considered to ensure existing open spaces are of a high quality and provide a broad range of features and facilities to support the health and wellbeing of residents. Where areas are deficient in good access to green space, consideration should be given to:

- Ensuring existing open spaces meet quality and value standards.
- 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.
- Addressing any potential barriers to existing open spaces.
- Creating new open spaces to meet deficit in accessibility. The typology of proposed open space should be informed by the form of deficiency.

Glen River Park

Figure 11.1: Parks and open space hierarchy



LUC

Figure 11.2: Existing open space provision by hierarchy

Cork City Council boundary

Proposed park provision and enhancements

A. North East of Cork New City Park
B. North West of Cork New City Park
C. Glen Valley Park
D. Glenamought Valley River Park
E. Vernon Mount Park

Existing park provision

Regional and city park

1. Marina Walk and Park
2. Lee Fields
3. Ballincollig Regional Park
4. Tramore Valley Park
5. Bishopstown Park
6. Blackrock Amenity

Area park

7. Glenamought River Valley Park
8. Glen Valley Park
9. Fitzgerald's Park
10. The Lough

Local park

11. Vernon Mount Park
12. John O'Callaghan Park
13. Atlantic Pond Mahon
14. Tank Field
15. Iona Park
16. Meelick Park
17. Popham's Park
18. Sun Valley Drive
19. Bridevalley Park
20. Curragheen Amenity Walk/ Murphy's Farm
21. Clashduv Park
22. Tory Top Park
23. Shalom Park
24. Ballinlough Park
25. Kennedy Park
26. Beaumont Park
27. Glenamoy Lawn Park
28. Fairfield Park
29. Bell's Field Park
30. Kilmore Park
31. Gerry O'Sullivan Park
32. Bishop Lucey Park
33. Douglas Community Park
34. Bally Brack Vally
35. Clogheenmilcon Amenity Walk & Playground
36. Japanese Gardens
37. Loughmahon Park
38. Nash's Boreen

Local park (cemeteries)

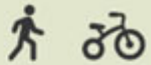
39. Military Cemetery Park
40. Doctor Mary Hearn Park
41. Saint Michael's Cemetery
42. Saint Joseph's Cemetery
43. Saint Mary's Cemetery
44. Saint Senan's Cemetery
45. Saint Oliver's Cemetery
46. Curraghkippane Cemetery
47. Saint Finbarr's Cemetery
48. Local Authority Graveyeard
49. Saint James' Cemetery
50. All Saints Famine Cemetery

0 1 2 km

Map scale 1:80,000 @ A3

: EB:Tomlinson_J LUC 11280_FIG_xx_hierarchy_20220221_05/04/2022
Source: LUC, CCC, OSI

Figure 11.3: Functions of the typologies forming the hierarchy

	Distance to travel and transport mode	Time spent on site	Activities	Users
Regional and City parks	0 - 45 minutes 	Long	Week-end walks, jogging, picnics, Children play, birthdays and gatherings	Families, groups of friends, joggers, visitors
Area parks	0 - 20 min 	Medium - long	Dog walking, jogging, picnics, Children play	Families, groups of friends, joggers,
Local parks	0 -10 min 	Short- medium	Children play, lunch breaks, local walks, regular dog walking	Families, groups of friends, Individuals, Dog owners
Pocket parks	0 - 5 min 	Short	Lunch/coffee breaks, people stopping for a rest	Local workers, local residents, people shopping, elderly people needing a walking break
Green community spaces	0 - 10 min 	Short - medium - long	Regular activity: gardening, vegetable growing, with either an educational, health or social objective	Locals, members

LUC

Figure 11.4: Application of accessibility buffers to existing parks and open spaces in the hierarchy

Cork City Council boundary

Proposed park provision and enhancements

A. North East of Cork New City Park
B. North West of Cork New City Park
C. Glen Valley Park
D. Glenamought Valley River Park
E. Vernon Mount Park

Existing park provision

Regional and city park

1. Marina Walk and Park
2. Lee Fields
3. Ballincollig Regional Park
4. Tramore Valley Park
5. Bishopstown Park
6. Blackrock Amenity Park

Area park

7. Glenamought River Valley Park
8. Glen Valley Park
9. Fitzgerald's Park
10. The Lough

Local park

11. Vernon Mount Park
12. John O'Callaghan Park
13. Atlantic Pond
14. Tank Field
15. Iona Park
16. Meelick Park
17. Popham's Park
18. Sun Valley Drive
19. Bridevalley Park
20. Curragheen Amenity Walk/ Murphy's Farm
21. Clashduv Park
22. Tory Top Park
23. Shalom Park
24. Ballinlough Park
25. Kennedy Park
26. Beaumont Park
27. Glenamoy Lawn Park
28. Fairfield Park
29. Bell's Field Park
30. Kilmore Park
31. Gerry O'Sullivan Park
32. Bishop Lucey Park
33. Douglas Community Park
34. Bally Brack Vally
35. Clogheenmilcon Amenity Walk & Playground
36. Japanese Gardens
37. Loughmahon Park
38. Nash's Boreen

Local park (cemeteries)

39c. Military Cemetery Park
40c. Doctor Mary Hearn Park
41c. Saint Michael's Cemetery
42c. Saint Joseph's Cemetery
43c. Saint Mary's Cemetery
44c. Saint Senan's Cemetery
45c. Saint Oliver's Cemetery
46c. Curraghkippane Cemetery
47c. Saint Finbarr's Cemetery
48c. Local Authority Graveyeard
49c. Saint James' Cemetery
50c. All Saints Famine Cemetery

Regional and city park (45 minute public transport travel time)
Area park (20 minute distance by public transport and walking)
Local park (10 minute walking distance)

Proposed park provision

Local proposed park (10 minute walking distance)

N 0 1 2 km

Map scale 1:80,000 @ A3

: EB:Tomlinson_J LUC 11280_FIG_xx_traveltime_regionalcity_area_local_r2_20220222 05/04/2022
Source: LUC, CCC, OSI, Traveltime API

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Recreation and sports

11.7 There are a number of sports facilities within Cork City, located throughout the City Centre, Neighbourhood Suburbs, Hinterland and Urban Towns. In particular there is provision of several facilities in Ballingcollig and within the Hinterland to the north of Cork City.

The facilities within this audit include a wide range of activities, such as hockey, horse riding, martial arts, and greyhound racing. However, the 2021 survey completed as part of the Active Recreation Infrastructure Strategy[141] highlights that the most popular sports are soccer, fitness, Gaelic Football (Mens and Ladies), walking, and athletics.

Trees

11.8 The dense tree canopy coverage forms one of the defining features of the landscape of Cork City. Some of the largest groupings of trees are concentrated to the north of the city, located on steep side-slopes and ridgelines[142]. Tree coverage is also prominent at Sunday's Well, Montenotte and parallel the river valleys associated with the Glen, River Bride and Glashaboy. To the south of the city, the distribution of trees is largely associated with institutional grounds, parks, open spaces, commentaries, unused rail corridors and the smaller river valleys[143]. The pattern of street trees in the City Centre influenced by the density of built form and topography, with a greater density of tree coverage found on steeper slopes. Beyond the City Centre and City Suburbs, the pattern of tree distribution is largely associated with the rural land use of the Hinterland.

11.9 Overall, a number of areas within Cork City are characterised by low tree canopy densities. These comprise Knocknaheeny, Blackpool Valley, Gurranabraher, City Centre, Docklands, Tramore Road, South Mahon and Tivoli and form some of the most deprived areas in the city.

Woodland

11.10 Areas of woodland and forestry within Cork City provide opportunities for residents and visitors to engage in recreational activities such as walking, mountain biking, orienteering etc. Access to woodland and forestry for recreational purposes enables people to connect with nature, and escape from the busier lifestyles experienced within more built-up areas, such as the city centre. Furthermore, access to woodlands promote healthier and active lifestyles which can have significant benefits for physical and mental health, alongside general wellbeing.

11.11 Cork City comprises approximately 121 ha of ancient and native woodland and 577 ha of other wooded areas. These habitats are primarily located in the west of the city, although significant wooded tracts also exist at Glanmire and

[141] Turley (on behalf of Cork City Council) (2021) *Active Recreation Infrastructure Study, Cork City: Survey Report.*

[142] http://137.191.227.217/media/Landscape%20Strategy.pdf
[143] http://137.191.227.217/media/Landscape%20Strategy.pdf

Garryduff. The latter, a 26ha woodland, is promoted by Coillte as a site for recreational pursuits.

Private gardens

11.12 A significant portion of green space within Cork City is characterised by private gardens and these play a significant role in tackling climate change at the local level. Well managed gardens offer the potential to mitigate the effects of extreme rainfall, reduce flood risk, increase urban biodiversity and enhance carbon sequestration.

11.13 In recent years, the paving-over of front gardens has become more frequent as people's desire for off-street parking increases. This is potentially having a negative effect on the risk of local surface water flooding, urban heating and biodiversity. Furthermore, recent research shows the importance of front gardens in people's health and well-being through the socio-cultural benefits which can be derived from planted up spaces which frame the street. Residents of Cork City should be encouraged to make the most of their gardens through de-paving (both front and back) to bridge the gap between the public and private realm whilst enhancing social interactions and community cohesion.

Active travel routes

11.14 CMATS outlines ambitious plans for the implementation of an additional 150km of secondary cycling routes, 60km of inter-urban cycling networks and 140km of greenways within Cork City. The proposed routes recommend improved connectivity between the City Suburbs and the Urban Towns of Glanmire and Ballincollig. Radiating into the Hinterland to the south, an additional route connects the City Suburbs and Cork Airport. However, the city is devoid of active travel routes connecting the Urban Towns of Blarney and Tower. The rural Hinterland to the north west of the city is also lacking in existing or proposed cycle way provision.

11.15 Public Rights of Way (PRoW) within Cork City are largely accommodated on the routes of minor roads. Few registered PRoW exist that are not maintained public roads.

Community food growing

11.16 Allotments, community gardens and urban farms form important GBI assets and contribute to the health and wellbeing of society through increased physical activity, social interactions and increased community resilience[144]. Established community food growing and local enterprises within Cork City are listed below:

- St. Stephen's Sustainable Food Lab;

[144] Baeey, V. (2015) *Growing Urban Agriculture in Cork: Can Cork be a Greener, Healthier and more abundant food producing city?* (http://corkfoodpolicycouncil.com/wp-content/uploads/2016/05/Urban-Agriculture-Report.pdf)

- Blackpool Community Garden;
- Knocknaheeny/Hollyhill Community Garden;
- Shandon Community Garden;
- Green Spaces for Health's St. John's Central College Rooftop Beehives;
- Food Forest, Summerhill South;
- Dean Street Youthreach Garden;
- Parkowen;
- Portney's Lane Garden; and
- UCC Community Garden.

11.17 The Council also operates a network of allotment sites; including Churchfield Allotments, Ballincollig Community Allotments and Douglas Allotments. Cork City has a strong history of locally sourced food production, with an increasing awareness of the potential for urban farming and community food growing. Located in the City Centre, the Cork Rooftop Farm forms an example of a local enterprise formed as a result of the COVID-19 pandemic. The project aims to promote healthy eating and support community volunteering.

Guerrilla Gardening and Temporary Spaces

11.18 Small scale interventions such as box planting and urban artwork have the potential to contribute to sense of place and improve pride in an area. 'Mad about Cork' is a street art and guerrilla gardening group which has carried out improvement works at Kyrl's, Coal, and George's Quay, among other locations. Small scale changes can make an important contribution to GBI.

11.19 The use of derelict sites as temporary greenspace can fill lifeless gaps in the urban realm. One potential unused site on Kyrl's Quay situated between Kyrl's Street and Cornmarket Street is due to serve as a temporary art exhibition in 2021 and will feature a densely planted native woodland in planters constructed of reclaimed materials.

Parklets

11.20 Parklets are sections of streets which provide amenities for people, generally in the form of seating, cycle parking and ornamental planting. They tend to utilise space normally used as one or more parking spaces. Parklets are small scale installations, but they illustrate an intention to prioritise people over parking and provide an opportunity for social interaction. At present there is the People's Parklet on Douglas street, and plans for the creation of 10 additional city parklets as part of the 'Re-imagining Cork City' programme.

Douglas Street Parklet

Key Issues and opportunities

Deprivation and health

11.21 Areas with particularly high levels of deprivation should be used to indicate priority areas for open space improvement and enhancement. The distribution of GBI within the city, including street trees, woodland belts and roof gardens, should ensure that all citizens benefit from the innate health benefits associated with nature. This is particularly important in more deprived areas and areas of high population density where residents are less likely to have access to private gardens. GBI offers the potential to enhance the physical and mental wellbeing of the city's residents by greening the 'grey' within the areas most deficient in green space. The provision of easily accessible active travel routes within some of the city's most deprived neighbourhoods also affords the opportunity to promote the health benefits of walking and cycling.

Accessibility to open space and recreation

11.22 Local access to all types of open space should ensure an equity of access. However, the distribution of high quality multifunctional open spaces varies throughout the city. It is therefore important to ensure that GBI is accessible and safe to all members of society. An example of this may be the inclusion of areas that are free from dogs, or where dogs have to be on leads, provision of wheelchair accessible paths, and delivery of accessibly facilities such as toilets and areas for rest. Furthermore, data also indicates a significant migrant

population in Cork, with the population of the City Centre comprised of between 27% to >44.5% non-Irish nationals. It may therefore be appropriate for the installation of signage in multiple languages to ensure that all members of society are able to access their local open space.

11.23 Open spaces and GBI should also be designed to ensure ease of accessibility to those with disabilities, including visual or mobility impairments. With life expectancy expected to increase in the future, there is likely to be greater demand for facilities available to elderly people, such as rest stops and accessible toilet facilities. Changes required to accommodate current and future generations of Cork City may include an adequate number of seating opportunities along walking routes, accessible toilet facilities for those with mobility issues and the installation of appropriate path surfacing.

11.24 The summary report for the Active Recreation Infrastructure Study[145] highlighted a number of issues with access and over-use of recreational facilities:

- Nearly half of sports facilities provide services for between 50 and 100 members, with 88% of respondents expecting membership to grow;

Consultation findings – key challenges

- Address the need for public open space to ensure accessibility for all.
- Encourage improvements to the public realm due to a current lack of seating, green space and play space. Address deficiencies in lighting in areas subject to anti-social behaviour should also be addressed.
- Respond to the deficiency in the accessibility to open space, particularly for those with a disability or from deprived communities. Future planning should work towards reducing inequality of access, with universal design standards to ensure equity of access.
- Address a lack of urban greening within the city, with a need for promotion of tree planting, installation of green roofs, de-paving of streets for greenspace and improvements to the connectivity of green routes.
- Tackle poor air quality associated with an over reliance on private vehicles and lack of street trees.

[145] Turley (on behalf of Cork City Council) (2021) *Active Recreation Infrastructure Study, Cork City: Survey Report.*

- Just over three quarters of respondents reported that there was inadequate active recreation infrastructure within the city;
- Only 28% of facilities were open to the public, without requiring membership or shared use; and
- Greater requirement for all weather pitches.

Noise pollution

11.25 The road and rail network within Cork City contributes to noise pollution, with detrimental effects on the population of the city. Running south of Ballincollig, the N40 connects the City Suburbs with the Urban Town of Glanmire. Immediately parallel this carriageway, as it passes through Togher, Ballyphehane, Frankfield and Grange, the day and night time noise pollution reaches over 80dB, far exceeding the EU threshold of 55dB Lden. Slightly lower levels of noise, albeit still exceeding the EU threshold, are also evident in Bishopstown, Togher, Ballyphehane, Frankfield, Grange and Maryborough. To the north of the city, noise pollution is particularly prominent in Mayfield and Fair Hill, associated with the N20 and R635. The opportunity exists to integrate GBI adjacent major sources of noise pollution within the city to act as sound absorption mechanisms.

Potential GBI Opportunities and Existing Interventions

11.26 A list of potential GBI opportunities and existing interventions are listed below in **Table 11.1**. The existing GBI baseline within this theme is summarised visually in **Figure 11.5.**

Table 11.1: Summary of potential GBI opportunities / existing initiatives / delivery partners

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
Enhance opportunities for community food growing	✓			Create additional opportunities for community food growing within existing open spaces, new open spaces and as part of new development through development of a Cultivation Plan. Initiatives and opportunities include: ■ Deer Park community food growing; ■ Food Forest, Summerhill; ■ Additional space for food growing gardens (including exploring the possibility of rooftop allotments); and ■ Temporary use gardens on 'meanwhile' and derelict land identified	Cork Food Policy Council The Council PPN	✓	✓	✓	 Biodiversity  Climate Change and the Environment  Tourism, Culture, Recreation and Leisure  Economic and Land Managment

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				through the planning department. There are currently several small plots of derelict land under ownership of the Council that have not been identified with a land use zoning, these include: ■ Lough View Terrace, Glasheen; ■ Árd na RÍ, Pouladuff Road, Glasheen; ■ High Street, Ballintemple; and ■ Wyndern Popes Road, Blackpool.					
Integrate opportunities to enhance local biodiversity (see Chapter 8)			✓	Promote and expand on the Green Spaces for Health's 'Bee Hives' project to educate communities across Cork City about the importance of bees within the environment. The spatial scope of this could include private	Green Spaces for Health Hive Mind St. John's Central College HEIs				 Biodiversity  Climate Change and the Environment

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				gardens across Cork City and within educational institutions. Create additional opportunities that will aid the delivery of Biodiversity Net Gain (BNG). For example, ■ Creating wildlife corridors through private gardens; and ■ Animal Aided Design approaches.					
Improve connections between existing open spaces (see Chapter 7, 12 and 13)	✓	✓	✓	Improve connectivity and address barriers to access between open spaces. Improved connectivity could include creation of new links between existing areas of open space, including: ■ Strategic linking of Ballincollig, Lee Fields, Fitzgerald's Park, Marina Park, and the Banks of the Lee walkway, to	Cork Sports Partnership Transport and Mobility Forum The Council Cork County Council Cork Environmental Forum	✓	✓		 Climate Change and the Environment  Tourism, Culture, Recreation and Leisure

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				create a large-scale open space; ■ Linking the three parks in Shandon; ■ Link Sally Brook, Glanmire and Riverstown to Vienna Woods and Mayfield; and ■ Utilisation of disused railway tracks.					 Biodiversity  Access and Connectivity
Creation of open spaces to complement existing provision (see Chapter 7)	✓	✓	✓	Support the delivery of new open space throughout the city, particularly for outdoor recreational use, walking and cycling. Potential opportunities and initiatives include: ■ Active Cities; ■ Northside Sports Hub; ■ Urban Outdoor Initiatives; ■ Linking Blarney and Tower with the City Centre via pedestrian routes;	Cork Sports Partnership Transport and Mobility Forum The Council Cork County Council Tidy Towns Developers Landowners	✓	✓		 Climate Change and the Environment  Biodiversity  Tourism, Culture, Recreation and Leisure

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				■ Use of vacant land for green space, particularly within the City Centre; ■ Inclusion of GBI in the Docklands regeneration project; ■ Implementation of a sustainable tourism attraction with access to the Hinterland; and ■ Curaheen River Walk from Murphy's Farm to the City Centre. ■ Create multi-functional neighbourhood parks in South Parish and St. Luke's. ■ Ensure new development addresses open space, play, sport and recreational needs as part of site design and layout.					 Access and Connectivity
Enhancement of existing open space	✓	✓		Ensure all residents have local access to a high quality, multifunctional open space, particularly those in	Transport and Mobility Forum	✓	✓		 Biodiversity

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
(see Chapter 7)				areas of high deprivation. Improvements to existing open space should strive to achieve EU Green Leaf Award. Initiatives and opportunities include: ■ Improved lighting, signage, and distance markers to delineate recreational routes; ■ Installation of street art; ■ EU Blue Green Cities; ■ River Lee Placemaking Network; and, ■ Green Spaces for Health. Possible locations for these improvements include: ■ Beaumont Quarry; ■ Atlantic Pond; ■ North bank of River Lee; ■ Hazelwood Close, Glanmire walkway; ■ The People's Parklet, Douglas Street;	The Council Cork Healthy Cities Waterways Ireland National Parks and Wildlife Service Cork Environmental Forum HEIs				 Tourism, Culture, Recreation and Leisure

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				■ Improve condition of Rope Walk; ■ Healthy School Streets e.g. at St Catherine's National School; and ■ Clogheenmillcon Sanctuary Ensure that not just new initiatives are developed, but that legacy initiatives are renewed and revitalised, such as 'Greening the Historic Spine' initiative from Barrack Street to Shandon Street.					
Improve public facilities and amenities	✓			Encourage use of public open space through improvements to the condition of facilities. For example, ■ Improved vehicle access at the Marina; ■ Toilet facilities at the Marina; ■ Family friendly facilities, toilets, picnic areas and	Cork Age Friendly City Cork Healthy Cities The Council	✓			 Tourism, Culture, Recreation and Leisure

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				designated BBQ locations (including ensuring these are accessible for those with limited mobility).					
Encourage active lifestyles through travel and recreation (see Chapter 9 and 13)	✓	✓		Encourage use of open space for recreation and active travel. Initiatives include: ■ Camino Walk Challenges in local communities; ■ Active Cities Project for Cork 2021; ■ Marina Tree Trail; ■ Ocean to City and Cork Harbour Festival (long distance rowing race); ■ Let's Play Cork; ■ Urban Outdoor Initiatives ■ Get Cork Walking; ■ Cycling programmes such as Sofa to Saddle, Learn to Cycle, Safer Cycling Programmes, Sprocket Rocket;	Cork Healthy Cities Transport and Mobility Forum Meitheal Mara Cork Sports Partnership Sport Ireland NTA Waterways Ireland	✓	✓		 Climate Change and the Environment  Tourism, Culture, Recreation and Leisure  Access and Connectivity

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				■ Sport & Physical Activity on the Greens Project; ■ Cork Sports Ability project; and, ■ URBACT Playful Paradigm Project.					
Improve recreational access to the water environment	✓	✓		Improve accessibility for residents and visitors to the water environment, such as the River Lee and Cork Harbour. Initiatives to include: ■ Promotion of the Ocean to City and Cork Harbour Festival (long distance rowing race); ■ Canoe Slalom on Lee; ■ River Lee Urban Outdoor Adventure Hub; and ■ River Lee Placemaking Group.	Cork Sports Partnership HC Meitheal Mara Phoenix Kayak Club Sport Ireland Waterways Ireland Irish Water	✓	✓	✓	 Tourism, Culture, Recreation and Leisure  The Water Environment
A tree lined avenue to commemorate	✓	✓		This would be inspired by the dark hedges intertwined beech trees along Bregagh Road in Antrim. Possible	The Council Cork Healthy Cities	✓			 Biodiversity

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
the victims of Covid-19				locations for this include along Tramore Valley Park or the proposed Cork Science Park in Curraheen.	Cork Nature Network				 Tourism, Culture, Recreation and Leisure

Green and Blue Infrastructure Study
Cork City Council

LUC

Figure 11.5: Baseline – People, Communities, Health and Wellbeing

Cork City Council boundary

Existing park provision

1. Marina Walk and Park
2. Lee Fields
3. Ballincollig Regional Park
4. Tramore Valley Park
5. Bishopstown Park
6. Blackrock Amenity Park
7. Glenamought River Valley Park
8. Glen Valley Park
9. Fitzgerald's Park
10. The Lough
11. Vernon Mount Park
12. John O'Callaghan Park
13. Atlantic Pond
14. Tank Field
15. Iona Park
16. Meelick Park
17. Popham's Park
18. Sun Valley Drive
19. Bridevalley Park
20. Curragheen Amenity Walk/ Murphy's Farm
21. Clashduv Park
22. Tory Top Park
23. Shalom Park
24. Ballinlough Park
25. Kennedy Park
26. Beaumont Park
27. Glenamoy Lawn Park
28. Fairfield Park
29. Bell's Field Park
30. Kilmore Park
31. Gerry O'Sullivan Park
32. Bishop Lucey Park
33. Douglas Community Park
34. Bally Brack Vally
35. Clogheenmilcon Amenity Walk & Playground
36. Japanese Gardens
37. Loughmahon Park
38. Nash's Boreen

Cemetery

39. Military Cemetery Park
40. Doctor Mary Hearn Park
41. Saint Michael's Cemetery
42. Saint Joseph's Cemetery
43. Saint Mary's Cemetery
44. Saint Senan's Cemetery
45. Saint Oliver's Cemetery
46. Curraghkippane Cemetery
47. Saint Finbarr's Cemetery
48. Local Authority Graveyeard
49. Saint James' Cemetery
50. All Saints Famine Cemetery

N 0 1 2 km

Map scale 1:80,000 @ A3

:JT EB:Tomlinson_J LUC 11280_FIG_xx_existing_proposed_park_20220221_06/04/2022
Source: LUC, CCC, OSI

COMHAIRLE CATHRACH CHORCAÍ
CORK CITY COUNCIL

Chapter 12
Theme 7: Economic Value and Land Use Management

Why is this theme relevant to GBI?

Climate Change

GBI included as part of new developments can support the amelioration of climate change impacts through the reduction in urban heat island effects and the strengthening of the city's flood resilience. The enhancement or creation of new GBI assets as part of strategic improvements to the urban environment also offers the opportunity for reductions of GHG emissions through the promotion of active travel, particularly if it is linked to areas of employment.

Wellbeing and Social Inclusion

GBI assets are considered to deliver a wide range of benefits to wellbeing and social inclusion by offering opportunities for recreation and active travel. GBI may improve the quality of the area, encouraging investment in the area which may bring employment opportunities. GBI assets also offer opportunities for the local community to commute to work and school in a cost-effective manner, while enhancing the physical and mental health.

Environmental Factors

Promotion of GBI offers the potential to benefit both the local economy and environmental factors. The regeneration of brownfield sites to open space may not only make better use of the land but also improve environmental quality, such as improved air quality, enhanced biodiversity and urban greening.

Key GBI Assets

Ecosystem services

12.1 The services that GBI assets provide can be of great economic value. As summarised in **Chapter 4**, it is estimated that the natural capital of native woodlands in Ireland is currently worth between €100 and €140 million per annum[146], when services such as carbon sequestration, domestic and international tourism are considered. The economic value of Irish native forests accounts for €67 million per year and the native forests cover only approximately 1.4% of the land area (100,000 hectares)[147]. At present, native woodlands form 14% of the total forest cover in Ireland[148]. Ireland's National Survey of Native Woodlands 2003 – 2008 have estimated that there is approximately 11,230 ha of native woodlands in Cork County (including Cork City)[149], what accounts for approximately 11% of Ireland's native woodlands (worth approximately €7 million). The role of pollinators was valued at €3.9 million per annum for the oil-seed rape crop alone, and that without pollinators there would be a 30% reduction in yield[150]. When considered for all other crops, the total value could be significant.

12.2 GBI assets can help deliver economic benefits by reducing the risk of flooding. Over €150 million of damage was caused to homes and businesses by the 2009 and 2014 floods in Cork City[151]. The LLFRS will deliver €140 million investment in flood protection, including flood forecasting, flow control between the north and south channel, hard engineering flood defences such as parapets, barriers, flood gates and quay wall

[146] Woodlands of Ireland (2016) A Strategy for Native Woodlands in Ireland 2016 – 2020. Woodlands of Ireland. [online] Available at: http://www.woodlandsofireland.com/sites/default/files/WoI%20NW%20Strategy%20Final%2824July16%20LoRes%20for%20webpage%29.pdf [Accessed on 19/01/2021]

[147] Bullock C., Hawe J., and Little D. (2014) Realising the ecosystem-service value of native woodland in Ireland in New Zealand Journal of Forestry Science, 44, Article number S4(2014) [online] Available at: https://link.springer.com/article/10.1186/1179-5395-44-S1-S4 [Accessed on 08/01/2021]

[148] Bullock C., Hawe J. (2014) The natural capital value of native Woodland in Ireland [online] Available at: http://www.woodlandsofireland.com/sites/default/files/Natural%20Capital%20Value%20of%20Native%20Woodland%20in%20Ireland%28Long%20version%20-%20Mar2014%29.pdf [Accessed on 08/01/2021]

[149] Perrtin P. et al. (2008) National Survey of Native Woodlands 2003 – 2008 [online] Available at: https://www.npws.ie/sites/default/files/publications/pdf/Perrin_et_al_2008_NSNW_V1.pdf [Accessed on 08/01/2021]

[150] Stanley, D. A.; Stout, J. (2013) Pollinators and pollination of oilseed rape crops (Brassica napus L.) In Ireland: Ecological and economic incentives for pollinator conservation. Journal of Insect Conservation, 1796). [online] Available at: https://www.researchgate.net/publication/258163435_Pollinators_and_pollination_of_oilseed_rape_crops_Brassica_napus_L_in_Ireland_Ecological_and_economic_incentives_for_pollinator_conservation

[151] Lower Lee (Cork City) Flood Relief Scheme Animation. [online] Available at: https://www.floodinfo.ie/frs/en/lower-lee/news/lower-lee-flood-relief-scheme-animation/

restoration. The scheme will enlarge parks with a greater focus on biodiversity improvements, and will enhance riverside parks and river amenity, incorporating walkways and cycleways, and improving recreational access to the river. Additionally, the LLFRS will also incorporate natural solutions such as the designation of upstream washlands which will enable land adjacent to rivers to be deliberately flooded in advance of an extreme event to facilitate an increase in storage capacity within the Carrigadrohid and Inniscarra reservoirs[152].

12.3 In terms of Ireland's ocean economy, it has been estimated that the direct value of this assets accounts for €1.8 billion and it provides employment for approximately 30,000 people. Oceans are important in the carbon cycle as they are known to absorb 30% of all CO_2 emissions. Additional economic value is provided through recreational services, carbon sequestration, fisheries and aquaculture, waste assimilation services, scientific and educational services, coastal defence services and seaweed harvesting. Economic value of aquaculture for Cork was estimated to be €32.8 million in 2015 (Atlantic salmon €25 million, pacific cupped oyster €3 million, and blue mussel €4.8 million)[153].

12.4 The total economic value of algae/seaweed harvesting in 2012 was €3.9 million. In Ireland, seaweed is mainly harvested on the western seaboard, on the shores of Donegal, Sligo, Mayo, Galway and Cork County[154]. A study by the Cork Institute of Technology[155] investigated the economic impact of the marine leisure industry on Cork Harbour. The study found that the total value of the marine leisure industry in 2016 was approximately €10.94 million, and that the industry provided 29 direct jobs and 290 indirect jobs.

12.5 Cork Harbour is becoming increasingly popular for cruise ships, with 103 visiting in 2019[156], an increase on figures from 2018. In 2015, the Port of Cork City overtook Dublin as the port with the highest share of cruise passenger visits in Ireland[157], and handled 19.2% of all freight in Ireland[158]. The marine leisure study[159] highlights that the luxury cruise liner

[152] ARUP; OPW (2017) Lower Lee (Cork City) Flood Relief Scheme (Drainage Scheme). [online] Available at: https://www.floodinfo.ie/frs/media/filer_public/92/de/92de219c-e817-4fe2-894f-81d687b6905a/lowerleefrs_exhibitionreport.pdf

[153] Socio-Economic Marine Research Unit (undated) Valuing Ireland's blue Ecosystem Services [online] Available at: https://www.nuigalway.ie/media/researchsites/semru/files/marine_ecosystem_service_non_technical_report_final.pdf [Accessed on 08/01/2021]

[154] Ibid

[155] Conway Lenihan and McGuirk (2017) The Economic Impact of the Marine Leisure Industry on Cork Harbour 2017 [online] Available at: https://sword.cit.ie/cgi/viewcontent.cgi?article=1000&context=hincksart#:~:text=Of%20the%20%E2%82%AC11%20million,jobs%20and%20290%20indirect%20jobs. [Accessed on 12/01/2021]

[156] Ashmore, J. (2018) Cruiseships Record of 103 Call Visits to Cork Harbour in 2019. Afloat. [online] Available at: https://afloat.ie/port-news/cruise-liners/item/41322-103-cruise-ships-to-visit-cork-in-2019

[157] Cork City Council 92018) Cork City Profile 2018. [online] Available at: https://corkhealthycities.com/wp-content/uploads/2019/01/Chapter-7-The-Environment.pdf

[158] Ibid.

[159] Conway Lenihan and McGuirk (2017) The Economic Impact of the Marine Leisure Industry on Cork Harbour 2017 [online] Available at: https://sword.cit.ie/cgi/viewcontent.cgi?article=1000&context=hincksart#:~:text=Of%20the%20%E2%82%AC11%20million,jobs%20and%20290%20indirect%20jobs. [Accessed on 12/01/2021]

business is worth approximately €12 million per annum to the local economy, with each passenger spending on average, €73 a day whilst onshore[160].

Land management

12.6 With a growing population, there is likely to be greater demand for development and land, which may increase pressure on existing open space. The encouragement of higher density development supports the more sustainable use of land and may increase demand for active travel and public modes of transport. Greater population densities may also increase demand for open space for recreational and leisure use.

12.7 The emerging Cork City Capacity Study aids the identification of parcels of land currently zoned, both within the built-up area and greenfield land, that have development potential. The document identifies 1,200 ha of land throughout Cork City which is considered to be underutilised or undeveloped[161]. Whilst most of the area identified is within the towns of Ballincollig, Glanmire, Blarney and Tower, higher density development is planned for strategically important brownfield sites within the City Centre and Suburbs, notably City Docks and Tivoli Docks, which comprise c. 90 ha and 60 ha, respectively[162].

12.8 Of all potential sites identified, 69% are less than 1 ha in size and predominantly located within the City Centre or Suburbs. Over 12% of sites are in excess of 5 ha, with 7% greater than 10 ha[163]. Except for the aforementioned City and Tivoli docks, these large sites are generally located in the Urban Towns and Hinterland.

12.9 The proximity of Cork City to the agricultural landscape contributes to its sense of place. Much of the rural landscape on the outskirts of Cork City is farmed for agricultural purposes, with some areas within the flood plain containing highly fertile soils. Although farmland is the main land use in these areas, there has been a recent decline in this industry which is expected to continue in the future. However, commercial forestry remains limited due to competing interests for agricultural land.

12.10 Reduced need for agricultural land, and a growing population may result in new development within the countryside. New development is therefore likely to directly conflict with existing land management and uses and may result in the loss of important ecosystem services such as the functioning flood plain, and natural and semi-natural habitats. Development may also adversely affect recreational resources. well planned and maintained GBI, delivered as an integral part

[160] Ibid.
[161] Cork City Council (2020) Cork City Development Plan 2022 – 2028: stage 1: Pre-plan consultation Issues Paper. [online] Available at: https://www.corkcity.ie/en/media-folder/cork-city-development-plan/issues-paper.pdf
[162] Ibid.
[163] Ibid.

of development, can help ensure ecosystem services continue to be provided?

Economic evidence

12.11 Cork City, as the second biggest city in Ireland, has a large economy. Approximately 150 multinational companies employ 28,500 people in Cork County, with many located within the administrative boundary of Cork City[164]. There is a large pharmaceutical presence with companies including Pfizer, GlaxoSmithKline and Johnson & Johnson. Likewise, many companies within the technology and services sectors are also based within the city, including notable companies such as Apple, Amazon, EMC, IBM, McAfee Ireland Limited, and Siemens[165].

12.12 Cork City is expected to experience increased investment into the economy following successful placement on the Financial Times top 10 'small European cities of the future 2020/21' list. The city was also ranked second in relation to economic potential.

Employment

12.13 Cork City is characterised by a relatively high unemployment rate of 12%, with an average labour force participation rate of 58.6%. Labour participation is above average within the City Centre, Urban Towns and Hinterland. However, the north west of the city has the highest local rates of unemployment at 17.7%, with the north-east at 13.2%. This compares to the lowest rates at 7.9% and 9.8% in the south east and south west, respectively.

12.14 Between 2011 and 2016, growth increased by 9.3% across Cork City (an average of 1,333 new jobs per month)[166]. The majority (over 86% ~ 5,774) of new jobs were created in the city's south west and south east city suburbs. New jobs in the city's north west and north east city suburbs accounted for less than 12% (740 jobs) of the overall growth rate, whilst jobs in the City Centre accounted for less than 11%[167].

12.15 The majority of jobs within Cork City are located within the Hinterland (14.5%), Heart of the City (13.4%) and Mahon (8.3%). These areas are each some of the largest importers of workers, along with the south west suburb (comprising Ballyphehane, Dennehys Cross, Model Farm Road, UCC and Wilton) and other parts of the City Centre (including South Parish, and the north and south city docks). Unsurprisingly, the north east and north west suburbs are net exporters of workers, alongside the south east suburb and Urban Towns.

[164] Cork City Council (2018) Local Economic and Community Plan (LECP) 2016 – 2021: Pure Cork An Action Plan for the City. [online] Available at: https://www.corkcity.ie/en/council-services/services/community/local-economic-and-community-plan-lecp-/
[165] The Business Report (undated) From Apple to Pepsi, Cork is a host of global ambition. The Business Report. [online] Available at: http://www.the-businessreport.com/article/apple-pepsi-cork-host-global-ambition/
[166] Cork City Council (2018) Cork City Profile 2018: Economy. [online] Available at: https://corkhealthycities.com/wp-content/uploads/2019/01/Chapter-2-Economy.pdf
[167] Ibid.

12.16 The main industries of employment within Cork City are professional services, and commerce and trade, which account for 25.1% and 23.5% of employment within the city, respectively. These industries are located predominantly in the south of the city, with professional service jobs particularly concentrated in the south west. This area of the city houses University College Cork, Munster Technological University's (previously Cork Institute of Technology) main campus and the Cork Business and Technology Park. Agriculture, forestry and fishing makes up just 0.5% of employment, and is generally focussed in the Hinterland regions of Cork City.

12.17 Improving the quality of the built environment, through incorporation of GBI, may promote greater investment in the area. This could result in increased employment opportunities, connectivity and permeability throughout the city. A high quality, green environment is also likely to help attract and retain skilled workers. In terms of access, 62.6% of people travel to places of work or education via private modes of transport, whilst 22.3% use green modes and 9.1% by public transport[168].

Education

12.18 Education rates vary across the City. 37.2% of the total population of Cork City has third level education qualifications, whilst 10.8% have no formal education or primary education only. Rates of attainment vary, with 48.3% of the population within the south-east having third level qualifications, compared to 24.1% in the north-west, and 31.4% in the north-east.

12.19 Similarly, the north east and north west areas of the city have the highest rates of no formal or primary education, at 11.5% and 17.7%, respectively. This is significantly higher than rates for the south east, which has the lowest rates across the city at 6.3%[169].

12.20 Cork City has approximately 36,000 students attending UCC, Munster Technological University, Griffith College Cork, Cork College of Commerce, St John's Central College, National Maritime College, Bruce College, CSN College and Cork English College[170].

Key Issues and Opportunities

Population growth

12.21 With significant population growth expected in Cork City, there will be an associated need for growth in the economy to accommodate new housing, infrastructure, enterprise and employment. Such development is likely to put greater pressure on existing areas of open space and GBI, which may be lost to facilitate development.

[168] Ibid.
[169] Cork City Council; AIRO (2020) Development Plan Review Socio-Demographic Profile, April 2020.
[170] Ireland Travel Guide (undated) Cork City Student Guide: Studying in Cork. [online] Available at: https://www.myirelandtour.com/travelguide/study/cork-student-guide.php#:~:text=Friendly%20and%20cosmopolitan%2C%20Cork%20has,100%20countries%20around%20the%20world

12.22 It is important to ensure that new development prioritises brownfield land over greenfield land. New development should, where possible, incorporate urban greening and/or greenspace whilst balancing the priorities and needs of future communities. This could provide enhancements to the local environment, which may attract future investment to the area, further boosting the economy. Incorporating greenspace will also ensure residents in the local area still have access to such areas, particularly if development takes place on greenfield land.

High levels of unemployment

12.23 There are high levels of unemployment in the north eastern and north western suburbs of Cork City, when compared to areas in the south[171]. This may be due to limited access to training / employment opportunities elsewhere within the City Centre, Suburbs and Hinterland areas. It is therefore important to seek GBI connections and improved permeability throughout the city. This will help improve accessibility to employment opportunities, and promote growth within the local economy. Furthermore, improvements to the quality of the local environment through implementation of GBI principles should encourage additional investment in the area.

Consultation findings – key challenges

- Increase collaboration between the Council and Cork County Council to ensure GBI connectivity throughout the metropolitan area.
- Provide increased support to ensure the delivery of leisure developments, as such schemes are not as profitable for private developers (especially in high value locations).
- Addressed increased demand for larger outdoor cultural and community areas and events.
- Ensure strategic employment locations are well-connected to residential areas through use of public transport links and green corridors.
- Promote the importance of green energy and district heating options for brownfield development (in locations such as the Docklands and Tivoli).
- Raise awareness of the benefits of open green space as flood alleviation.
- Address the deficiency of community facilities and services within Cork City.
- Recognise the value added to the surrounding lands through the creation and maintenance of open green space.

[171] Cork City Council; AIRO (2020) Development Plan Review Socio-Demographic Profile, April 2020

Varying rates of education

12.24 When compared to the south, there are lower levels of education and qualifications in the north eastern and north western suburbs of Cork City[172]. This is a similar pattern to that of unemployment across the city. This may be due to limited access to educational opportunities elsewhere within the City Centre, Suburbs and Hinterland areas. Improved rates of education will help encourage investment in the area, in turn boosting the local economy.

Competing land use

12.25 Due to a growing population, there is likely to be greater pressure for new development in the countryside which was traditionally for agricultural purposes or provided natural or semi-natural green space[173]. New development is also likely to put pressure on existing areas of green space, particularly within the City Centre. Therefore, there may be competing interests with land use across the city.

12.26 The advantages and disadvantages of new development, particularly on greenfield land, should be considered to ensure the needs of the community are met. Decisions regarding the siting of new development should take account of the GBI benefits currently provided by green and brownfield sites and that development should include provision for new or enhanced GBI assets so that benefits are maintained or improved overall.

Land Ownership

12.27 Land ownership within the city is likely to be a barrier to the delivery of GBI. Landowners and developers are less likely to provide leisure development or open space, as other forms of development such as employment, retail etc. may be considered more profitable. Similarly, where open space contributes to GBI is provided, this may be privately owned and not publicly accessible for all. Consequently, the planning system within Cork City has a key role to play to ensure policies and guidelines are implemented to ensure the successful delivery of GBI.

[172] Ibid.

[173] Ibid.

Potential GBI Opportunities and Existing Initiatives

12.28 A list of potential GBI opportunities and existing interventions are listed below in **Table 12.1**. The existing GBI baseline within this theme is summarised visually in **Figure 12.1.**

Table 12.1: Summary of potential GBI opportunities / existing initiatives / delivery partners

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
Promote the role of Cork City's GBI in creating a high quality city where people want to live, work and visit	✓	✓	✓	Utilise GBI to create a well-connected network of high quality green spaces which offer the opportunity to provide localised economic benefits. These include the promotion of inward investment, employment creation and the wider stimulation of economic activity. Enhancements to the physical environment can also help attract and retain a skilled workforce, support inward investment and the growth of local businesses.	The Council Private developers Land owners Southern Regional Assembly HSE	✓	✓		 People, Communities, Health and Wellbeing  Landscape and the Harbour

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
Create opportunities for cooperative land ownership relating to open space	✓	✓	✓	Create additional opportunities for cooperative land ownership to foster a sense of community ownership and ensure the continued management of green spaces. The potential exists to establish community trusts to partner with the Council in the future development of open spaces at the following locations: ■ Railway Park; and ■ Glen River Park.	The Council Private developers Land owners Local Enterprise Office	✓			 People, Communities, Health and Wellbeing
Enable future proofing of key growth sites		✓	✓	Future proofing of key growth sites to 2040 through the front loaded delivery of GBI i.e. activating the site early in a sustainable way.	The Council	✓			 Landscape and the Harbour  Biodiversity

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
Create opportunities to connect high value nature sites using green and quiet ways (see Chapters 7, 8, 11, and 13)	✓	✓	✓	Utilise green and quiet ways to connect high value nature sites as well as provide transit points for commuters. The opportunity exists to connect residential and employment zones through the enhancement of the following routes: ■ Link the Glen River Park to Blackpool; ■ Tramore Park to Mount Vernon link; and, ■ City Centre to Docklands Part 8 Scheme.	The Council Transport and Mobility Forum Transport Infrastructure Ireland Cork Healthy Cities NTA	✓	✓		 Access and Connectivity  Biodiversity  Water Environment
Create opportunities to improve current policies			✓	Policy support for biodiversity and pollinator friendly planting	The Council	✓			 Biodiversity

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
Complement the aims of CMATS			✓	An opportunity for the Study is to compliment CMATS by providing green and blue corridors for active travel. This also includes increased accessibility to other public transport facilities and interaction with Light Rail, suburban rail, bus corridors and metropolitan walking / cycle strategies.	NTA Transport and Mobility Forum The Council Cork County Council Bus Éireann Irish Rail	✓			 Access and Connectivity
Utilise GBI principles to underpin future developments and regeneration projects (see Chapters 6, 7, 11 and 13)	✓	✓		Create additional opportunities that will aim to deliver or improve GBI assets at the following locations: ■ The north docks (sites include Old Whitechurch Road, a number of sites around Commons Road and Old Mallow Road);	Developers The Council EU Interreg Blue Green Cities	✓	✓	✓	 Biodiversity  Access and Connectivity

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				■ Urban regeneration of the northside (e.g. in Blackpool); and, ■ Regeneration of the brownfield site at Gouldings Fertiliser Plant. ■ Tivoli regeneration. Create additional opportunities to link GBI strategy with other projects, initiatives or strategies: ■ Greening for Health Programmes; ■ EU Interreg Blue Green Cities project - Cork City a key partner with the SRA and Limerick and Waterford - cities learning from each other, from EU and key agency stakeholders.					

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
Create opportunities for compact development (see Chapter 7 and 13)	✓	✓		Create additional opportunities for compact developments: ■ At Docklands; and, ■ at Tivoli. Create additional opportunities for protecting and identifying key GBI assets in some dense areas of forestry (owned by Coillte) and in one of the Strategic Land Reserves (Castletreasure) which are earmarked for potential growth.	The Council Private developers	✓	✓		 Landscape and the Harbour
Create opportunities to improve water access (see Chapters 6, 9, 11 and 13)			✓	Build capacity for recreational users along the river and promote links with Corkumnavigation to provide additional access points along the waterside. A network of existing access points requiring improvement, private	Urban Outdoor Initiative Project Cork Sports Partnership (Sport Ireland)	✓	✓		 Water Environment  Access and Connectivity

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				access points requiring protection and proposed access points have been identified along the following sections of the River Lee: ■ Glanmire - Blackrock – City; ■ North Channel to Split Weir; ■ Waterworks to Albert Quay; and ■ Waterworks to Inniscarra Dam.	Blackrock Sailing Club and other water activity providers The Council				
Relocation of SEVESO sites from the docklands	✓			Create additional development opportunities in the docklands areas by relocating the SEVESO sites	The Council				 Landscape and the Harbour

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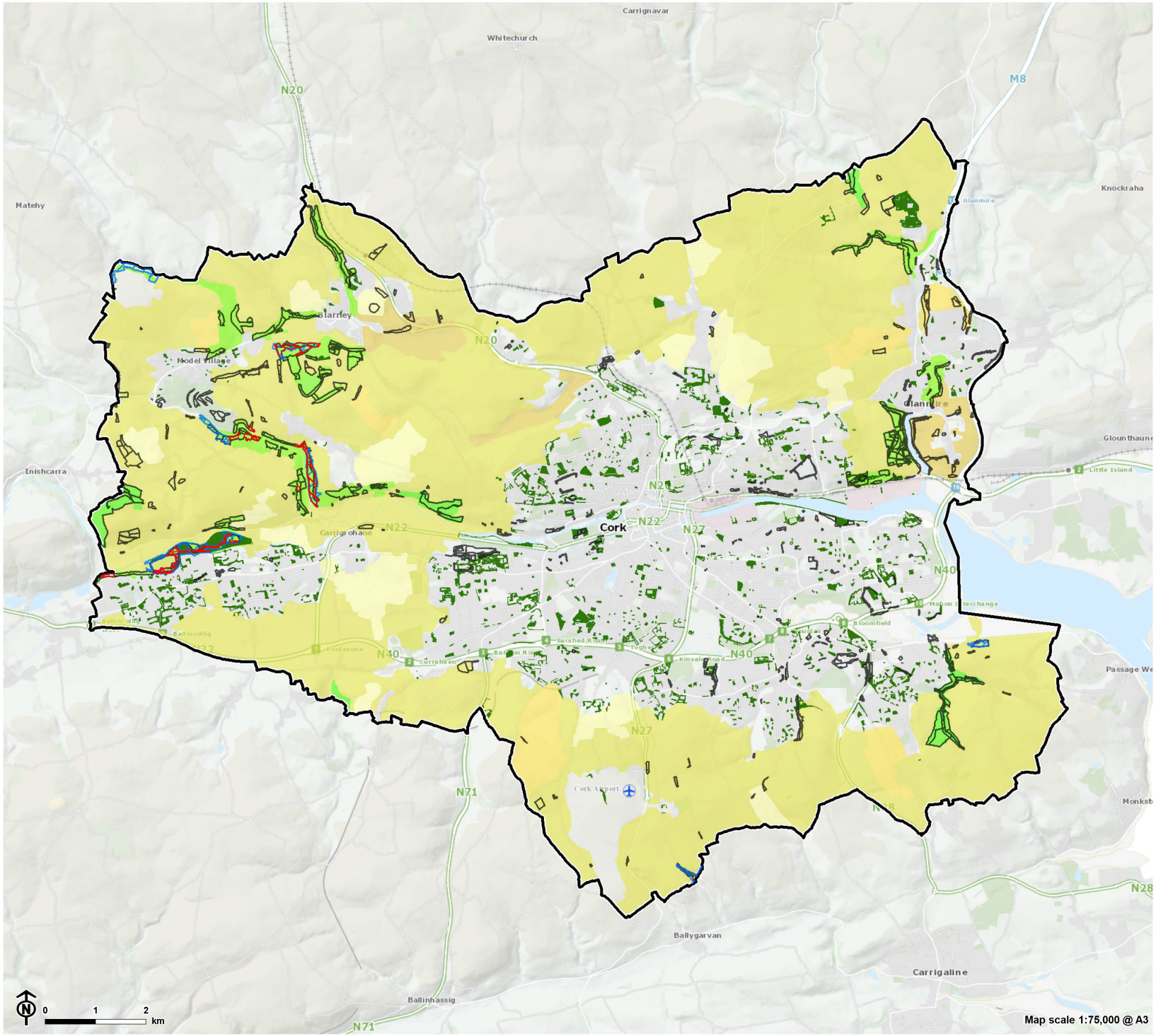
Figure 12.1: Current baseline of GBI in Cork City – Economic Value and Land Use Management



- Ancient Long Established Woodland
- National Survey Native Woodlands
- Woodland area
- Cork City Council boundary
- Green space

Corine 2018

- 123: Port areas
- 211: Non-irrigated arable land
- 231: Pastures
- 242: Complex cultivation patterns
- 243: Land principally occupied by agriculture, with significant areas of natural vegetation
- 311: Broad-leaved forest
- 313: Mixed forest

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CB:JI EB:Chamberlain_K LUC FIGX_11280_r0_Baseline_EconomicValueLandUse_A3L 07/04/2021
Source: LUC, CCC, OSI

Chapter 13
Theme 8: Tourism, Culture, Recreation and Leisure

Why is this theme relevant to GBI?

Climate Change

Tourism and recreational assets are at increased at risk from climate change impacts. Enhancement of GBI across Cork City offers the opportunity to reduce the urban heat island effect through the provision of shade during dry summers and the integration of SuDS to address flood risk. Consequently, increasing the climate resilience of Cork City to the impacts of climate change may positively impact tourism as visitors take advantage of the city's relatively mild climate. Well planned and managed spaces supported by well-designed GBI can also help ameliorate the effects of climate change through enhanced carbon sequestration.

Wellbeing and Social Inclusion

Planned GBI networks offer the opportunity to enhance multifunctional benefits for health and wellbeing, both in terms of improving the quantity and quality of open spaces as well as addressing deficiencies in access.

Environmental Factors

A well connected GBI network may contribute to reductions in air pollution, particularly where strategic tree planting forms an effective filter barrier for pollutants. Similarly, open spaces can help to mitigate noise pollution, acting as buffers between residential development and arterial transport corridors.

Key GBI Assets

Heritage assets

13.1 Cork City boasts a wealth of historic features and assets, contributing significantly to the city's identity, richness and diversity of its urban fabric (see **Figure 13.1**). In particular, the medieval street pattern forms an intrinsic part of the city, helping to define its layout and form, and creating a distinctive sense of place. Several methods currently exist to protect the integrity of cultural assets; including appropriate zonings, Architectural Conservation Areas (ACAs), Record of Protected Structures (RPS), Record of Monuments and Places (RMPs) and Zones of Archaeological Interest.

13.2 The Zone of Archaeological Potential (CO074-034--001) for the City Centre includes the medieval historic core. The area includes 54 RMP sites, including the site of the original monastery of Saint Finbarre and the medieval walled defences[174]. There are also 59 RMP sites located outside the Zone of Archaeological Potential for the City[175].

13.3 The Council maintains a RPS. There are currently over 1,200 protected structures (buildings of historic, architectural or other significance) within Cork City, and 42 ACAs. Of all of the ACAs, only Blarney ACA, Bishopstown Park Architectural Area, Church Street ACA and West Douglas Street ACA are located outside of the immediate City Centre, as shown on **Figure 13.1** Additionally, there are 14 historic street character areas and one wreck within Cork City.

Cultural heritage

13.4 Maritime traditions and links with the river and sea provide a rich source of cultural heritage within Cork City. Specifically, the city's relationship with the River Lee is significant as it has shaped the development of the urban forms through provision of a medium for transport, communication, defence, commerce, biodiversity and recreation. In addition, the proliferation of fortifications across the city reflect Cork City's long military history[176].

Public and open spaces

13.5 The Council maintains a total of 1,500 acres of parks, walkways and open spaces[177]. These are distributed

[174] https://www.corkcity.ie/en/council-services/services/arts-culture-heritage/archaeology/archaeology-development.html
[175] Ibid.
[176] https://www.corkcity.ie/en/media-folder/heritage/cork-city-heritage-plan-2015-2020.pdf
[177] https://www.corkcity.ie/en/council-services/services/sports-recreation-parks/parks/cork-city-council-parks.html

throughout the City Centre, City Suburbs and Urban Towns (Tower, Blarney, Ballincollig and Glanmire). Major parks within Cork City include Fitzgerald Park, Tramore Valley Park, Bishop Lucey Park, The Lough, Kennedy Park, Tory Top Park, The Glen River Park, Ballincollig Regional Park and the Municipal Golf Course[178].

13.6 Public parks offer a wide range of ecosystem services. If well managed, they may promote pollination, provide habitat and improve connectivity for a number of species. In addition to educational and recreational opportunities, parks offer the potential to improve physical and mental health through the provision of opportunities for social interaction and exercise[179].

13.7 Cathedral and church grounds and cemeteries provide a setting for heritage assets as well as being attractions in their own right. For example, the grounds at St. Finbarres Cathedral contains a Labyrinth Garden which provides a contemplative space for locals, pilgrims and tourists.

Green space

13.8 Green Spaces for Health[180] operates a city-wide and community-led initiative that fosters a reverence for nature. The project focuses on the maintenance of existing open spaces and promotes new greening opportunities. The project encompasses the themes of ecology, biodiversity and habitat creation with the aim of delivering green and sustainable initiatives.

13.9 The Landscape and Natural Heritage report[181] concludes that areas comprising the fewest tree canopies within Cork City include Knocknaheeny, Blackpool valley, Gurranabraher, City Centre, Docklands, Tramore Road area, South Mahon and Tivoli.

Outdoor sport provision

13.10 the estuary of the Douglas River. Moreover, the Council also operates three leisure centres outlined below:

- Leisureworld Bishopstown;
- Leisureworld Churchfield and Douglas; and
- The Glen Resource Centre[182].

Play spaces

13.11 Cork City contains a number of play spaces available for recreational purposes. This includes 13 playgrounds, eight multi-use games areas (MUGAs) and two skate parks[183].

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

[180] https://corkhealthycities.com/greenspacesforhealth/
[181] https://www.yumpu.com/en/document/read/50050321/landscape-and-natural-heritage-cork-city-council
[182] http://137.191.227.217/Services/RecreationSport/
[183] https://www.corkcity.ie/en/things-to-do/parks-outdoors/playgrounds/

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Figure 13.1: Historic Assets

- Cork City Council boundary
- Record Protected Structure
- National monuments
- Architectural Conservation Areas
- Conservation areas
- Proposed Natual Heritage Area

Map scale 1:75,000 @ A3

CB:CB EB:llott_J LUC FIGX_11280_r0_HistoricAssets_A3L 19/03/2021
Source: CCC, OSI, EPA

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Ballincollig Regional Park

Tourism and the COVID-19 pandemic

The COVID-19 pandemic has significantly impacted the tourism industry with a shift in locations visited, lengths of stays, and numbers of trips taken in 2020/21.

According to Failte Ireland's COVID-19 Consumer Sentiment Behaviour reports throughout 2020/21[184], there is a new appreciation for Ireland with an increase in the number of people taking domestic breaks or 'staycations' while the number of tourists arriving in Ireland has reduced dramatically, primarily due to international travel restrictions. Generally, people have preferred to visit more rural locations in Ireland rather than cities due to feelings of personal health, safety and social distancing measures. The Wild Atlantic Way is the destination of choice for the majority of travellers, followed by Ireland's Ancient East. Galway is the most popular city destination with Cork the fifth preferred county to travel to.

The shift away from indoor activities negatively impacts activities such as visiting historic houses/castles and visitor/heritage centres. Meanwhile, there has been an increase in the proportion of people using GBI to engage in outdoor activities such as visiting open spaces/gardens, swimming, cycling, and water-based activities. Similarly, visits to urban greenspaces soared during the pandemic,

[184] Failte Ireland (2020 and 2021) Consumer Sentiment Behaviour reports. Available at: https://www.failteireland.ie/Research-Insights/Visitors-Feedback.aspx

demonstrating the importance of GBI for health and wellbeing.

Cork City Council responded to the impacts of the pandemic and, in July 2020, launched the "Re-imagining Cork City" programme which aims to:

- Convert parking spaces into outdoor seating areas with planting for 10 new parklets, following the success of the pilot parklet project in Douglas Street; and,
- Create 14 new 'people friendly' pedestrianised streets in Cork City centre together with a multi-million Euro enhancement of pedestrian and cycling routes and improvements to city amenity. This transformation means that up to 1,000 residents and visitors to Cork City can eat and drink alfresco – thereby supporting local businesses during the pandemic.

Tourism

13.12 Pre COVID-19, tourist numbers in Cork City increased year-on-year since 2014 largely due to Cork being an ideal base to explore Ireland's Ancient East, as well as being a gateway to the Wild Atlantic Way. In 2019, Failte Ireland listed the top attractions in Cork City as the Crawford Art Gallery, Cork Vision Centre at St. Peter's, The Glucksman in University College Cork, Elizabeth Fort and the Cork Public Museum[185]. In Cork City's catchment, Fota Wildlife Park and Blarney Castle and Gardens are major attractions and were identified as the nineth and tenth most popular attractions in Ireland in 2019[186].

13.13 Cork City has developed its own tourism and visitor economy capitalising on its qualities as a cultural destination and an area of local distinctiveness with the City acting as a gateway and a base for regional tourism. Cork City is one of the oldest cities in Ireland and has a rich archaeological record and a strong medieval history. Cork Harbour has a rich maritime heritage, which continues to this day in Cork City's Docklands with the ongoing commercial trading and related industrial activities, the architectural, archaeological, sporting and cultural heritage of the area, and the intermittent visits of naval, training and private vessels to the area. Improving access to the water for amenity purposes will be key to enhancing the tourism potential of Cork City and strengthening the city's identity as a Maritime Harbour.

13.14 Following a vote by more than 600,000 people across Europe, Cork City has been included among 15 of the `European Best Destinations 2020'[187]. In 2019 the tourism industry supported 25,300 jobs in Cork and contributed

[185] Failte Ireland (2019) Visitors to Top Free Visitor Attractions 2019 [pdf] Available at: https://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/3_Research_Insights/4_Visitor_Insights/Visitors-to-Top-Free-Visitor-Attractions-2019.pdf?ext=.pdf

[186] Failte Ireland (2019) Visitors to Top Fee Charging Visitor Attractions 2019 [pdf] Available at: https://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/3_Research_Insights/4_Visitor_Insights/Visitors-to-Top-Fee-Charging-Visitor-Attractions-2019.pdf?ext=.pdf

[187] https://www.europeanbestdestinations.com/destinations/cork/

€895m to the local economy, however, tourism revenues in Cork reduced to €225m in 2020[188]. Cork City has significant accommodation stock including the recently built 109-bedroom The Dean Cork hotel and the 163-bedroom Maldron Hotel, with some 1,300 new hotel rooms in the pipeline for Cork (either at planning or in construction) at the end of 2020, including the 35-storey skyscraper 240-bedroom hotel tower on Custom House Quay which will be Ireland's tallest building when constructed. In terms of tourist bed nights, Cork City is second only to Dublin. However, the Cork Tourism Strategy[189] recognises that many visitors pass through Cork City via access points such as Cork Airport and Cork Harbour, and often do not consciously decide to visit the city itself.

13.15 Cork Airport is Ireland's fastest growing and second busiest airport after Dublin Airport with over 2.6 million passengers in 2019[190]. Cork Airport serves an important role for both the business and the tourism industries, providing access to Britain and other destinations in Europe in particular. Cork City attracts approximately 17.5% of all overseas visitors who arrive in Ireland.

13.16 Cork City is becoming increasingly popular for tourists arriving on cruise ships. In 2015, the Port of Cork overtook Dublin as the port with the highest share of cruise passenger visits in Ireland[191]. In 2019, 103 cruise ships docked in Cork Harbour[192]. This represents an increase of nearly 12% compared to 2018[193].

13.17 Cork City hosts numerous festivals which add to the vibrancy and attractiveness of the City both for residents and visitors alike. Many GBI assets are utilised for these festivals including SeaFest at the quays, the Cork Harbour Festival set in the second largest natural harbour in the world, and the Cork Jazz Festival.

13.18 As with Cork City's leisure tourism, business tourism in the city has been severely impacted by COVID-19. However, in 2020, the Cork Convention Bureau ranked the second highest in Ireland as a destination for sustainable business tourism according to the Global Sustainable Destination Index.

Key Issues and Opportunities

Population growth and development pressures

13.19 The growth targets set out in the Project Ireland 2040 NPF, Regional Spatial and Economic Strategy for the Southern Region (RSES) and upcoming Cork City Development Plan 2022 – 2028 predict a population increase of nearly 300,000 people by 2031. Requirements for open space provision to

[188] Irish Hotels Federation
[189] https://www.corkairport.com/docs/default-source/default-document-library/growing-tourism-in-cork---a-collective-strategy.pdf
[190] https://www.corkairport.com/news/detail/2020/01/16/cork-airport-contributes-904-million-to-irish-economy
[191] Cork City Council 92018) Cork City Profile 2018. [online] Available at: https://corkhealthycities.com/wp-content/uploads/2019/01/Chapter-7-The-Environment.pdf
[192] Ashmore, J. (2018) Cruiseships Record of 103 Call Visits to Cork Harbour in 2019. Afloat. [online] Available at: https://afloat.ie/port-news/cruise-liners/item/41322-103-cruise-ships-to-visit-cork-in-2019
[193] Ibid.

meet minimum targets will increase accordingly, recommended by WHO to equate to 9m^2 of open space per person.

13.20 However, the associated development needed to support this population growth (e.g. housing) may result in the loss of existing areas of open space. The Cork City Development Plan 2022 – 2028 Issues Paper highlights that new development should be focussed on brownfield and vacant sites within the city, to take the advantage of shorter distances and existing amenities and services. While this may prevent the unnecessary loss of existing open space, vacant land can also serve as important sites for urban woodlands and green networks.

Open space provision

13.21 Currently, access to open space and nature is not equal across Cork City. Due to the significant population growth predictions, this issue is likely to be exacerbated in the future due to the potential loss of existing open space to development or adverse effects on how an area performs against quality standards.

13.22 To meet the minimum target of 9m^2 of open space per person (see paragraph 13.15), Cork City will need to deliver more open space of all types. Increasing open space provision within the city may be achieved by focussing new development on brownfield and vacant sites, and where feasible, utilising vacant land for new areas of open space. Furthermore, new development proposals should be encouraged to incorporate open space within the development or provide contributions to provide off-site mitigation.

Recreational Pressure

13.23 With the population of Cork City expected to increase significantly in the future, there is likely to be greater pressure for the successful integration of existing recreational facilities in the form of open green space, routes and more formal sports facilities. The expansion of new development and infrastructure to meet the needs of the growing population may result in the loss of existing areas of open space.

13.24 Furthermore, recreational activities can result in significant effects on conservation sites; including erosion due to trampling, fire, vandalism or disturbance of sensitive features. These pressures may further increase as a result of population growth that will result in increased demand for outdoor recreation.

Poor Accessibility

13.25 It is important that open spaces and routes that can be used for recreational and leisure purposes are distributed across Cork City to ensure an equity and ease of access. Currently, there are some green spaces within the city that are privately owned and therefore not publicly accessible. A notable example are private golf courses. Additionally, some areas of open green space may be associated with institutions may therefore be inaccessible for public use.

Heritage Asset Management

13.26 Cork City includes a number of historic features and assets, and the city's built heritage contributes significantly to the city's identity and the richness and diversity of its urban fabric. However, these heritage assets will require careful management, particularly against the effects of climate change, and as a result of increasing tourism.

Consultation findings – key challenges

- Promote the importance of buy-in from both the public and private sectors to ensure a coordinated and focussed approach to the promotion of nature-tourism.
- Address the deficiency in the availability of access to the water environment for recreational purposes within Cork City.
- Resolve the conflicting demands of cruise boats and nature-based tourism, including the potential for negative impacts on SAC and SPA designations.
- Maximise the recreational value of the harbour and the waterways in the city.
- Address the detrimental impacts on tourism within Cork City due to the COVID-19 pandemic.
- Promote the cultural value of Cork's existing GBI assets.

Potential GBI Opportunities and Existing Interventions

13.27 A list of potential GBI opportunities and existing interventions are listed below in **Table 13.1**. The existing GBI baseline within this theme is summarised visually in **Figure 13.2.**

Table 13.1: Summary of potential GBI opportunities / existing initiatives / delivery partners

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
Deliver opportunities to connect and create high value open space (see Chapters 6, 7,11 and 12)	✓	✓	✓	Create new areas of open space and improve connectivity between existing open spaces. This could include the creation of new links between existing areas of open space, such as: ■ Transforming the old railway route north of Cork Kent Station (vacant land) into a green space. The potential exists to create linkages with the playground on O'Mahony's Avenue and open green space	The Council Cork Healthy Cities LCDC PPN Tidy Towns	✓			 People, Communities, Health and Wellbeing  Biodiversity  The Water Environment

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				to north of O'Mahony's Avenue; ■ Delivering access to Tramore Valley Park via Grange Frankfield; and ■ Improving access to Glen River Park. Opportunities to create and enhance open space include: ■ Crestfield shopping centre in Glanmire; ■ Potential of a Park at Lotamore between Glanmire and the City Suburbs; ■ Transforming Blarney Square into a park; ■ GBI enhancements at Blarney Bog; and ■ Introduction of inclusive water play equipment in parks to complement the well-					 Access and Connectivity  Landscape and the Harbour

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				used facilities at Fitzgerald's Park.					
Enhance connectivity and promote improvements to the pedestrian network (see Chapter 9 and 11)	✓	✓	✓	Support the delivery of Cork City's pedestrian network. Focus should be given to connectivity improvements, including the delivery of new and enhanced cycling and walking routes as detailed below: ■ A city boundary cycle route on existing roads; ■ The Eurovelo 2 route from the City Centre to Tivoli and towards Little Island; ■ A greenway linking Tivoli docklands to City Centre; ■ Lee to Sea Greenway Linking Ballincollig to	The Council NTA Transport and Mobility Forum Cork Healthy Cities Transport Infrastructure Ireland	✓	✓		 Landscape and the Harbour  Biodiversity  Access and Connectivity  People, Communities, Health and Wellbeing

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				City Centre to Blackrock Marina; ■ A pedestrian link between Tramore Park and Mount Vernon Flyover; ■ A link between Tramore Park and the Togher River; ■ Tivoli greenway to North Docks; and ■ Delivery of a link from Ballinlough, Douglas Road to Tramore Valley Park (via St. Finbarrs campus).					
Promote Cork City's status as the second largest harbour in the world as a focus for water based recreation			✓	Improvement and enhancement of water based recreation within and along the River Lee and Cork Harbour. Cork offers important blue infrastructure assets that can provide active recreation and attractions.	The Council River Lee Placemaking Group Cork Sports Partnership Sport Ireland / Urban	✓	✓		 Economic Value and Land Management

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
(see Chapters 6, 9, 11 and 12)				Activities to promote this recreational asset include: ■ Promoting events such as Cork Harbour Festival, Canoe Slalom on the River Lee, Lee Swim, Rebel Plunge, Cork Head of the River Race; ■ Developing a hub for water based activities at Blackrock village; ■ Promoting the Corkumnavigation (Meitheal Mara) work; ■ Liaising with Sport Ireland / the Outdoor Urban Initiative Project and Cork Active Cities to develop the programme of annual events and build capacity for users along the river	Outdoor Initiative Project Cork Harbour Festival PoCC Marine Institute Cork Environmental Forum Waterways Irelands Lee to Sea Greenway Group Water activity providers e.g. Blackrock Sailing Club, Phoenix kayak Club Urban Outdoor				 People, Communities, Health and Wellbeing  The Water Environment

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				■ Promoting the inclusive use of waterways for amenity through the development of projects with the Cork Sports Partnership as a focus for disability and youth services; ■ Developing a City Centre 'angling hub' providing links to Cork Harbour; and ■ Promoting Cork City's status as the second largest harbour in the world. This can be made more accessible through physical improvements: ■ Localised dredging of the River Lee to ensure the watercourse remains navigable (ensuring consideration of ecological impacts);	Project Initiative Meitheal Mara Cork Healthy Cities				

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				■ Enhancing river banks e.g. as part of the proposed Lee to Sea Greenway; ■ Delivering a 2.5km waterfront regeneration scheme at the Tivoli Docks; and ■ Creating a rich nature corridor into Cork City along the River Bride. Enhance the accessibility for residents and visitors to the water environment, such as the River Lee and Cork Harbour. Initiatives include: ■ Introducing a number of additional access points to the river to address the increased demand for recreational use of the water environment;					

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				■ Liaising with Sport Ireland / the Outdoor Urban Initiative Project and Cork Active Cities to develop the programme of annual events and build capacity for users along the river; ■ Promoting the inclusive use of waterways for amenity through the development of projects with the Cork Sports Partnership as a focus for disability and youth services; and ■ Developing a City Centre 'angling hub' providing links to Cork Harbour.					
Enhance the river environment for	✓	✓	✓	Enhance the quality of the water environment, such as	River Lee Placemaking Group	✓	✓		 Access and Connectivity

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
recreational pursuits (see Chapters 6,9 11 and 12)				the River Lee and harbour. Initiatives include: ■ Localised dredging of the River Lee to ensure the watercourse remains navigable (ensuring consideration of ecological impacts); ■ Delivering a 2.5km waterfront regeneration scheme at the Tivoli Docks; ■ Enhancing the banks either side of proposed Lee to Sea Greenway; and, ■ Creating a rich nature corridor into Cork City along the River Bride. This route will benefit tourism and local amenity value, whilst protecting and enhancing natural assets.	The Council Developers Waterways Ireland Lee to Sea Greenway Group				 People, Communities, Health and Wellbeing  Biodiversity  Water Environment

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
Promote Cork City's cultural heritage	✓	✓		Promote Cork's cultural heritage, including improved social and physical access to natural or cultural heritage recreational facilities within Cork City. This could be achieved by: ■ Promoting maritime heritage, with the potential for a new Maritime Heritage Museum at Bonded Warehouses; ■ Installing public interactive art, and community centres; ■ Working with private developers and the Council, utilise GBI to enhance the significant heritage value of strategic sites such as the former McMahon's	The Council	✓			 Economic Value and Land Management

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				Building Providers site at Cork Port; ■ Further enhancing the former Ballincollig Gunpowder Mills (Ballincollig Regional Park) as a visitor attraction.					
Promote Cork City as a key destination for heritage-led tourism	✓	✓	✓	Promote Cork's tourism industry and identify the potential for GBI assets to function as international, national or regional tourism facilities for nature-based or heritage tourism. The rising trend of eco-tourism and demand for green and ethical products offers the potential for GBI to form a valuable marketing tool to enhance the natural aesthetic of Cork City. Initiatives include:	The Council	✓	✓		 Landscape and the Harbour  Economic Value and Land Management  People, Communities, Health and Wellbeing

Opportunity	Scale →			Spatial Scope	Delivery Partners	Life Stage →			Key cross-compatible themes
	Site	Local	Landscape			In concept	In progress	Partially complete	
				■ Enhancing cultural heritage tourist attractions; ■ Providing a wayfinding facility for visitors arriving by water; ■ Organising Harbour Festivals; and, ■ Providing green links between tourism attractions and amenities.					 Access and Connectivity
Create opportunities for compact development (see Chapter 7 and 12)	✓	✓		Create additional opportunities for compact developments, to minimise the loss of open space. Initiatives include: ■ Promoting a '10 minute city' concept; and, ■ Promoting the development of vacant and brownfield sites over greenfield sites.	The Council Private developers	✓	✓		 Economic Value and Land Management  Access and Connectivity

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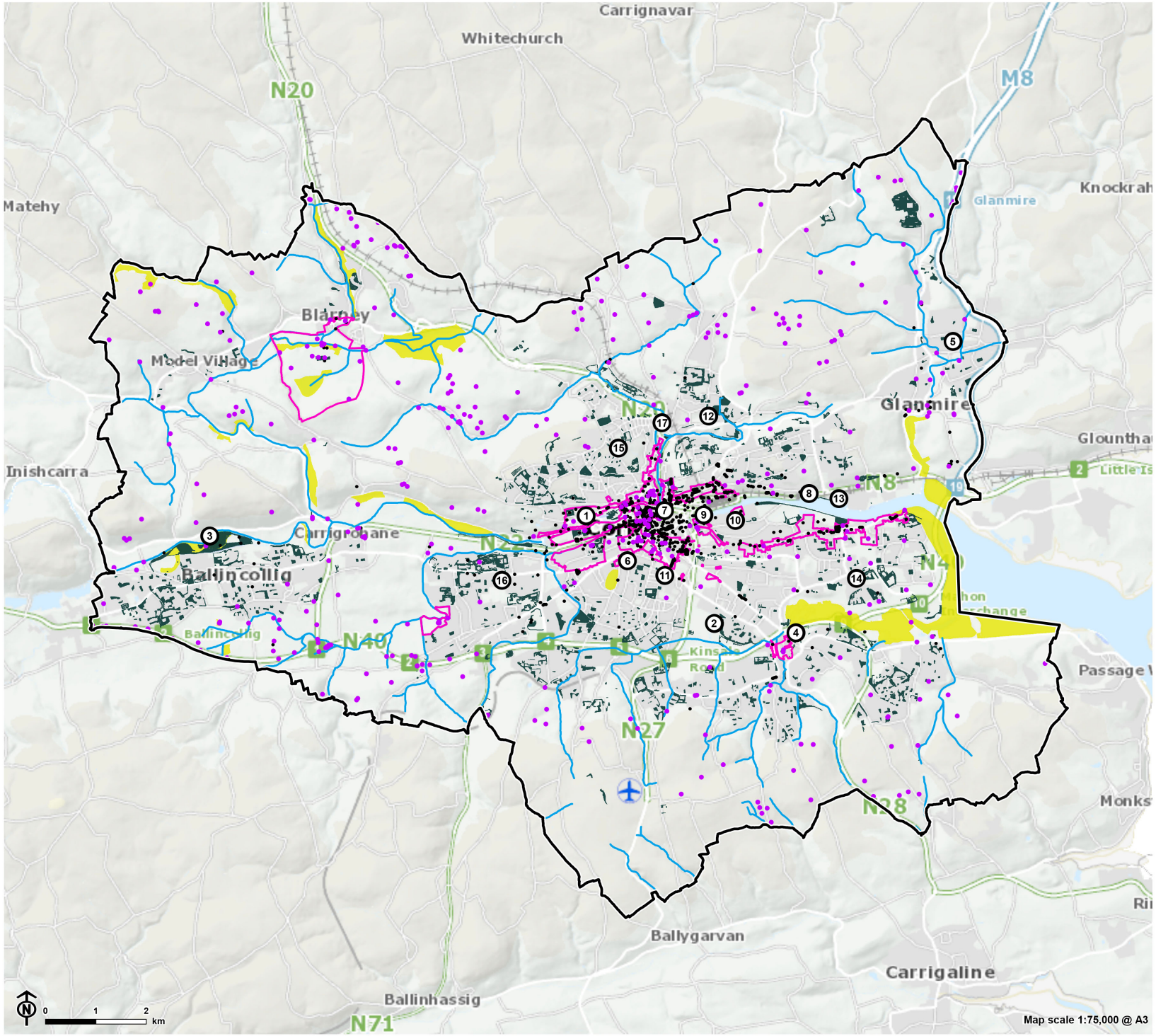
Figure13.2: Current baseline of GBI in Cork City – Landscape and the Harbour



- Cork City Council boundary
- Architectural conservation area
- Conservation area
- Proposed Natural Heritage Area
- Green space
- River
- National monument
- Record of protected structure

1: Fitzgerald's Park
2: Tramore Valley Park
3: Ballincollig Regional Park
4: Douglas Park
5: John O' Callaghan Park
6: The Lough
7: Bishop Lucey Park
8: Atlantic Pond and Mahon Walkway
9: Shalom (Peace) Park
10: Kennedy Park
11: Tory Top Park
12: The Glen River Park
13: Marina Park
14: Mahon Municipal Golf Course
15: Leisureworld Churchfield and Douglas
16: Leisureworld Bishopstown
17: The Glen Resource Centre

CB:JI EB:Willshear_R LUC FIGX_11280_r0_Baseline_TourismCultureRecLeisure_A3L 09/04/2021
Source: LUC, CCC, OSI

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Chapter 14

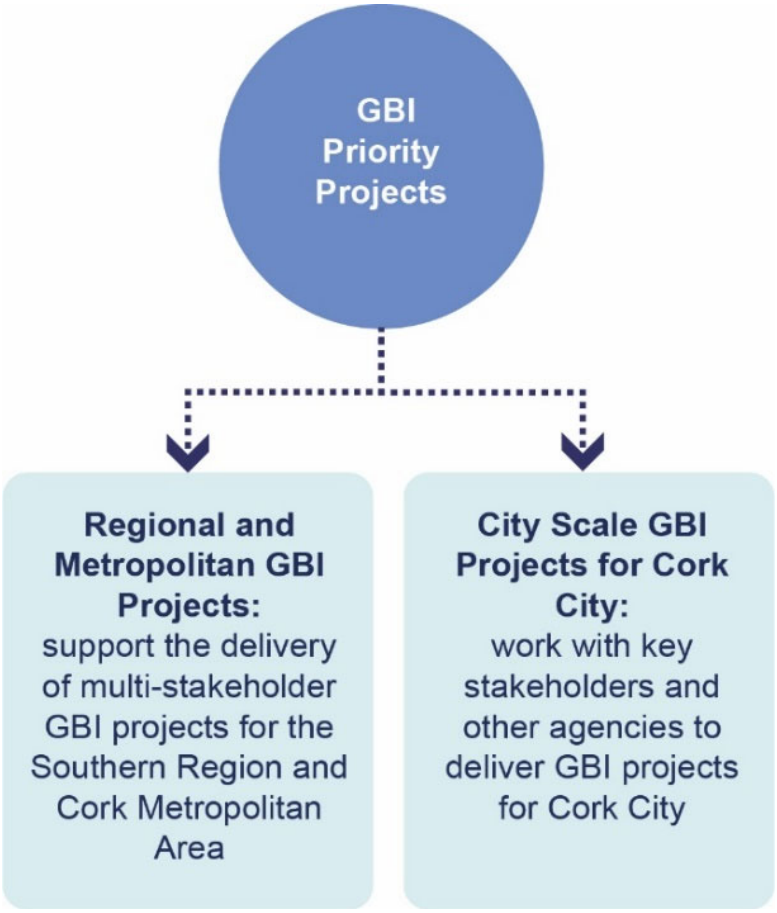
Strategic GBI Opportunities and Priorities

In this chapter, emerging opportunities identified by theme are brought together to understand commonalities. Interventions with the capacity to deliver a range of GBI outputs and multiple objectives are proposed.

14.1 Working with the Council, priority opportunities have been identified with the aim of delivering a host of multifunctional benefits through improvements to the GBI network. These interventions will guide the direction of the city's GBI and set a framework for sustainable growth and future development. Defined as GBI Priority Projects, each opportunity is guided by its own vision which will be realised through a set of project specific objectives. As well as ensuring the city's GBI network is multifunctional, delivery of the GBI Priority Projects will also support the establishment of 'Healthy', 'Resilient', 'Wilder' and 'Destination' Spaces (see **Chapter 3**) across the city, whilst also tackling areas of deficiency.

14.2 The opportunities are designed to offer a range of deliverability options and are sub-divided as shown in **Figure 14.1**.

Figure 14.1: Categorisation of GBI priority projects in Cork City



'Healthy Spaces' - priority sites for improving health and well-being outcomes;

'Resilient Spaces' – priority sites for climate adaptation interventions;

'Wilder Spaces' – priority sites for recreational or ecological improvements; and

'Destination Spaces' - priority sites for recreation, income generation and regeneration.

Identification of GBI Priority Projects

14.3 A breakdown of the GBI Priority Projects are listed below and categorised within **Figure 14.2**. For each project, information is provided on the following:

- The nature of the opportunity and its contribution to the range of GBI functions;
- Details of the proposed intervention;
- Potential challenges and risks;
- Potential delivery partners, mechanisms and stakeholders; and
- Indicative timescales and potential costs.

14.4 All opportunities outlined are indicative – the ability of each opportunity to deliver the number of functions highlighted is dependent on effective planning, siting and design. The priority interventions should not be regarded as

alternatives to all the opportunities recommended within this report, but instead act as a framework for their delivery. However, this chapter is designed to support the prioritisation of projects for delivery as funding becomes available or opportunities arise, or as an initial reference point for further detailed feasibility and master planning work. The opportunities may also be used in negotiations with developers to help best direct developer contributions coming forward.

14.5 Broad consideration is also given to costings, providing a guide as to future levels of investment in delivering capital works. However, these costs are indicative only and aim to provide an estimate of investment costs to deliver the required GBI functionality. Where a project forms a series of component sub-projects, this will have implications on cost. It is recognised that additional future cost planning will be also be required. Consideration is also given to the requirement for additional professional inputs needed to deliver projects. In addition to the liaison, consultation and negotiations identified, each capital project will also require further survey work.

Regional and Metropolitan GBI Priority Projects

14.6 Regional and metropolitan scale GBI projects are listed below and described in detail within this chapter. These projects are predominantly non-spatial (thematic or interpretive).

Regional and Metropolitan GBI Priority Projects:

Cork Metropolitan Area Water Quality Plan

Cork Harbour Water Restoration Action Plan

An Ecosystems Service Guide to enhance GBI based Placemaking in the Southern Region

A Guide for implementing Nature Based Solutions in the Southern Region

Cork Metropolitan Cultivation Plan

City Scale GBI Priority Projects for Cork City

14.7 City Scale GBI priority projects for Cork City are identified below. Spatial representations of these projects within Cork City are provided in **Figure 14.3.**

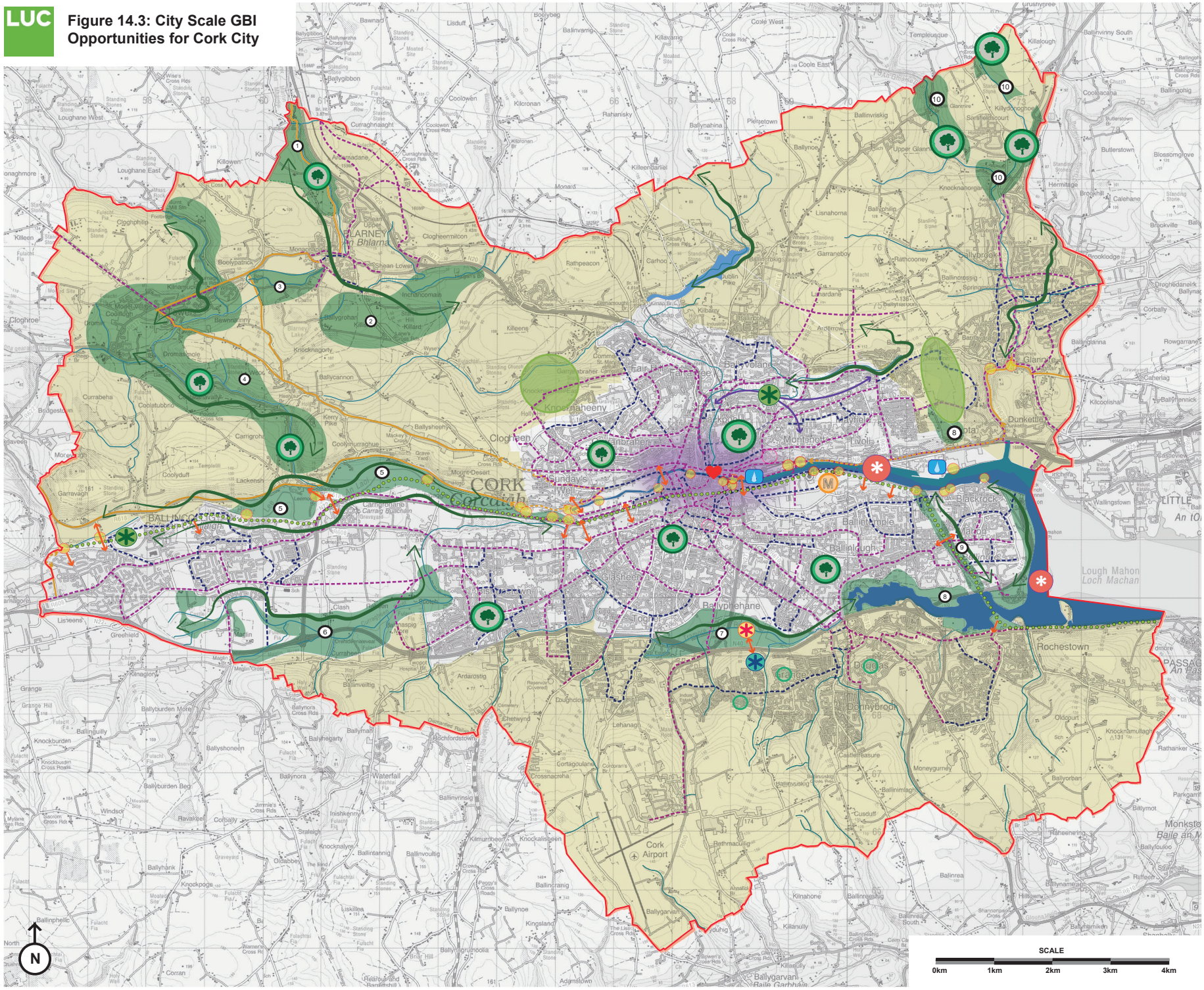
City Scale GBI Priority Projects for Cork City:

- Lee to Sea Greenway Biodiversity and Greening Plan
- City Docks and Tivoli Docks Urban Drainage Strategies
- Glen Valley Park Project
- Cork City Tree Planting and Management Strategy
- Vernon Mount Park Project
- City Parks in the North East and North West of the City
- Cork City Rewilding, Rewetting and Reafforestation Projects
- Activating Blue Corridors in Cork
- Ecology, Biodiversity and Natural Heritage Data Project for Cork City
- Scoping and Options Assessment for an International/National/Regional GBI Tourist Attraction in Cork City
- Promotion of Cork City as a destination for water-based recreation
- Update and Review of the Cork City Landscape Characterisation Strategy
- City Centre Neighbourhood Parks Pilot projects
- Activate Greening Projects in Cork City Centre
- Reinstatement of the weir and canal system at Ballincollig Regional Park
- Decarbonising Zone Pilot Project

Figure 14.2: City Scale GBI Projects for Cork City

LUC

Figure 14.3: City Scale GBI Opportunities for Cork City



#1 Lea to Sea Greenway Biodiversity and Greening Plan

- Existing scenic route
- Proposed connection of the Lea to Sea Greenway with scenic route
- Secondary cycle lanes
- Primary cycle lanes
- Lee to Sea Greenway route
- Potential creation of strategic links between city neighbourhoods / key GBI assets

#2 City Docks and Tivoli Docks Urban Drainage Strategies

- Potential development of urban drainage strategies to assess and outline a Nature Based Solution (NbS) approach to urban drainage

#3 Glen Valley Park Project

- Proposed enhancement of Glen Valley Park
- Proposed creation of a strategic link between Blackpool and St. Luke's as well as Tinker's Cross to the east

#4 Cork City Tree Planting and Management Strategy

- Potential delivery of a medium-term city-wide tree planting and management strategy.

#5 Vernon Mount Park Project

- Proposed enhancement of Vernon Mount Park
- Proposed creation of linkages with existing GBI destination sites (Tramore Valley Park)
- Proposed delivery of city scale NbS for drainage within Frankfield, Grange and Douglas

#6 New City Parks in the North East and North West of Cork City

- Proposed delivery of a new city park

#7 Cork City Rewilding, Rewetting and Reafforestation Projects

- Explore the opportunity to promote rewilding, reafforestation and rewetting projects
  1. Marlin Corridor at Ardamadane
  2. Blarney Peatlands
  3. Blarney Castle complex
  4. Shournaugh Valley
  5. Lee Valley
  6. Curragheen Lowlands
  7. Tramore Valley
  8. Douglas River Estuary and margins
  9. Passage Railway Greenway corridor
  10. River Glashaboy corridors
- Potential extension and enhancement of existing green corridors

#8 Activating Blue Corridors in Cork

- Proposed protection / restoration of river channels and riparian area

#10 International/National/Regional GBI Tourist Attraction in Cork City

- Proposed protection and restoration of Cork Harbour to promote a healthy ecosystem and sustain local economies

#11 Promotion of Cork City as a destination for water-based recreation

- Potential implementation of river access improvements

#12 Update and Review of the Cork City Landscape Characterisation Strategy

- Extended area to be included within the proposed study

#13 City Centre Neighbourhood Parks Pilot projects

- Proposed delivery of two neighbourhood scale pilot projects within the neighbourhoods of St Luke's/McCurtain Street (Mahoney's Avenue) and South Parish (Park Owen)

#14 Activate Greening Projects in Cork City Centre

- Proposed 'heart of urban greening' or concept for a 'green quarter' - showcase of urban greening in the City Centre

#15 Reinstatement of the weir and canal system at Ballincollig Regional Park

- Proposed reinstatement of the weir and canal system at Ballincollig Regional Park

#16 Glenamought River Valley Park

- Safeguard and enhance the Glenamought River Valley as a linear wildlife corridor and riverside amenity

#17 Maritime Activities and Recreation Hub

- Deliver a multi-use maritime activities centre within Marina Park, forming the gateway for aquatic and waterside activities in Cork City

Regional and Metropolitan GBI Project

Cork Metropolitan Area Water Quality Plan

Vision

Deliver a multi-stakeholder plan to improve water quality in Cork City with specific short, medium and long-term planning and management objectives.

Timescale

Short term (next 5 years) | Medium term (5-10 years) | Long term (10-20 years)

Potential Costs

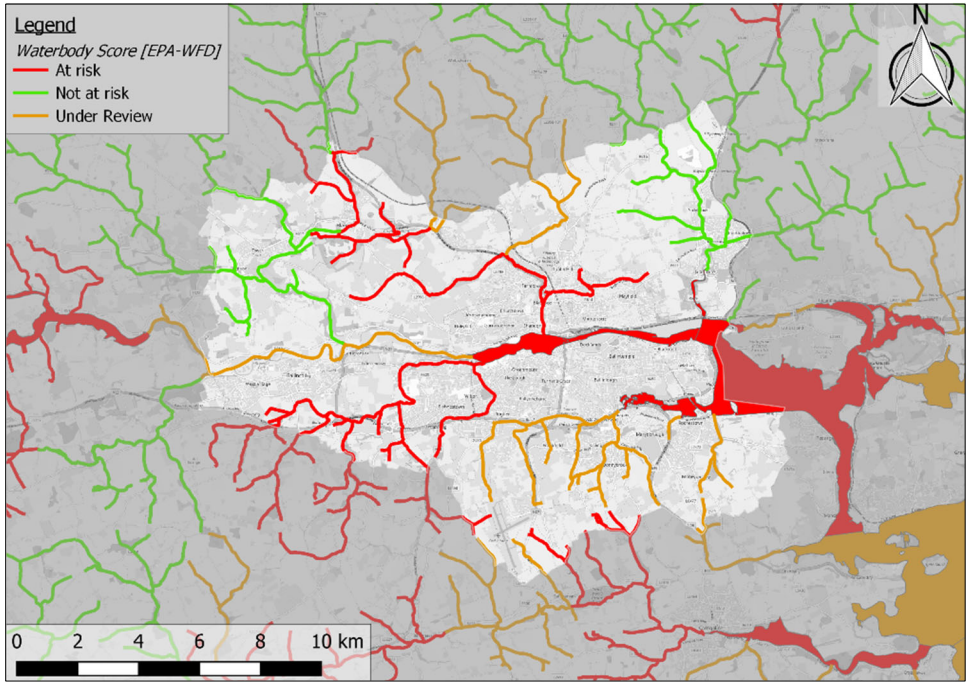
Low | Intermediate | Substantial

Objectives

- Develop an integrated River Basin Management Plan for the River Lee catchment;
- Improve water quality in local waterbodies (rivers / lakes / coastal);
- Provide direct linkages to the emerging Marine Spatial Plans as part of the wider National Marine Planning Framework; and
- Address the intensification of farming and associated degradation of habitats.

Details of the intervention

14.8 As part of the WFD, water quality in Ireland is actively monitored by the EPA. Their assessment has found that only 53% of surface water bodies nationally exhibit satisfactory water quality[194].



Waterbody scores in Cork City (image source: EPA)

[194] Environmental Protection Agency (2019) *Water Quality in 2019*

14.9 The key pressures impacting water quality in the River Lee catchment include:

- Hydromorphology (modified channels / banks leading to higher siltation, and dams);
- Urban diffuse (sewer overflows/leaks and run-off from paved areas);
- Wastewater treatment plants;
- Agriculture (run-off of phosphorous and other nutrients to waterbodies);
- Forestry (introduction of excess siltation and nutrients from forestry activity - clear felling/extraction);
- Industry – nutrient point discharges; and
- Others (illegal dumping and waste / landfill).

14.10 The development of a metropolitan scale Water Quality Plan is recommended for the River Lee catchment. This plan should include measures to address sources of pollution, particularly between Macroom and Lough Mahon. The document should seek to integrate the following land use / water based actions and best practices:

- Protection of riparian zone from development;
- Introduction of regional or landscape scale SuDS;
- Incorporation of SuDS into new developments; and
- Retrofitting of SuDS into modifications / extensions of existing developments.

14.11 Other initiatives may include:

- Naturalisation of existing rivers and wetland restoration;
- Weir removal / improvement;
- Upgrades to existing sewer networks, including separation of foul and stormwater;
- Water conservation programmes; and
- Public education and participation.

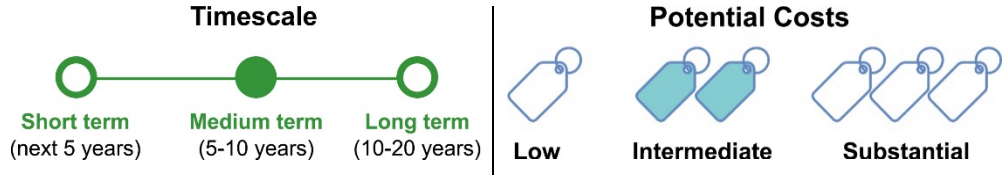
Delivery Partners:	**Recommended Professional Inputs:**
▪ The Council (inter-departmental) ▪ Cork County Council ▪ EPA ▪ OPW ▪ ESB ▪ IFI ▪ Waterways Ireland ▪ Coillte ▪ The Department of Agriculture, Food and the Marine ▪ Irish Water ▪ National Federation of Group Water Schemes	▪ Cork City Engineers ▪ Civil Engineers ▪ Hydrologists ▪ Hydrogeomorphologists ▪ Drainage Area Planners ▪ Ecologists

Regional and Metropolitan GBI Project

Cork Harbour Water Restoration Action Plan

Vision

Deliver a multi-stakeholder plan that provides an evidence-based assessment of current water quality in Cork Harbour.



Objectives

- Inform actions and best practice for water restoration projects in Cork Harbour over the short, medium and long term.
- Improve ecological status / potential of Cork Harbour and Lough Mahon by 2040;
- Achieve 'good' ecological potential and chemical status by 2040;
- Ensure compliance with the WFD; and
- Provide direct linkages to the emerging Marine Spatial Plans as part of the wider National Marine Planning Framework.

Details of the intervention

14.12 The waterbody scores published by the EPA classify Lough Mahon (IE_SW_060_0750) and Cork Harbour (IE_SW_060_0000) as being 'at risk'. Although Lough Mahon and Cork harbour are designated as Heavily Modified Water Bodies (HMWB), much of the issues regarding water quality can be attributed to the River Lee and its altered hydromorphology (increased sediment from drainage schemes, forestry activity etc.).

14.13 It is recommended that a River Basin Management Plan is developed for the River Lee catchment and Cork Harbour to identify key pressures and devise conservation measures. The potential exists for GBI and SuDS initiatives to play a key role in improving water quality within Cork Harbour. The adoption of an integrated strategy for water restoration in Cork Harbour will also ensure compliance with the WFD and provide a number of environmental and recreational benefits.

Delivery Partners:

- The Council (inter-departmental)
- Cork County Council
- EPA
- Bord Iascaigh Mhara (BIM)
- IFI
- Meitheal Mara

Recommended Professional Inputs:

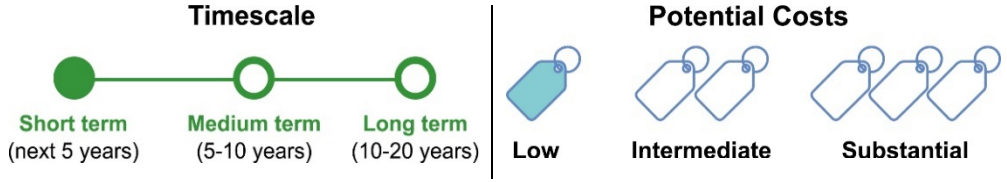
- Cork City Engineers
- Civil Engineers
- Hydrogeomorphologists
- Drainage Area Planners
- Hydrologists
- Ecologists
- Landscape Architects

Regional and Metropolitan GBI Project

An Ecosystem Services Guide to enhance GBI based placemaking in the Southern Region

Vision

Support the delivery of a focused guidance document outlining best practice associated with the implementation of an ecosystem services approach to large scale infrastructure projects.



Objectives

- Encompass project scoping, planning, tendering, delivery and post-construction management to ensure the integration of best practice initiatives within the Southern Region;
- Support and guide delivery of GBI projects and initiatives within the region;
- Mitigate the fragmentation impacts of existing transport infrastructure;
- Retain and enhance vegetation parallel travel corridors and roadside verges to act as 'biodiversity corridors' for movement and dispersal;
- Ensure high quality of GBI assets that are delivered to enhance placemaking;
- Maximise the potential ecosystem services that can be delivered by a GBI project/initiative; and
- Increase the overall quality of existing and planned GBI assets.

Details of initiative

14.14 The integration of GBI into large scale development and infrastructure projects offers the potential to minimise and mitigate impacts of ecosystem fragmentation and deliver a number of ecosystem services. Potential design solutions include sensitive routing, engineering structures that minimise land-take (such as tunnels or viaducts), and implementation of green bridges or eco-tunnels to mitigate the barrier effects for wildlife. The delivery of a detailed guidance document should include references to best practice examples of interventions, including:

- Permeable paving as a contrast to traditional paving techniques to minimise surface water run-off;
- Woodland tree belts and naturally colonised scrub along, around and extending beyond developments or linear transport routes to provide ecological corridors;

- Storm water management through naturalised surface SUDS;
- Wildflower sowing on appropriately managed grass verges; and
- Reconnection of fragmented habitats through the provision of linkages across infrastructure corridors.

14.15 Successful delivery of the guide will require awareness among decision makers of the importance of GBI within large-scale infrastructure projects. However, effective and timely communications with local community members will be needed to ensure 'buy-in' to altered appearance of the transport corridors. A demonstration of the impact will be helpful in this effort, as will broader awareness-raising initiatives.

14.16 Negotiations with Cork City Highways Officers will be needed to ensure that safety and access standards are maintained. This could be achieved through the retention of appropriate 'visibility splays' to ensure that vehicle sight lines are maintained where necessary.

Delivery Partners:

- The Council (inter-departmental)
- NPWS
- EPA
- Neighbouring LPAs
- Cork Environment Forum
- Landowners

Recommended Professional Inputs:

- Cork City Biodiversity Officer (TBC)
- Ecologists
- Cork City Heritage Officer
- Cork City Engineers / Highway Officers
- Cork City Climate Action Unit Manager
- Landscape Architects
- Cork City Parks and Landscape Officer
- Civil Engineers
- Cork City Planners

Regional and Metropolitan GBI Project

Southern Region Nature-Based Solutions Implementation Guide

Vision

Preparation of a regional guide illustrating best practice delivery of NbS within the urban and rural context of Cork City. The guide should provide an aid to project design, planning and implementation for use as a supporting document within both City and County Development Plans.

Objectives

- Provide a 'toolkit' for the implementation of GBI interventions to act as a checklist for proposed development, encouraging better developer standards and a coordinated approach to NbS across the city;
- Develop a city-wide framework of NbS and GBI standards, utilising recognised guidance and best practice principles to ensure all new developments to include these elements by 2028;
- Introduce guidance for retrofitting GBI and NbS within existing developments to address areas of poor environmental quality;
- Major development proposals should contribute to the greening of Cork City through the inclusion of NbS as a fundamental element of design and by incorporating measures such as high quality landscape proposals; and
- Support the implementation of NbS across the urban and rural context of Cork City, promoting a layered network of ecosystem services stretching from the coast to the uplands.

Details of initiative

14.17 The proposal should encompass the full extent of the Southern Region to ensure holistic interventions and the creation of a cohesive green network . Consequently, a regional working group should be established with representatives across the Southern Region.

14.18 Proposed interventions will be required to reflect the range of landscapes located within Cork City and the wider Southern Region, as detailed below:

- **Urban areas:** NbS within urban areas offers the potential to include 'green to grey' initiatives. These will be particularly important in Cork City due to the extent of the urban environment. Initiatives could include:

- A programme of installing green roofs on bus stops, for example along Curaheen Road and R608 in Cork and R639 in Glanmire;
- Retrofit green walls, such as ivy (and other locally appropriate shade tolerant plants) screens within Cork City centre to break up the grey infrastructure;
- Consider green roofs or walls for all new major developments, on large civic buildings and where appropriate, these could double as open spaces for the public;
- In conjunction with the Tree Planting and Management Strategy, introduce street trees with appropriate pits to provide throughout the city; and
- Develop a standard specification for rain gardens and swales which can be rolled out across all Council-led and developer projects.

- **Agricultural land:** These interventions will be particularly important within the Hinterland. Initiatives could include:
  - Introduce wetland areas around the River Lee to provide flood storage and sequester carbon, livestock should be kept to a minimum on riverbanks to reduce poaching; and
  - Restore and manage hedgerows to increase biodiversity and support pollinators.
- **Uplands:** Whilst the key upland and peatland assets within the Southern Region are outside the Cork City boundary, there are some higher ground and peat assets present, particularly near Blarney and Tower. Guidance for the restoration and rewetting of these should be developed, for example installing dams and rewetting. These proposals offer the potential to improve water quality, slow water flow and reduce flood risk, and improve carbon sequestration in peat soils.
- **Coastal fringes:** NbS can extend into marine settings. In particular, sea grass can play a role in providing coastal protection and sequester carbon, contributing to 'blue carbon' storage. With the relocation of the harbour, there is the opportunity to explore introducing sea grasses into the harbour area.

14.19 The definition of NbS is relatively broad, and it is therefore important that the outputs can be implemented in conjunction with other GBI projects, for example: the City Docks and Tivoli Docks Urban Drainage Strategies; Cork City Tree Planting and Management Strategy, and Cork City Rewilding, Rewetting and Reafforestation Projects.

14.20 Perceived additional implementation costs, increased maintenance budgets and a lack of understanding concerning the benefits of GBI can result in resistance from developers when considering the implementation of NbS. Discussions at an early stage and access to design expertise will be necessary to ensure a strong understanding of the overall need for GBI. It will also be necessary to ensure that the performance of NbS is monitored following implementation to ensure standards are achieved.

Delivery Partners:

- The Council (inter-departmental)
- Southern Regional Assembly and associated councils (Carlow, Tipperary, Waterford, Wexford, Kilkenny, Cork County, Kerry, Clare and Limerick)

Recommended Professional Inputs:

- Cork City Biodiversity Officer (TBC)
- Ecologists
- Landscape Architects
- Cork City Parks and Landscape Officer
- Cork City Tree Officer (TBC)
- Cork City Heritage Officer
- Cork City Climate Action Unit Manager

Regional and Metropolitan GBI Project

Cork Metropolitan Cultivation Plan

Vision

Creation of a network of community growing sites across Cork City to promote the importance of the local food supply, address the local sustainability challenge and contribute to increased climate resilience. Utilise cultivation opportunities to provide health and wellbeing benefits and other positive impacts on human health.

Objectives

- Explore the potential to provide approximately 5,000m^2 of growing space for every 1000 houses across Cork City, including up to 2500m^2 temporary gardens by 2040;
- Support the role of community growing spaces as areas for social or 'green prescribing';
- Promote the benefits of volunteering or attending a community event at community garden;
- Encourage the sale of food grown within community gardens within the local community through the establishment of partnerships with cafes and bistros;
- Maximise the use of derelict land for the benefit of food growing opportunities; and
- Ensure that all Council-owned housing estates to have a community-led food growing scheme by 2040.

Details of initiative

14.21 The Cultivation Plan will support the delivery of community gardens throughout Cork City. Ranging from raised beds and containers to large spaces capable of hosting events, the potential exists to establish a network of growing spaces throughout the city. Spaces utilised could include school grounds, plots within housing land and disused land, including derelict land which could be taken on under a temporary lease.

14.22 This part of the Plan will outline the following initiatives:

- Map the existing (see **Figures 14.7-14.9**) and potential sites in collaboration with students from UCC. This will include identification of suitable spaces (including schools, disused, derelict land, housing plots and underused private land) and analysis of their potential (e.g. soils, light levels, ground contamination and safety issues);
- Introduction of community growing sites in close proximity to local communities;

- Work with the Council to establish a recognised mechanism for using derelict land for temporary community growing;
- Work in partnership with primary schools to deliver food growing opportunities within playgrounds and to include sustainable food growth as part of the curriculum; and
- Work with developers to ensure sufficient community and private food growing space is delivered across new development.

14.23 In order to ensure that these spaces reach their full potential, the Cultivation Plan should focus on community engagement and the provision of full support to volunteers as outlined below:

- Identify a lead person, group or organisation to oversee the longevity of the project. Particular potential exists in areas where a community group is already established to improve the likelihood of implementation and management;
- Create a network of community garden groups and volunteers to share knowledge, training, and resources across Cork City. All community garden groups should be encouraged to engage with the wider Community Gardens Ireland Network;
- In addition to their role as a health promoter, reinforce the educational benefits of cultivation sites as outdoor learning environments;
- Create a support strategy for community groups offering events within community gardens, including cooking, training and fundraising. This support would include ensuring appropriate health and safety checks and insurances are in place;
- Ensure greater access to cultivation, for example promoting groups within elderly care homes, groups for people with a disability, outreach groups, and schools. This should focus on the health benefits and promote healthy eating; and
- Develop entrepreneurship in cultivation in collaboration with the city's business community. Ventures to include links with local farmers and county markets (including Taste of West Cork Food Festival).

14.24 One of the benefits of local food growing is its contribution to climate change mitigation, reducing the need for food to travel long distances or to be imported. Established allotments can be connected through CFPCs Cork Food Map to local businesses to supply local food. This could also help provide ongoing financial support for community garden provision.

Delivery Partners:

- The Council (inter-departmental)
- Healthy Ireland
- Cork Healthy Cities
- Cork Food Policy Council (CFPC)
- Green Spaces for Health Cork City
- UCC
- Community Gardens Ireland
- Exiting community garden groups (e.g., Knocknaheeny Community Garden)

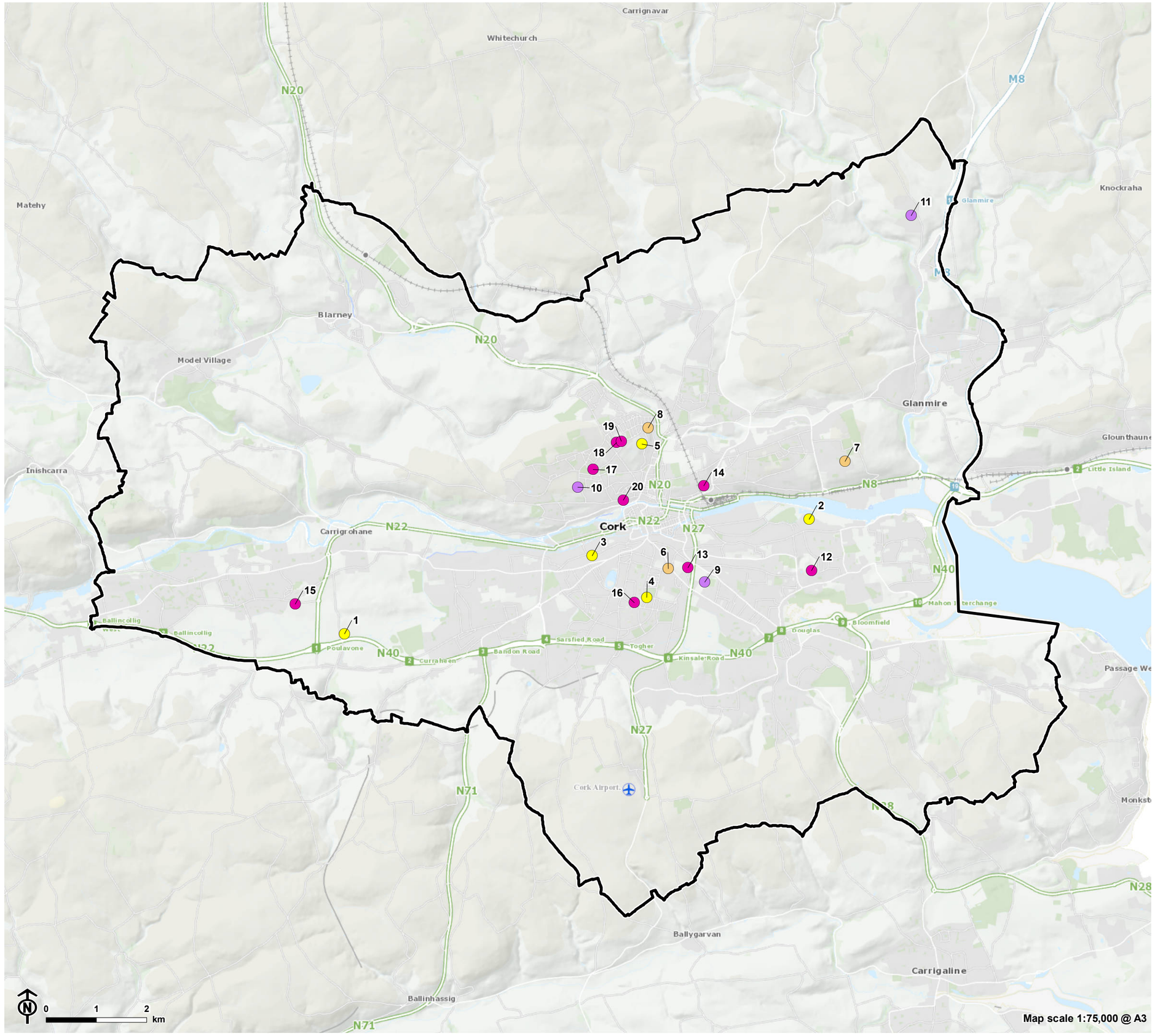
Recommended Professional Inputs:

- Landscape Architects
- Cork City Parks and Landscape Officer
- Cork City Council City Centre Coordinator
- Cork City Planners
- Consultation and Engagement Specialists
- Soil scientists (as required)
- Ground contamination specialists (as required)

Cork's Rooftop Garden

LUC

Figure 14.4: Existing Food Growing Initiatives



- Cork City Council boundary
- 19. Lough View Terrace, Glasheen
- 20. Árd na RÍ, Pouladuff Road, Glasheen
- 21. High Street, Ballintemple
- 22. Wyndern Popes Road
- Adult Education
  - 1. Field of Dreams – Down Syndrome Ireland
  - 2. Horticulture Local Training Initiative
  - 3. UCC Community Garden/Polytunnels
  - 4. Ballyphehane Library Courtyard
  - 5. NCE – Northside Community Enterprises
- Residential (Housing Estate)
  - 6. Deerpark
  - 7. Ashmount Estate *
  - 8. Cushing Road *
- Hospital
  - 9. St. Finbarr's Hospital (Mental Health Dept.)
  - 10. St. Mary's Orthopedic (Eco - Therapeutic)
  - 11. St. Stephen's Hospital (Mental Health)
- School
  - 12. Beaumont Girls National School
  - 13. Colaiste Chriost Ri, Girls Secondary School
  - 14. Educate Together
  - 15. Gaelscoil Ui Roirdain
  - 16. Maria Assumpta
  - 17. Scoil Padre Pio
  - 18. North Presentation Catholic Secondary School Farranree
  - 19. Scoil Aiseiri Chriost
  - 20. Blarney Street Primary School

CB:JI EB:Chamberlain_K LUC FIGX_11280_r0_ExistingFoodInitiative_A3L 07/04/2021
Source: LUC, CCC, OSI

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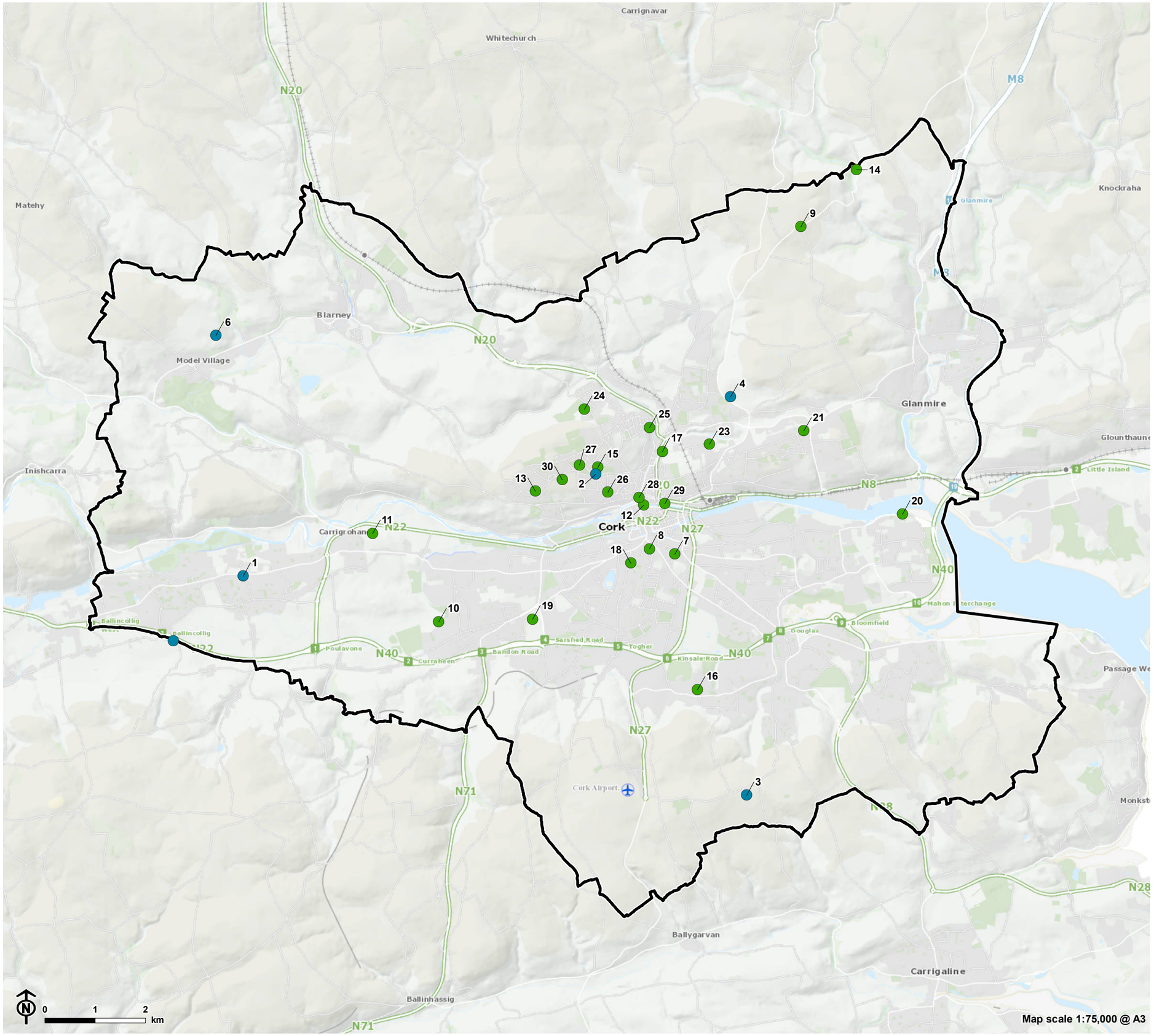
Figure 14.5: Existing Food Growing Initiatives



- Cork City Council boundary
- Allotment
  - 1. Ballincollig Community Allotments
  - 2. Churchfield Allotments
  - 3. Douglas Allotments
  - 4. Men's Shed
  - 6. Hydro Farms Allotments
- Community garden
  - 7. Food Forest
  - 8. Stephen Street Community Garden
  - 9. Upper Glanmire Community Sensory Garden
  - 10. Murphy's Farm Community Garden
  - 11. Cork County Beekeepers (affiliated to the FIBKA the Federation of Irish Beekeepers Associations)
  - 12. Test Site
  - 13. Knocknaheeny/Hollyhill Community Garden
  - 14. Future Orchard Cork
  - 15. Churchfield Community Trust
  - 16. Men's Shed Grange/Frankfield
  - 17. Café Garden/The Foyer
  - 18. The Lough Community Centre
  - 19. SMA Fathers, at back of library
  - 20. La Scala
  - 21. Mayfield CDP
  - 23. The Glen Community Garden
  - 24. Farranree (Springboard)
  - 25. Farranree (Springboard)2
  - 26. The Hut Rooftop Garden (CDYS)
  - 27. Gurranbraher & Churchfield Green Spine Project
  - 28. Shandon Community Garden
  - 30.

CB:JI EB:Chamberlain_K LUC FIGX_11280_r0_ExistingFoodInitiative_p2_A3L 07/04/2021
Source: LUC, CCC, OSI

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Figure 14.6: Potential Food Growing Sites

Cork City Council boundary

Potential Food Growing Sites

1. Mahon
2. Carrigaline Tidy Towns
3. Lower Road
4. Ashleigh gardens
5. Cloverhill Park
6. Greenmount Primary
7. School Grounds
8. CUH – Cork university Hospital
9. Hollyhill (a site next to Niche)
10. Site on Cushing Road
11. Woodlawn behind houses (Large green area)
12. Green area adjacent to Togher Boys National School
13. Charles Daly Road (At the end of the road there is a large green area with nothing currently happening on it.)
14. Clashduv Park (Area west of tennis courts)
15. Summerstown Avenue (large park here)
16. Behind St Aloysius playing grounds
17. Area behind Gilabbey Park
18. Large Green area Green Area

Examples of Potential sites on Derelict Land

19. Lough View Terrace, Glasheen
20. Árd na RÍ, Pouladuff Road, Glasheen
21. High Street, Ballintemple
22. Wyndern Popes Road

0 1 2 km

Map scale 1:75,000 @ A3

CB:JI EB:Chamberlain_K LUC FIGX_11280_r0_PotentialFoodGrowing_A3L 07/04/2021
Source: LUC, CCC, OSI

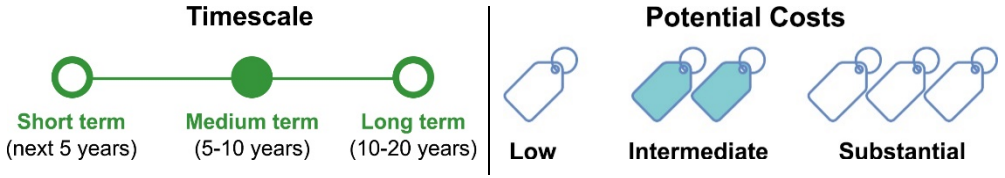
COMHAIRLE CATHRACH CHORCAÍ CORK CITY COUNCIL

City Scale GBI Projects for Cork City – 'Resilient Spaces'

City Docks and Tivoli Docks Urban Drainage Strategies

Vision

Delivery of Urban Drainage Strategies to assess and outline a NbS approach to urban drainage in the City Docklands and Tivoli Docks.



Objectives

- Demonstrate that surface water will be controlled at source in accordance with SuDS principles within the City Docks and Tivoli Docks;
- Enhance the quality and distinctiveness of the docklands and integrate best practice climate change actions;
- Explore the opportunity to remove pollutants from urban run-off at source;
- Combine water management with the creation of a protected riparian corridor to emphasise benefits for amenity, recreation, wildlife and placemaking; and
- Reflect the findings of the Ballincollig Drainage Study in future proposals.

Details of intervention

14.25 As the second largest multi-modal port in Ireland and the largest natural harbour, the Port of Cork plays a key strategic role in the development of both the Cork Metropolitan Gateway region and the wider Irish economy. The masterplan for Tivoli Docks envisages the construction of circa 3,000 new homes in the area over the next 20-30 years. Although some existing drainage infrastructure exists in the area, the aim should be to incorporate SuDS into any new development. Proposals should aim to control the rate of runoff, improve water quality, create new amenity areas and enhance biodiversity.

14.26 The document should aim to provide technical standards for the design, maintenance and operation of SuDS to drain surface water in the docklands. Emphasis should also be placed on the requirement for ongoing maintenance of the SuDS scheme, ensuring that operation of the project is economically proportionate. The opportunity exists to incorporate the following components into SuDS interventions:

- Ponds and wetlands;

- Swales, bio-retention systems, filter strips and detention basins;
- Rainwater harvesting and infiltration systems;
- Trees, green roofs and vertical greening; and
- Propriety treatment systems and pervious pavements.

14.27 Given that the existing Tivoli Docklands are located on reclaimed land, it is recommended that future development proposals for the area aim to restore a network of riparian habitats and incorporate NbS into the existing waterfront.

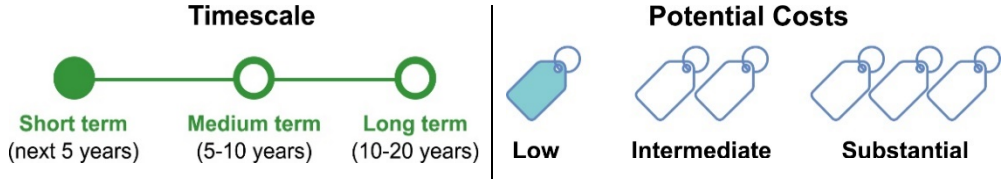
Delivery Partners:	**Recommended Professional Inputs:**
▪ The Council (inter-departmental) ▪ PoCC	▪ Cork City Engineers / civil engineers ▪ Ecologists ▪ Cork City Biodiversity Officer (TBC) ▪ Cork City Parks and Landscape Officer ▪ Landscape Architects

City Scale GBI Projects for Cork City – 'Resilient Spaces'

Cork City Tree Planting and Management Strategy

Vision

Delivery of a medium term city-wide tree planting and management strategy focussing on best practice implementation, design and management of the city's tree network.



Objectives

- Promote better protection for local trees at a local level;
- Increase provision of tree planting and woodland cover in rural, urban and peri-urban areas;
- Implement a phased delivery of tree planting, centring on the City Centre and high-density areas of the City Suburbs;
- Promote actions which ensure the wider tree planting and tree management at a local level within Cork City;
- Explore the potential to deliver reafforestation projects within the wider city;
- Emphasise the importance of tree pit design, particularly in urban areas, in order to deliver maximum canopy coverage in the long term; and
- Appoint a Tree Officer within the Council with responsibility for delivery of the project.

Details of initiative

14.28 The intervention will deliver a strategy which focusses on the City Centre as well as the most densely populated areas in the City Suburbs; including Blackpool, The Lough and Montenotte.

14.29 Potential locations for tree planting and key considerations are highlighted below. However, the suitability of locations for tree planting will require additional survey effort to ensure the principle of the 'right tree in the right place' is followed.

- **Active travel routes, particularly towards schools:** Urban trees bordering these routes offer the opportunity to frame active travel routes and form a barrier between pedestrians / cyclists and road users. Where space allows, this buffer should be formed by vegetation to separate air pollution from active travel routes. This could take place in locations such as Greenmount National School, St Vincent

Convent Primary School, and Scoil Mhuire Catholic Junior School.

- **Major roads:** Small tree specimens that allow for upward movement of air provide a range of benefits parallel arterial routes. Certain species of trees are particularly efficient at reducing air pollution, including Cotoneaster and London Plane. Key locations for this include along the N22, N27 and N20.
- **Land within housing estates:** Underused land within housing estates provides a valuable green asset, with space for mature species that offer shading and opportunities to enhance urban biodiversity. This is particularly important in densely populated and more deprived areas where occupants may have less access to private gardens.
- **Within commercial and retail areas:** Street trees can be introduced into wider or pedestrianised high streets and commercial developments to enhance the social value of these spaces. This can include larger canopies that provide shading and species with striking aesthetics, including blossom, fruit or autumn hues which would emphasise a sense of place in these locations. Example locations where this could be explored include Cornmarket Street, Emmett Place and Grande Parade.
- **Riverside locations:** Riparian woodland can be introduced along river corridors, including along the River Lee within the City Centre. However, any planting at this location would have to be completed in conjunction with flood alleviation works and ensure navigation was not impacted.

14.30 The Strategy should outline best practice for installing trees in an urban setting and on hard surfaces. In particular, this includes ensuring that there is sufficient root space and soils, for instance by using soil cells for tree installation, increasing the amount of useable soil available and increasing canopy size. Existing streets will also need to be surveyed for underground utilities to better understand viability for future tree planting and improved drainage systems. As a consequence, effective and timely communications will be required due to disruption to the road network and local streets.

14.31 Ongoing management and care of these trees is also important, and this can be a key area in which local communities can get involved, increasing the social value of the tree planting asset. This could be achieved through organised events during National Tree Week in March with schools and community groups which would raise awareness of tree management. In addition, local food growing groups or residents' groups could be involved in dealing with leaf litter, which could be used as mulch or composted.

Delivery Partners:

- The Council (inter-departmental)
- Developers
- Cork Nature Network
- Cork Environment Network
- NeighbourWood Scheme
- Coillte

Recommended Professional Inputs:

- Cork City Tree Officer (TBC)
- Landscape Architects
- Cork City Parks and Landscape Officer
- Cork City Council City Centre Coordinator
- Cork City Biodiversity Officer (TBC)
- Ecologists
- Cork City Planners
- Consultation and Engagement Specialists
- Soil scientists (as required)
- Ground Contamination Specialists / Geotechnical Engineers (as required)
- Cork City Engineers
- Cork City Climate Action Unit Manager

City Scale GBI Projects for Cork City – 'Resilient Spaces'

Glen Amenity Park / Glen River Park

Vision

Extend the Glen Amenity Park / Glen River Park eastwards along the North Ring Road to Tinker's Cross public space. Create linkages between the Glen Amenity Park / Glen River Park westwards to connect residential, retail and employment zones in Blackpool to high value nature sites.

Objectives

- Investigate the potential to deliver high value open spaces by extending the Glen Amenity Park / Glen River Park along the North Ring Road to Tinker's Cross public space to provide a continuous riverside amenity route;
- Utilise GBI to connect the Glen Amenity Park / Glen River Park to residential, retail and employment zones in Blackpool; and
- Enable wider benefits from using the picturesque, accessible, safe and riverside amenity routes.

Details of initiative

14.32 The Glen Amenity Park / Glen River Park comprises a natural river valley located at the Glen on the northern side of Cork City. The narrow, meandering Glen River flows through the valley which in the eastern end is relatively wide with gentle inclined slopes and in the western end is narrow with very steep slopes. The vegetation of the valley varies from gorse, heather, bracken to mixed deciduous trees to grass, providing a valuable refuge for biodiversity. The wildness is a huge part of its charm and a valuable resource of natural heritage in the City.

14.33 Extending the Park eastwards to Tinker's Cross public space and westwards to Blackpool would provide a range of benefits including increased resilience to climate change for natural habitats; reduced car use; easing of congestion; improved air quality; and improved health and wellbeing for the people of Cork City.

Delivery Partners:

- The Council (inter-departmental)
- Cork Healthy Cities
- Cork Green Spaces for Health
- Cork Environment Forum

Recommended Professional Inputs:

- Landscape Architects
- Cork City Parks and Landscape Officer
- Cork City Engineers
- Hydrologists
- Civil engineers
- Cork City Biodiversity Officer (TBC)
- Ecologists

City Scale GBI Projects for Cork City – 'Resilient Spaces'

Update and Review of the Cork City Landscape Characterisation Strategy

Vision

Develop an update of the Cork City Landscape Strategy (2008) which supports sustainable development whilst protecting and enhancing Cork City's unique landscapes. The document should include the extended areas which form part of the city's post-2019 expanded administrative area.

Objectives

- Deliver an updated analysis of the varying landscapes within Cork City;
- Produce a technical document and sound evidence base for planners and developers to consider the character and valued features of the landscapes within Cork City;
- Provide key information for developers and planners to inform decisions on the appropriate location, scale and design of new development within Cork City;
- Consider the likely pressures and opportunities for landscape change, including informing land management decisions;
- Assess the sensitivity of Cork City's landscapes to change;
- Develop guidelines as to how the landscapes can accommodate change, and how they can be conserved and enhanced; and
- Identify how the landscape is intrinsically linked to the provision of ecosystem services.

Details of initiative

14.34 Cork City's unique landscapes are a fundamental component of the GBI network, providing opportunities for recreation and leisure, habitats for biodiversity and an extensive range of other ecosystem services. The initiative should aim to ensure the area's distinctive, varied and dynamic landscape are considered, and opportunities to enhance and strengthen character are pursued where possible. In particular, this work will be important in the context of a changing climate, at a time when action is needed now to strengthen the landscape's resilience to the challenges that lie ahead.

14.35 The Landscape Characterisation Strategy will update the existing strategy to reflect the changes to Cork City's

administrative boundary in 2019. The document will aim to recognise the importance of Cork City's landscape elements in contributing towards the city's GBI network. The existing landscape assets in Cork City will be identified and assessed, providing guidance for the potential management and growth of the city and its resources. The document will strive for a sustainable future which does not adversely affect the character or quality of the landscape.

14.36 The Strategy will integrate the findings of other relevant studies relating to ecology and biodiversity, to highlight the important and intrinsic linkages between these elements and the landscape. In particular, the Tree Planting and Management Strategy, Rewilding, Rewetting and Reafforestation Projects, and Ecology, Biodiversity and Natural Heritage Data Project for Cork City should form key considerations within the Strategy.

14.37 To ensure that Cork City's landscapes are protected and enhanced, the Landscape Characterisation Strategy will:

- Categorise and map updated LCTs within Cork City;
- Identify pressures and opportunities, sensitivity, and management guidelines relevant for each LCT;
- Identify opportunities for landscape improvement within Cork City, with a specific emphasis on measures which provide ecological enhancement; and
- Provide policy recommendations.

Agricultural land use within Cork City

14.38 The potential exists for the document to inform analysis of landscape sensitivity, providing evidence to guide the determination of future planning decisions. Value and susceptibility (both landscape and visual) could also be distinguished when deriving sensitivity judgements within the city. In addition, the development of the document offers the opportunity to rationalise the existing county and city scale landscape value designations within the emerging Development Plan. Adoption of a consolidated approach should aim to differentiate between the scale and rural / urban focus of the two existing designations.

Delivery Partners:

- The Council (inter-departmental)
- Cork County Council

Recommended Professional Inputs:

- Cork City Parks and Landscape Officer
- Landscape Architects
- Cork City Biodiversity Officer (TBC)
- Cork City Planners
- Cork City Heritage Officer

City Scale GBI Projects for Cork City – 'Resilient Spaces'

Reinstatement of the weir and canal system at Ballincollig Regional Park

Vision

To restore the weir and canal system at Ballincollig Regional Park to enhance the park's industrial heritage, biodiversity, recreational amenities and potential to provide preventative flood relief.

Objectives

- Investigate the potential to restore the partially collapsed weir on the Inniscarra Bridge bank of Ballincollig Regional Park which collapsed in 2014;
- Explore the feasibility of reinstating the canal system running through the former Ballincollig Gunpowder Mills;
- Enhance the range of habitats as part of the reinstated canal system;
- Promote the industrial heritage of Ballincollig Regional Park through the reinstatement of the weir, original canal system and interpretation materials;
- Introduce water retention measures within and alongside the River Lee; and
- Strengthen connectivity to Ballincollig Regional Park as part of the Lee to Sea Greenway project.

Details of initiative

14.39 The weir was built in 1795 to create a supply of water for diversion through a sluice into a system of canals which powdered the gunpowder mills. The canal system then fed back into the River Lee downstream. Since the partial collapse of the weir, the canal system has dried up, depriving the park of an important aspect of its heritage. Restoration of the canal system offers the potential to enhance habitats within the park. The current situation poses a safety risk as a result of the unstable condition of the weir remnants and periodic surges of water on the River Lee due to the Inniscarra Dam upstream.

14.40 The weir is a highly valued asset, not just for its heritage value, but also as a paddling spot and a resource for canoeists. As there are a wide range of different users, it is important that the development of the project consults with all key concerned parties. Weirs can reduce biodiversity and

negatively impact on the natural flow and profile of rivers. Restoration work should therefore enhance the park's cultural heritage, but not at the expense of the park's natural heritage. Forming a multidisciplinary project team will ensure the most responsive, sensitive design outcome.

Delivery Partners:

- The Council (inter-departmental)
- OPW
- IFI
- Local Authority Waters Programme
- EPA
- Ballincollig Heritage Association
- Waterways Ireland

Recommended Professional Inputs:

- Cork City Engineers
- Hydrologists / Civil Engineers
- Cultural Heritage / Archaeologists
- Cork City Heritage Officer
- Cork City Biodiversity Officer (TBC)
- Ecological Clerk of Works (ECoW)
- Landscape Architects
- Cork City Tourism Officer

City Scale GBI Projects for Cork City – 'Resilient Spaces'

Vernon Mount Park

Vision

Creation of a cycle link and pedestrian bridge / 'green bridge' over the N.40 to connect Vernon Mount Park with Tramore Valley Park and beyond.

Objectives

- Provide safe, off-road access to Tramore Valley Park from Vernon Mount Park;
- Explore the potential to connect the suburban areas of Grange and Frankfield, via the green bridge, to Tramore Valley Park;
- Provide public access to the attractive wooded valley east of Vernon Mount House, as part of the Vernon Mount Valley & Woodlands Walks Project; and
- Provide linkages o Tramore Valley Park and Vernon Mount Park to act as a catalyst for the restoration of the culturally significant Vernon Mount House.

Details of initiative

14.41 The Tramore Valley Park is a 160 acre (65 ha) former landfill site which opened in 2019. Within Tramore Valley Park are walkways and trails, an all-weather area, a grass pitch, an international standard BMX Track, an outdoor gym, a sports pavilion, a wetlands area, a raised dome area, and a pedestrian/cycle access track from the South Douglas Road. Vernon Mount House is an 18th century historic house surrounded by woodlands, located south of the N40.

14.42 The creation of a cycle link and pedestrian bridge / 'green bridge' between the Tramore Valley Park and Vernon Mount Park would significantly add to the tourism, recreation and heritage offering of the City. The green bridge would also connect the suburban areas of Grange and Frankfield to the Tramore Valley Park and beyond.

14.43 Renewal works as part of the Vernon Mount Valley & Woodlands Walks Project are currently underway in the wooded valley east of Vernon Mount House to remove invasive, occluding vegetation and to replant damaged woodland areas with indigenous tree species. The area is

important for local biodiversity and therefore, works to create the green bridge in the valley should be overseen by ecologists and arboriculturists.

14.44 The linking of Tramore Valley Park and Vernon Mount Park could act as a catalyst for the restoration of the culturally important Vernon Mount House, currently in private ownership.

Delivery Partners:

- The Council (inter-departmental)
- Grange Frankfield Partnership
- The Glen Resource & Sports Centre (management of Tramore Valley Park)
- Douglas and Frankfield Community Associations
- Amberley Residents' Association

Recommended Professional Inputs:

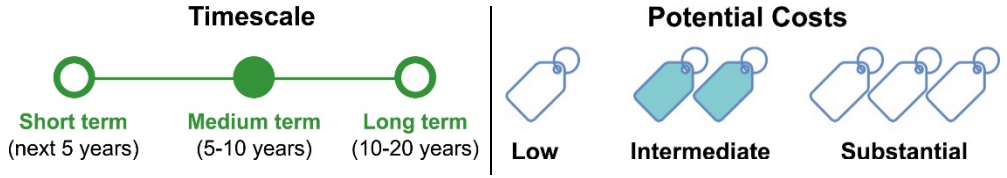
- Cork City Engineers / Highway Officers
- Structural / Civil Engineers
- Cork City Heritage Officer
- Cork City Biodiversity Officer (TBC)
- Ecologists
- Cork City Parks and Landscape Officer
- Landscape Architects
- Cork City Tourism Officer

City Scale GBI Projects for Cork City – 'Resilient Spaces'

Decarbonising Zone Pilot Project:

Vision

Further reduce Cork City's contribution to GHG emissions by introducing a Decarbonising Zone (DZ) within the city. The projects should seek to encourage adaptation to the effects of climate change whilst addressing the wider co-benefits of climate proofing, afforestation and behavioural change.



Objectives

- Identify a DZ within Cork City which to explore a range of mitigation measures to address local low carbon energy, GHG emissions and climate needs to contribute to national climate action targets;
- Reduce GHG emissions by 7% per annum by 2030, in accordance with the ambitious whole society approach of the Climate Action Plan[195];
- Promote active and sustainable travel throughout Cork City;
- Encourage greater carbon sequestration through the delivery of afforestation and GBI assets;
- Utilise the expertise and research capabilities of both UCC and Munster Technological University in development of the DZ;
- Deliver a wide variety of co-benefits associated with climate change mitigation measures; and
- Help the Council better understand the scale of the challenge in decarbonising the local economy, acting as a key driver in the development of the DZ.

Details of initiative

14.45 The Council has requested the adoption of a DZ as a measure to help mitigate against the effects of future climate change. For example, the DZ should encourage and facilitate the uptake of renewable energy technologies which can provide energy for several sectors such as buildings, industry and transport. The project will involve the identification of the following elements:

- Physical indication of the DZ, including the estimated population which falls within its boundary;

[195] Department of then Environment, Climate and Communications (2019) *Climate Action Plan*

- Broad indications of where potential carbon emission savings will be realised e.g. housing (public and private), transport, HEIs, large energy users etc.; and
- Techniques to ensure greenhouse gas emissions are reduced e.g. substitution of fossil fuel boilers to heat pumps, CHP, renewable energy etc.

14.46 Various other climate mitigation measures can also be employed, including many directly related to GBI within the city. A paper published by CARO[196] acknowledges that increasing the rate of carbon sequestration through delivery of GBI, afforestation, and re-wetting and restoration of peatland will also lead to reductions in GHG emissions.

14.47 These measures can have further positive effects in relation to other topics. Notably, provision of GBI, afforestation and peatland restoration will benefit biodiversity by improving quality and connectivity of habitats, enhance water and air quality, and provide recreational opportunities. In particular, the latter could have subsequent benefits on health and wellbeing by promoting active lifestyles and social inclusion, and contributing to reductions in the urban heat island effect. Consideration should be given to the redevelopment of brownfield land and former commercial and industrial sites to provide GBI, habitat enhancements and/or active travel infrastructure.

14.48 Likewise, provision of active travel infrastructure within DZs, such as cycling and walking routes, will encourage a modal shift in travel behaviour bringing benefits to GHG emissions reductions, air and noise pollution, and health and wellbeing. Transport orientated development should therefore form a key component of DZs, resulting in benefits such as improved air quality, health and wellbeing and reduced noise levels.

14.49 A whole community approach is required for the successful implementation of a DZ. Stakeholder and citizen engagement is also encouraged in identifying suitable locations and measures to be implemented in DZs. Such engagement can provide important insights into local issues and potential solutions.

14.50 A programme of monitoring and evaluation should be included a spart of project proposals to ensure that sufficient data is collected on changes in energy usage and citizen behaviour. Next steps in development of the initiative will involve the progression of the stages outlined below:

- **Stage 1:** Progress the project's strategic direction through the recently formed working / steering group;
- **Stage 2a:** Organisation of an extensive stakeholder group to act as representatives of the different sectors within the zone;
- **Stage 2b:** Development of the 'carbon' base line; and

[196] http://www.codema.ie/images/uploads/docs/Developing_Decarbonising_Zones_in_Ireland_A_Briefing_Paper_for_the_Local_Authority_Sector.pdf

- **Stage 3:** Preparation of an implementation plan following consolidation of the responses from stakeholder engagement

Delivery Partners:

- The Council (inter-departmental)
- Southern Regional Assembly
- Department of Environment, Climate and Communications
- EPA
- Sustainable Energy Authority of Ireland
- Climate Action Regional Office
- Cork Healthy Cities
- Cork Green Spaces for Health
- Cork Environment Forum
- Coillte
- Laois County Council
- UCC
- Munster Technological University

Recommended Professional Inputs:

- Cork City Climate Action Unit Manager
- Cork City Planners
- Sustainability Consultants / Low Carbon Consultants
- Cork City Highways Officer
- Cork City Parks and Landscape Officer
- Landscape Architects

City Scale GBI Projects for Cork City – 'Healthy Spaces'

Activate Greening Projects in Cork City Centre

Vision

Delivery of a connected network of greening projects / initiatives across Cork City; including green roofs and vertical greening, community gardens, wildflower meadows, beehives and orchards.

Objectives

- Support the delivery of actions and projects that promote greening within the City Centre;
- Explore the opportunity to introduce a mosaic of urban greening features specifically focused to support City Centre recovery;
- Develop a 'GBI audit' to ensure that 'greening' opportunities are fully integrated in order to deliver streetscapes that encourage active travel;
- Promote the greening of key locations, 'gateways' and green routes within the City Centre;
- Increase knowledge sharing across the city by showcasing best practice; and
- Accommodate multifunctional GBI assets and signposting to key green spaces where road layouts are reconfigured to accommodate walking and cycling.

Details of initiative

14.51 Develop the number of initiatives across Cork City that focus on delivering the network of greening projects, as detailed below:

- Cork Rooftop Farm provides an example of a local enterprise formed as a result of the COVID-19 pandemic. The food growing project aims to promote healthy eating, support community volunteering and showcase the range of food growing opportunities; as detailed below:
  - Uses approximately 20m^3 of soil, distributed across raised beds on the 7,000 sq. foot roof of the old Coal Quay in the City Centre;
  - Provides a range of vegetables, herbs and fruits, in total about 50 varieties;

  - Forms an example of a sustainable and regenerative farming initiative; and
  - Provides pollinator-friendly plants and flowers[197].
- St. Stephens 'Sustainable Food Lab' Community Garden is a self-funded, member-led and non-for-profit urban agriculture project on a derelict site, an old basketball court, established in 2017. Details of the scheme include the following:
  - Uses recycled materials and collects rainwater for watering plants;
  - Provides shared produce following a 'one harvest for all' policy; and
  - Grows a range of herbs, vegetables, fruits and wild flowers[198].
- Planter boxes and planting around tree bases by Mad About Cork in various City Centre locations; including Kyrl's Quay and George's Quay (incorporating pollinator friendly plants);
  - Built on an unused site in Kyrl's Quay situated between Kyrl's Street and Cornmarket Street;
  - Serves as a temporary art exhibition and features a densely planted native woodland in planters constructed of reclaimed materials[199].
- Douglas Street Parklet forms an open and public space that combines seating, planting, street art and bike parking. It offers an inviting space for residents and passers-by to sit, relax and to foster a sense of place, community and environment. The parklet features a steel and timber structure with seating for 15-20 people, and planting space for pollinator-friendly plants[200].
- Rainwater harvesting at Patrick Hanley Buildings, Grattan Street / Peter Street using rainwater boxes, showcases how GBI solutions can be implemented across all new developments;
- Beehives on the rooftop of the St John's College enhance the biodiversity of the area by bringing more pollinators into an urban setting. This initiative is not only beneficial for the ecosystem, but it also enables community participation by encouraging people in South Parish to grow flowers specifically for bees and other insects.

[197] Irish Examiner (2020) Cork Rooftop Farm: urban agriculture taking root on Coal Quay. [online] Available at: https://www.irishexaminer.com/lifestyle/food/arid-40046399.html [Accessed on 16/03/2021]
[198] Echo Live (2020) A green piece of paradise in heart of Cork city. [online] Available at: https://www.echolive.ie/corklives/arid-40101902.html [Accessed on 16/03/2021]
[199] Irish Examiner (2019) Parking space in Cork city transformed into 'People's Parklet'. [online] Available at: https://www.irishexaminer.com/news/arid-30939188.html [Accessed on 16/03/2021]
[200] Irish Examiner (2019) Douglas Street unveils the city's first Parklet giving road space to pedestrians and cyclists. [online] Available at: https://www.echolive.ie/corknews/arid-40147202.html [Accessed on 16/03/2021]

  - The project is backed by the South Parish Learning Neighbourhood, the Green Spaces for Health initiative, and Cork Healthy Cities; and
  - As honey bees can forage up to 4km from their hives, the location of St. john's college gives them access to parks, gardens, trees and weedy patches located within the city centre[201];
- "Rewilding" and Native Hedgerow at Parkowen, which is a former St John's Cemetery. The site has become a public park that encompasses native hedgerow, and native species of plants and trees. A third of the park is dedicated to rewilding by allowing the nature to take over the space. Moreover, the park includes beds for flowers and herbs that attract pollinators, there are public events held in the space, and volunteering opportunities.
  - In the future, the project aims to focus on supporting specific types of endangered bees, installing bird boxes and start a citizen science movement[202].

Additional planned initiatives:

- Vertical Greening / rainwater boxes are proposed to give special emphasis in the City Centre Placemaking Scheme 2021 to greening projects.
- South Channel Walk is proposed to be developed which would pass along four parklets on the quays (three of them on the South Channel) and one of the Ardu murals.

Delivery Partners:

- Cork Rooftop Farm
- Cork Healthy Cities
- Cork environmental Forum
- The Lantern Project
- Cork Nature Network
- St. John's College
- The Council (inter-departmental)
- Cork Food Policy Council

Recommended Professional Inputs:

- Cork City Parks and Landscape Officer
- Landscape Architects
- City Centre Coordinator at the Council
- Cork City Biodiversity Officer (TBC)
- Ecologists
- Cork City Planners
- Cork City Engineers
- Cork City Climate Action Unit Manager
- Cork City Tourism Officer

[201] Irish Examiner (2019) Bees living in roof of St John's College in Cork produce A-grade honey. [online] Available at: https://www.irishexaminer.com/news/arid-30960261.html [Accessed on 16/03/2021]

[202] Green Spaces for Health (undated) Parkowen. [online] Available at: https://corkhealthycities.com/greenspacesforhealth/ [Accessed on 16/03/2021]

City Scale GBI Projects for Cork City – 'Healthy Spaces'

City Centre Neighbourhood Parks Pilot projects

Vision

Create multi-functional neighbourhood scale pilot projects within the City Centre neighbourhoods of St Luke's / MacCurtain Street (Mahoney's Avenue) and South Parish (Parkowen).

Objectives

- Create multi-functional neighbourhood parks in South Parish and St. Luke's.
- Explore the opportunities for proposals to implement active, low traffic neighbourhoods in areas of poor environmental quality; and
- Introduce GBI elements into proposals for neighbourhood renewal.

Details of initiative

14.52 Cork Healthy Cities and Cork Nature Network are currently transforming the former cemetery at Park Owen (St. John's Cemetery) into a neighbourhood park. The scheme includes planting proposals for hedgerows / trees as well as sections of rewilding to promote a naturalistic character. Future plans include the installation of bird boxes, supporting specific types of endangered bees, and events such as mindfulness workshops, urban ecology tours, pollinating workshops, and Tai Chi classes.

14.53 Future design schemes for a neighbourhood park in South Parish should provide a mix of active and passive spaces and aim to increase access to biodiversity and nature for visitors and residents living within close proximity. It should also create a link to Douglas Street or an adjoining street to make it widely accessible.

14.54 The creation of a neighbourhood park off Mahoney's Avenue in St. Luke's should cater to the needs of the local community and be accessible, safe, and multi-functional. A design scheme for Mahoney's Avenue was prepared as part of the South Docks Public Realm Strategy in 2012 and incorporated a performance area with amphitheatre style seating to allow for spectator seating; play areas for children; open green space for passive recreation; reinforced grass performance area; retention of existing mature trees; and planting of new trees and other landscaping.

14.55 The future design scheme for a park along Mahoney's Avenue should be informed by this background work produced by the Council.

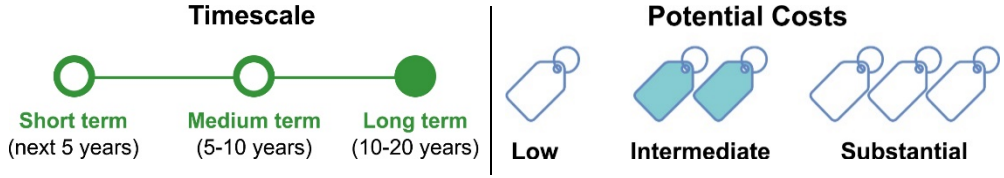
Delivery Partners:	**Recommended Professional Inputs:**
▪ The Council (inter-departmental) ▪ Cork Health Cities ▪ Cork Nature Network	▪ Landscape Architects ▪ Cork City Parks and Landscape Officer ▪ Cork City Engineers ▪ Civil Engineers ▪ Cultural Heritage / Archaeologists ▪ Cork City Heritage Officer ▪ Cork City Biodiversity Officer (TBC) ▪ Ecologists

City Scale GBI Projects for Cork City – 'Wilder Spaces'

Cork City Rewilding, Rewetting and Reafforestation Projects

Vision

Development of a connected network of rewilding, rewetting and reafforestation projects across Cork City. The proposals should include parks, gardens, wildflower meadows, forests and woodlands; affording biodiversity improvements and improvements to green and blue spaces within the city.



Objectives

- Support the delivery of actions and projects that promote rewilding, rewetting and reafforestation of Cork City;
- Promote initiatives across the city by showcasing best case examples, knowledge sharing and best practice;
- Explore the opportunity to deliver a regional asset that promotes tourism, providing benefits for business, health and the environment;
- Promote positive woodland management techniques to enhance species richness of habitats. This includes the creation of glades, rides and thinning as appropriate; and
- Balance the needs of recreational users by encouraging the adoption of ecologically-friendly management regimes.

Details of initiative

14.56 The intervention aims to enhance the network of projects across Cork City; focussing on rewilding, rewetting and reafforestation proposals. The opportunity exists to provide crucial projects to enhance biodiversity, acting as 'stepping stone' habitats and playing a key role in the restoration of fragmented habitat networks. These projects could be delivered in partnership with key stakeholders and project funding providers, although the opportunity also exists to appeal to residents and private land owners in order to contribute to the local network of green spaces. The overall aim of the network should be to:

- Protect favourable ground conditions and management for all existing areas, ensuring designated sites have a management plan including appropriate restoration and interpretation in place, identify buffer zones where appropriate;

- Explore opportunities to extend creation of all peatland habitat types as part of a landscape-scale mosaic with fens and wet grasslands; and
- Ensure that initiatives also include new planting and natural recolonisation (rewilding), which together provide new sites, extensions or connecting shelter belts.

14.57 Woodland expansion or rewetting projects require the availability of land. Significant consultation and engagement are therefore needed to identify land for these projects, ensuring future management costs are accounted for. In addition, woodland creation initiatives should be informed by the update and review of the Cork City Landscape Characterisation Strategy.

Delivery Partners:

- The Council (inter-departmental)
- NPWS
- EPA
- Neighbouring Councils
- Cork Environment Forum
- Landowners

Recommended Professional Inputs:

- Cork City Biodiversity Officer (TBC)
- Ecologists
- Cork City Parks and Landscape Officer
- Landscape Architects
- Cork City Planners

City Scale GBI Projects for Cork City – 'Wilder Spaces'

Activating Blue Corridors in Cork City

Vision

Preparation of an integrated access strategy promoting the recreational use of the network of watercourses in Cork City.

Objectives

- Investigate the feasibility to improve and enhance the potential for water-based recreation within and along the River Lee and Cork Harbour;
- Explore the opportunity to supplement existing provision to the water environment with new access points to the River Lee for recreational users;
- Investigate the potential to utilise Cork City's blue infrastructure assets to create a framework for strategic travel whilst enhancing recreational opportunities;
- Strike the correct balance between biodiversity interest & access along existing watercourses;
- Explore the potential to implement appropriate zoning, recognising the importance of rivers as key parts of the multifunctional GBI network and their role as 'living landscapes';
- Establish a consistent wayfinding approach to promote a network of blueways within Cork City;
- Protect and enhance existing features along river corridors;
- Create, maintain and enhance the riparian buffer zone and adjacent wetlands; and
- Embed a 'universal' and inclusive design approach into the siting of water access points where possible, ensuring compliance with the principles of best practice guidance[203].

Details of intervention

14.58 The River Lee boasts a wide variety of established water sports clubs (kayaking, canoeing, rowing, fishing), albeit availability of access to the water forms a significant issue within the city. Through the establishment of a number of

[203] Irish Wheelchair Association – Sport / Sport Ireland (2018) *Great Outdoors: A Guide for Accessibility*

initiatives, the scope exists to develop and improve localised access points (in conjunction with local stakeholders). In addition, blue corridors / blueways offer the potential to improve access to recreational sites whilst facilitating natural hydrological processes, minimising urban flooding and surface water ponding.

14.59 The introduction of the following initiatives and activities provide an opportunity to enhance access for residents and visitors to the water environment:

- Introduce a number of additional access points to the river to address the increased demand for recreational use of the water environment within Cork City (see **Figure 14.10-14.12);**
- Liaise with Sport Ireland / the Outdoor Urban Initiative Project and Cork Active Cities to develop the programme of annual events and build capacity for users along the river;
- Develop a hub for water-based activities at Blackrock village;
- Promote the inclusive use of waterways for amenity through the development of projects with the Cork Sports Partnership as a focus for disability and youth services;
- Develop a City Centre 'angling hub' providing links to Cork Harbour;
- Promote the Corkumnavigation (Meitheal Mara) projects;
- Promote events such as Cork Harbour Festival, Canoe Slalom on the River Lee, Lee Swim, Rebel Plunge, Cork Head of the River Race;
- Promote Cork City's status as the second largest harbour in the world;
- Deliver river enhancement works as part of the LLFRS;
- Provide linkages with GBI assets along river corridors;
- Introduce restrictions associated with new development in close proximity to watercourses;
- Incorporate SuDS (swales, ponds, wetlands etc.) as part of new developments, including retrofitting within existing schemes;
- Explore the potential for wetland creation in areas adjacent to existing watercourses to increase the resilience of the landscape to a changing climate. The naturalisation of river corridors provides an opportunity to introduce the sustainable storage of surface water;
- Undertake physical improvements to the water environment through localised dredging of the River Lee to ensure the watercourse remains navigable (ensuring consideration of ecological impacts); and
- Enhanced wayfinding and signage to promote recreational access to the River Lee.

14.60 Development of a coordinated approach to activating blue corridors in Cork City requires investment in a landscape-

led masterplan. Engagement with landowners is crucial to the effective delivery of the project and to ensure joined up and / or cross boundary working. A requirement also exists for consultation throughout the planning and delivery to ensure that new works complement ongoing projects. It is also recommended that the importance of river valleys and functionality is reflected in the policies of the emerging Development Plan. A feasibility study should form a future piece of work for the Council.

14.61 The opportunity exists to build on initial feasibility studies and consultation undertaken by the River Lee Placemaking Group, in collaboration with Meitheal Mara, Lee to Sea Greenway Group, Corkumnavigation paddlers and Naomhóga Chorcaï. Qualitative data recorded as part of a slipway survey in April 2021 highlighted the limited opportunities to launch boats in and around Cork City. Provision of a public slipway located at the upper reaches of the River Lee would improve access and remove tidal restrictions, forming an alternative to existing facilities within the city. Next steps in the delivery of this project should aim to gather views from other recreational users of the river, including 'hard to reach' groups to ensure proposals maximise future benefits.

Delivery Partners:

- The Council through expressing aspirations in policy;
- Relevant community groups / local societies at a local level – e.g. the River Lee Placemaking Group
- PoCC
- Cork Sports Partnership
- Sport Ireland / Urban Outdoor Initiative Project
- Cork Harbour Festival
- Marine Institute
- Cork Environmental Forum
- Waterways Ireland
- Lee to Sea Greenway Group

Recommended Professional Inputs:

- Cork City Engineers
- Hydrologists
- Civil Engineers
- Cork City Planners
- Cork City Biodiversity Officer (TBC)
- Ecologists
- ECoW during implementation works within the bird nesting season
- Landscape Architects
- Cork City Tourism Officer
- Consultation and Engagement Specialists

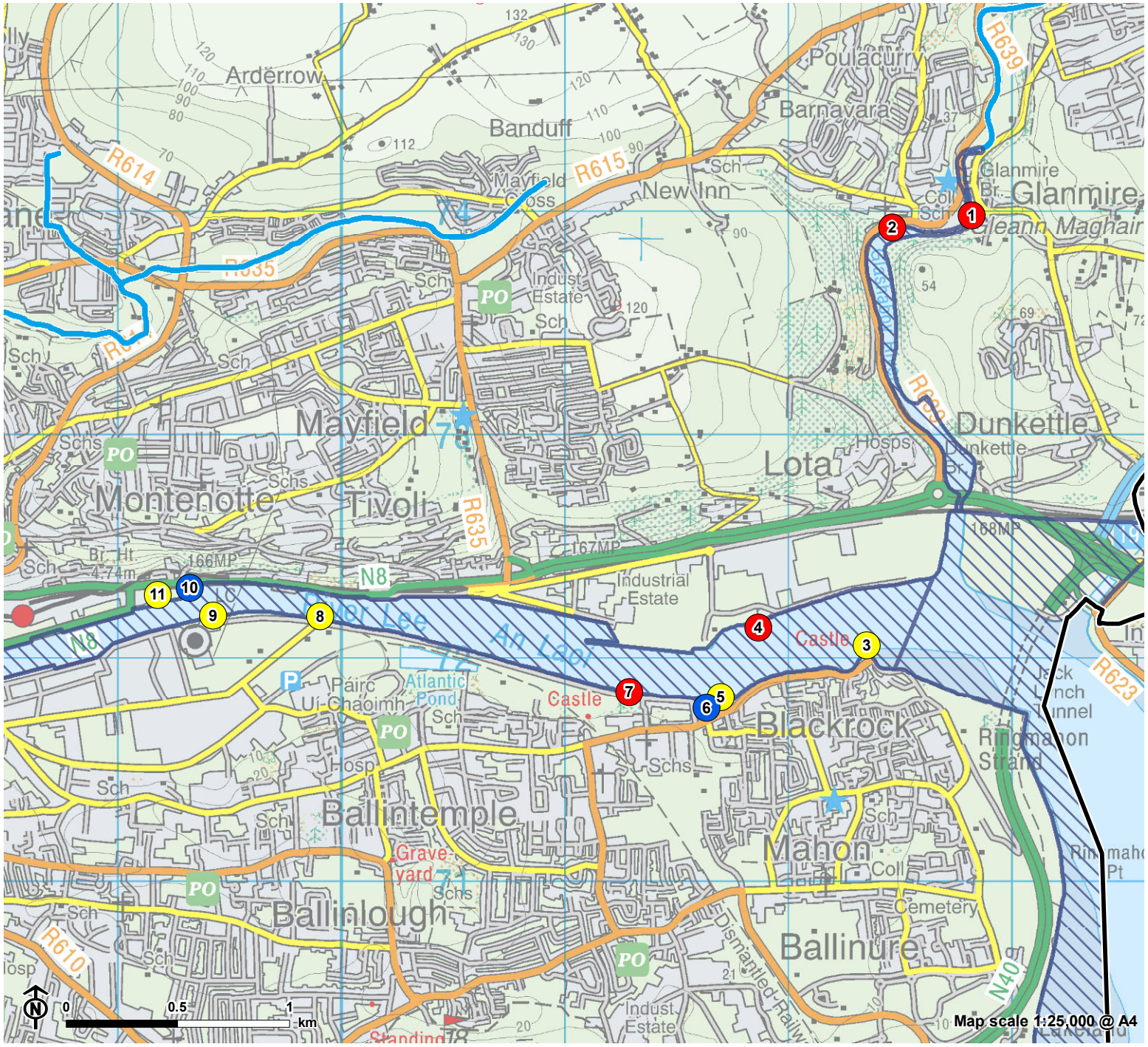
▪ Water activity providers e.g. Blackrock Sailing Club, Phoenix Kayak Club ▪ Urban Outdoor Project Initiative ▪ Meitheal Mara ▪ Corkumnavigation paddlers ▪ Naomhóga Chorcaï ▪ Cork Healthy Cities	

Upstream view of the River Lee

Green and Blue Infrastructure Support for City Development Plan
Cork City Council

LUC

Figure 14.7: River Lee access points: Glanmire to Blackrock City



Cork City Council boundary
River
Transitional waterbody

River Lee access requirements

Existing private access to be protected
Existing requiring improvement
To be created

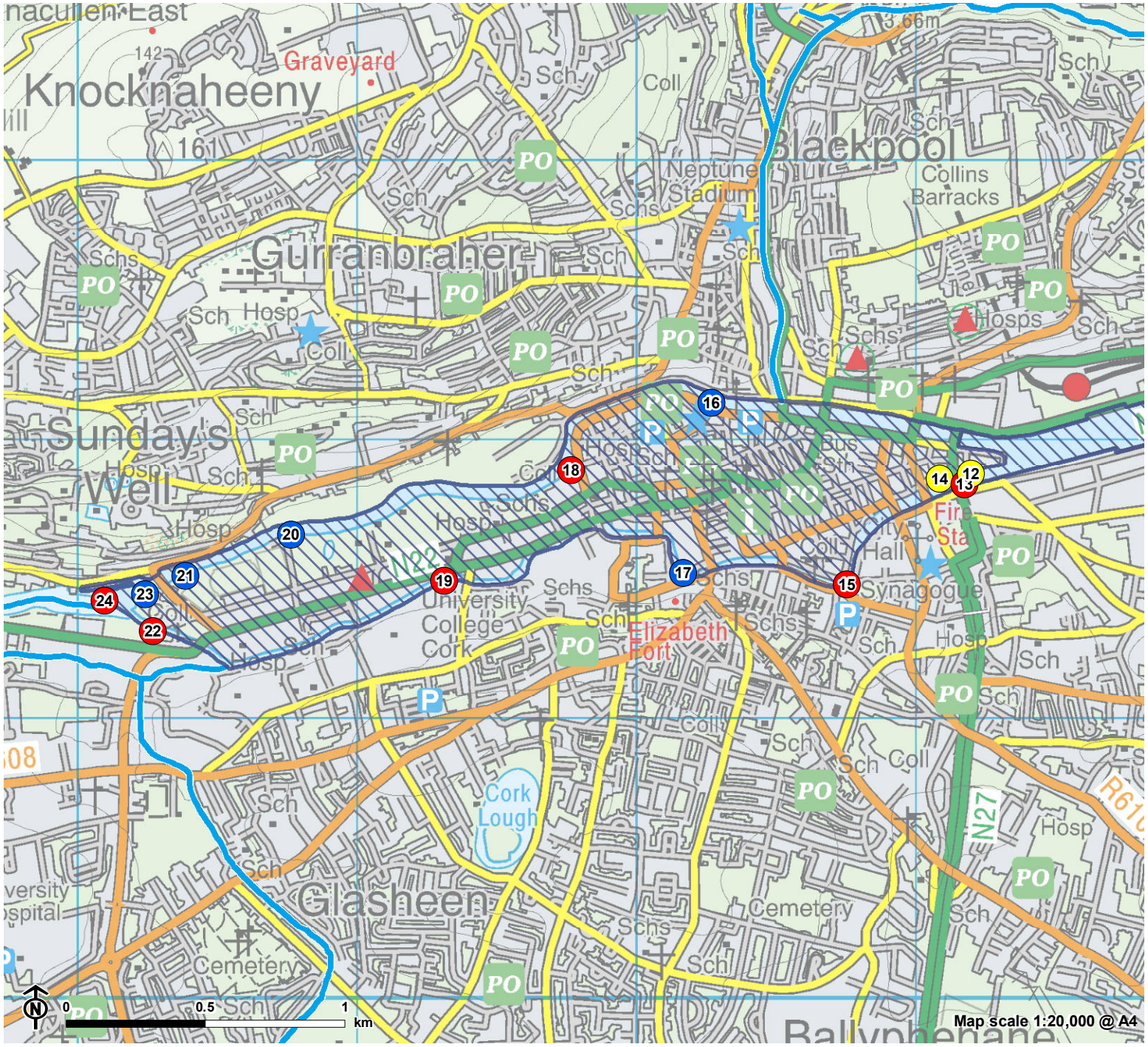
1. Science Polish
2. Glanmire Quay
3. Blackrock Castle
4. Tivoli development
5. Cork Boat Club
6. Blackrock
7. Marine Activity Centre
8. Lee RC
9. Shandon BC
10. Public Slip Glanmire Rd
11. Graving Dock

CB:CB EB:Chamberlain_K LUC FIGX_11280_r0_RiverLeeAccess_DDP_A4L 16/04/2021
Source: OSI, CCC

Green and Blue Infrastructure Support for City Development Plan
Cork City Council

LUC

Figure 14.8: River Lee access points: Waterworks to Albert Quay



Cork City Council boundary
River
Transitional waterbody

River Lee access requirements

Existing private access to be protected
Existing requiring improvement
To be created

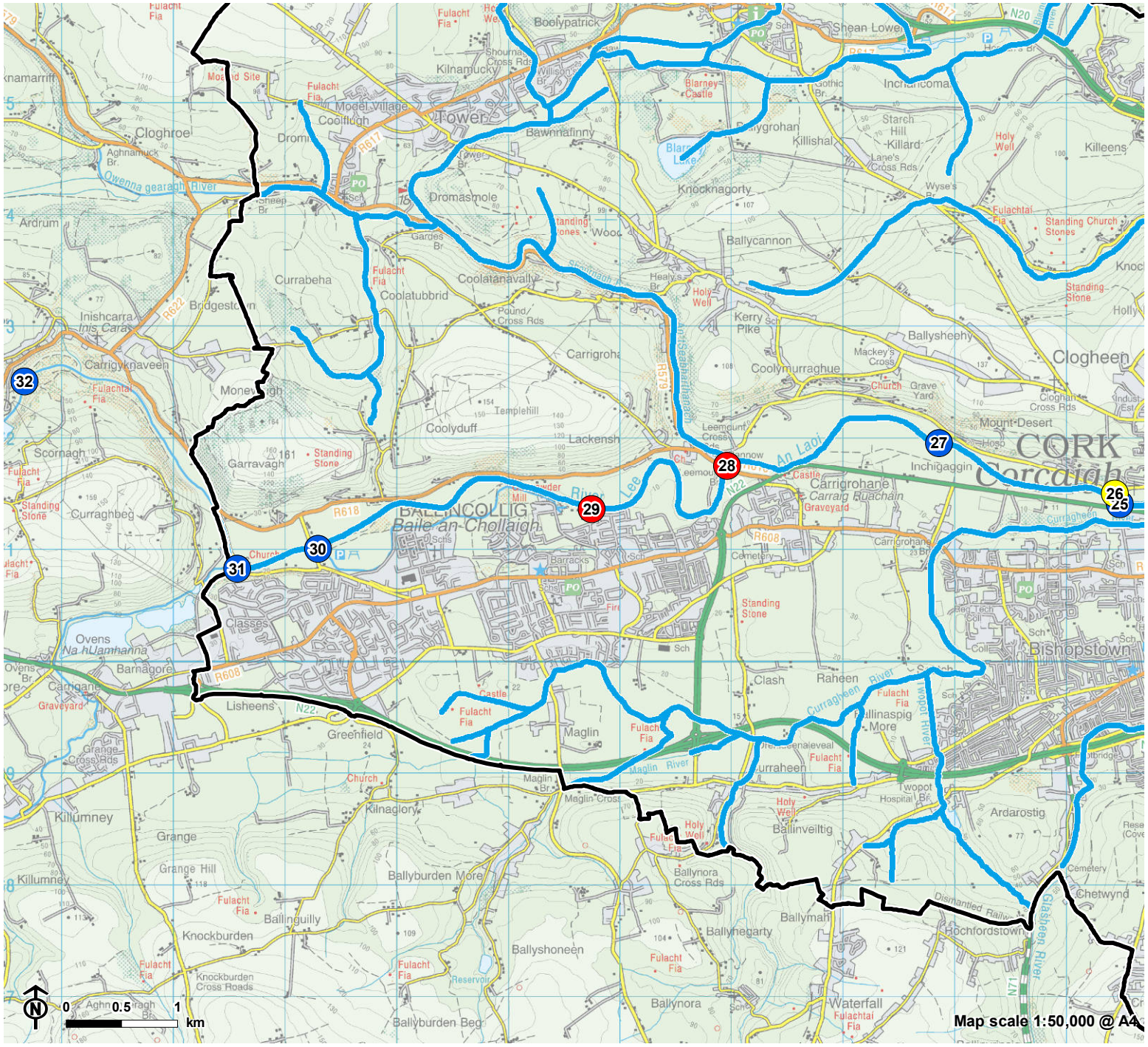
12. Custom House Marina
13. Albert Quay
14. Lapps Quay pontoon
15. Trinity Br
16. Shandon Br
17. Crosses Green
18. Mercy Hosp
19. Bons Secours - Glucksmann
20. Fitzgerlad Pk
21. Mardyke slip
22. Sacret Heart Br
23. Split weir escape
24. Split weir

CB:CB EB:Chamberlain_K LUC FIGX_11280_r0_RiverLeeAccess_DDP_A4L 16/04/2021
Source: OSI, CCC

Green and Blue Infrastructure Support for City Development Plan
Cork City Council

LUC

Figure 14.9: River Lee access points: Waterworks to Iniscarra Dam



CB:CB EB:Chamberlain_K LUC FIGX_11280_r0_RiverLeeAccess_DDP_A4L 16/04/2021
Source: OSI, CCC

City Scale GBI Projects for Cork City – 'Wilder Spaces'

Ecology, Biodiversity and Natural Heritage Data Project for Cork City

Vision

Collate all existing ecology, biodiversity and natural heritage baseline data into a user friendly integrated platform to inform future decision making.

Objectives

- Develop a successful approach to the collation of biodiversity and natural heritage data for use in spatial planning;
- Identify the barriers to obtaining and using existing data sources and adopt new approaches to overcome gaps in baseline data at the city level;
- Invest in integrated data collection and management systems tools, supported by local data collection and monitoring;
- Identify strategies for improved data collection, mobilisation and data sharing devices; and
- Highlight the benefits of integrating biodiversity information at an early stage in development planning.

Details of initiative

14.62 Land use decision making should aim to avoid, mitigate or compensate habitat loss and disturbance within the city. The creation and enhancement of GBI assets within Cork City should therefore be guided by robust baseline data to determine the existing value of functionally linked habitats. However, the use of biodiversity data in spatial data is often restricted by datasets of insufficient quality or coverage.

14.63 The provision of a platform to provide datasets relating to species, habitats and ecosystems will aim to improve the range of tools for data analysis. This initiative will increase the accessibility of biodiversity data and support future decision making. The collation of datasets from different sources will also allow the targeting of future data collection to address current gaps. The shared platform format will therefore be useful to a range of relevant stakeholders from national, city and community levels to inform biodiversity enhancement projects.

14.64 The project should identify opportunities to utilise new tools, additional datasets or citizen science initiatives to supplement existing datasets. Species monitoring data should also be used to inform management proposals in order to accommodate habitat provision where practicable and aid the delivery of Biodiversity Net Gain (BNG). The use of biodiversity data also enables ecologists to measure the achievement of policy targets, inform biodiversity related policy decisions and study how species are responding to future climatic change.

Delivery Partners:

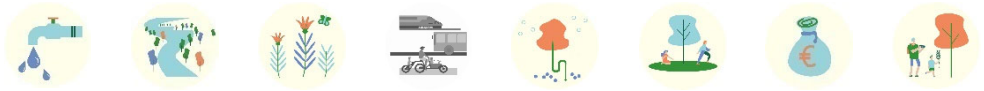
- The Council
- Cork County Council
- NPWS
- EPA
- Neighbouring Councils
- Cork Environment Forum

Recommended Professional Inputs:

- Cork City Biodiversity Officer (TBC)
- Ecologists
- Cork City Parks and Landscape Officer
- Landscape Architects
- Cork City Planners
- Cork City Heritage Officer

City Scale GBI Projects for Cork City – 'Wilder Spaces'

Glenamought River Valley Park



Vision

Safeguard and enhance the Glenamought River Valley as a linear wildlife corridor and riverside amenity as part of wider residential masterplanning proposals. The opportunity exists to provide an accessible green space and neighbourhood scale park to the north of the Study Area. Proposals should ensure consideration is given to the existing context, landscape character and potential sustainable transport connections.

Objectives

- Recognise and preserve the natural amenity and social heritage of the landscape at Glenamought River Park, promoting the role of the landscape as local amenity and recreational resource;
- Ensure emerging residential masterplanning proposals for the Tier 1 residentially zoned lands / north of City North Business Park are sensitive to the visual and natural amenity of the Glenamought River Valley;
- Explore the potential to create future physical connections between Glenamought River Valley Park and New Regional Park in the North West of Cork City;
- Adopt best practice urban and landscape design principles in the wider masterplanning of the site, ensuring emerging land uses complement the existing riverside context;
- Explore opportunities for the integration of a neighbourhood-scale park;
- Retain and enhance access to the riverside to increase the public amenity value of the river valley;
- Enhance and protect natural habitats along Glenamought River, including the wetlands of Murphy's Rock;
- Restore wetland habitats and maximise their value for flood alleviation, SuDS and carbon storage; and
- Explore the opportunity to formally recognise the biodiversity importance of the site through its designation as a special area of conservation.

Details of initiative

14.65 Stretching to the west of the Eight Arch Bridge and running east towards Kilcully Bridge, the Glenamought River Valley incorporates Bride Valley, the wetlands at Murphy's Rock and the corridor of the Glenamought River, located to the north of Cork City. Currently designated as an Area of High Landscape Value and encompassed within a Landscape Preservation Zone, the area is recognised locally for its amenity value.

14.66 The project proposes the preservation and enhancement of the existing landscape to create a neighbourhood scale park. The proposals seek to provide riverside amenity whilst retaining landscape character and promoting the space as an asset for local wildlife. The potential also exists to enhance the site's existing historic, cultural and social history as well as create wider physical connections to the New Regional Park in the North West of Cork City.

14.67 The masterplanning proposals should focus on ensuring development is undertaken sensitively to safeguard and protect the river corridor. This should be achieved through the adoption of best practice design principles which seek to balance the competing demands for recreation and biodiversity. Delivery of proposals for a neighbourhood-scale park offer the opportunity to integrate best practice principles of flood alleviation, biodiversity conservation, SuDS and carbon storage.

Delivery Partners:

- The Council (inter-departmental);
- Cork Healthy Cities;
- Murphy's Rock and Bride Valley Support Group;
- Cork Environmental Forum;
- Waterloo Renewal Group;
- Cork Green Spaces for Health; and
- Blarney Tidy Town & Kilcully.

Recommended Professional Inputs:

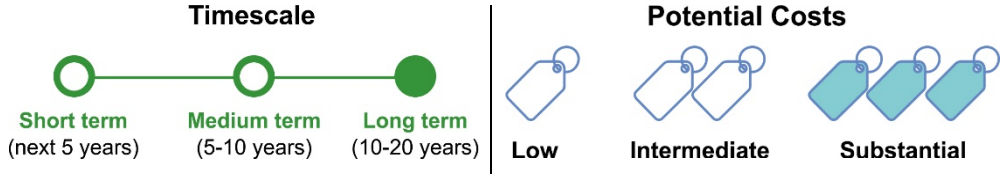
- Landscape Architects / Masterplanners;
- Cork City Parks and Landscape Officer;
- Cork City Heritage Officer;
- Cork City Archaeologist;
- Cork City Tree Officer;
- Cork City Engineers / Civil Engineers;
- Developers;
- Hydrologists;
- Cork City Biodiversity Officer (TBC); and
- Ecologists.

City Scale GBI Projects for Cork City – 'Destination Spaces'

New City Parks in the North East and North West of Cork City

Vision

Develop a scoping report for the planned delivery of two new strategic city parks to serve the north east and north west areas of the city.



Objectives

- Support draft conceptual proposals for the development of two new regional parks;
- Develop proposals which promote a range of both passive and active recreation to surrounding communities;
- Set guidelines for how the projects will be funded, implemented and managed over the timescales of the Development Plan period and beyond;
- Utilise GBI to enhance the urban context as well as provide a range of opportunities for recreation within the north east and north west areas of the city;
- Support the commitment listed in the Climate Change Adaptation Strategy to develop two new regional parks in the north of the city; and
- Explore the opportunity to create linkages with other green spaces in the area to promote the potential for active travel.

Details of initiative

14.68 The development of strategic parks and green spaces offer the potential for economic, social, cultural and environmental benefits. The implementation of two new multi-functional green spaces also provides an opportunity for successful place-making in areas proposed for sustainable growth and renewal.

14.69 The North West Regional Park is planned to serve Knocknaheeny, complementing the City Northwest Quarter Regeneration Masterplan and seeking to address a deficiency in park provision to the north of the city. In addition, the proposals seek to address an expected population increase over the next five to ten years. The project also proposes the development of a North East Regional Park, located within

Glanmire. Both schemes are of similar scale to the successfully implemented Ballincollig Regional Park and Tramore Valley Park, located to the south of the River Lee.

14.70 The project will require the development of landscape-led masterplans for each park proposal. The intervention should ensure sufficient expenditure for ongoing landscape management to support the capital works proposals. It is important therefore that the GBI assets are 'future proofed' i.e. that adequate provision is made for maintenance, including the responsibility for future activities and funding as part of detailed design development.

Delivery Partners:

- The Council (inter-departmental)
- EU Development Fund
- Cork Healthy Cities
- Cork Green Spaces for Health
- Cork Environmental Forum

Recommended Professional Inputs:

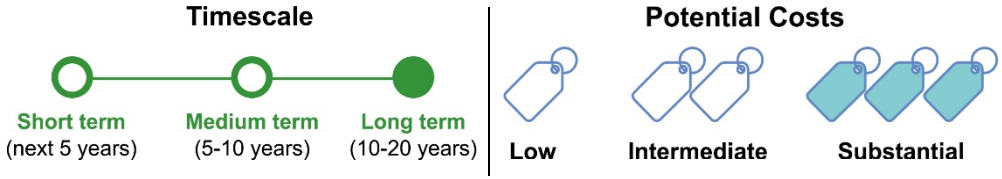
- Landscape Architects
- Cork City Parks and Landscape Officer
- Cork City Planners
- Cork City Engineers / Civil Engineers
- Cultural Heritage / Archaeologists
- Cork City Heritage Officer
- Cork City Biodiversity Officer (TBC)

City Scale GBI Projects for Cork City – 'Destination Spaces'

Scoping and Options Assessment for an International / National / Regional GBI Tourist Attraction in Cork City

Vision

Further promote Cork City as a tourist destination through the delivery of a GBI tourist attraction of international, national, or regional scale.



Objectives

- Deliver a new, large scale, eco-tourism attraction within Cork City;
- Further promote Cork City as a key location in Ireland for eco-tourism; and
- Explore the opportunity to enhance eco and nature-based tourism in Cork City by 50% by 2040.

Details of initiative

14.71 The opportunity exists to promote the tourism industry within Cork City and identify the potential for GBI assets to function as international, national or regional tourism facilities for nature-based or heritage tourism. Using an ecosystem services approach, the study should inform project scoping and help identify potential sites for eco-tourism attractions, including prospective design concepts and delivery.

14.72 The rising trend of eco-tourism and demand for green and ethical products offers the potential for GBI to form a valuable marketing tool to enhance the natural aesthetic of Cork City. The city possesses a wealth of GBI assets and the opportunity exists to promote Cork Harbour, the proximity to the Wild Atlantic Way as well as enhancements to cultural heritage tourist attractions. A new eco-tourism attraction could also be developed to connect with several notable natural features within Cork City; including the provision of large nature reserves or woodland tracts, forming wider linkages to the Boggeragh and Nagle Mountains to the north and the Shehy Mountains to the south.

14.73 A key benefit of providing a new large-scale eco-tourism attraction would be its contribution towards the local economy in Cork City, both from people visiting the attraction, but also tourists who chose to stay in the city during their visit. In addition, the new destination would provide

recreational, leisure and educational opportunities for residents in Cork City itself. This could subsequently have positive effects on health and wellbeing.

14.74 The new eco-tourism attraction should seek to be located whereby it can be easily reached via active and sustainable modes of travel. The integration of GBI into the proposals also offers the potential to provide green links between tourism attractions and amenities. The attraction should be accessible for all members of the public, including those with limited mobility.

Delivery Partners:

- The Council (inter-departmental)
- The EU Development Fund
- Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media
- Failte Ireland
- Cork Healthy Cities
- Cork Green Spaces for Health
- Cork Environment Forum
- Coillte

Recommended Professional Inputs:

- Cork City Tourism Officer
- Tourism Consultants and experts in visitor experience
- Access Consultants
- Cork City Planners
- Cork City Engineers
- Cork City Parks and Landscape Officer
- Landscape Architects

City Scale GBI Projects for Cork City – 'Destination Spaces'

Promotion of Cork City as a destination for water-based recreation

Vision

To support the delivery of actions and projects that promote Cork City's status as the second largest harbour in the world and form a key destination for water-based recreation.

Objectives

- Explore the opportunity to introduce improvements to enhance the provision of water based recreation within and along the River Lee and Cork Harbour; and
- Promote the delivery of a corridor of blueway access areas within Cork Harbour, linking the city and providing both active and passive recreation for both visitors and residents.

Details of intervention

14.75 Cork City offers important blue infrastructure assets that can provide active recreation and attractions. The River Lee boasts a wide variety of established water sports clubs (kayaking, canoeing, rowing, fishing), albeit availability of access to the water forms a significant issue. A hierarchy of specific locations should be focused on to provide a linked network of land and launching spots (e.g. Blackrock Harbour, The Marina, Fitzgerald Park, Lapps Quay, City Docklands, Tivoli Docklands and other areas) to provide as a series of publicly accessible linked landing spots for active and passive tourism). The initiatives listed below offer the potential to promote the city's blue infrastructure assets for recreational use:

- Development of a hub for water based activities at Blackrock village;
- Provision of new access points for the promotion of passive and active recreation;
- Development of the 'place making' potential of the 30 existing bridges spanning the River Lee in the City Centre;
- Publication of scheduled / forecasted river flows for recreational users of the watercourse, as regulated by ESB at Inniscarra Reservoir;
- Establishment of new trails and enhancement of the Lee to Sea Greenway to provide a range of active travel routes;

- Use of Fitzgerald Park as a potential green starting and landing point for blue recreation;
- Improvements in water quality to benefit recreational users of the watercourse; and
- Development of a City Centre 'angling hub' providing links to Cork Harbour.

Delivery Partners:

- The Council (inter-departmental)
- ESB
- PoCC
- Meitheal Mara
- River Lee Placemaking Group
- Cork Environmental Forum
- Waterways Ireland
- Lee to Sea Greenway Group

Recommended Professional Inputs:

- Cork City Tourism Officer
- Tourism Consultants and experts in visitor experience
- Access Consultants
- Cork City Planners
- Cork City Engineers
- Hydrologists and Civil Engineers
- Cork City Parks and Landscape Officer
- Landscape Architects

City Scale GBI Projects for Cork City – 'Destination Spaces'

Lee to Sea Greenway Biodiversity and Greening Plan

Vision

Preparation of a strategic plan to support the delivery of a world class greenway and active travel asset, promoting walking, running, and cycling through Cork City. Commencing at the River Lee Valley and farmland at Inniscarra Dam, the proposal passes through the City Centre and around Cork Harbour to the coast, before terminating at Crosshaven. The plan offers the opportunity to introduce significant biodiversity benefits through the creation of a diversity of habitat types and improvements to connectivity of the nature network.

Objectives

- Explore the opportunity to plan and deliver a greenway route which forms a regional tourism asset within Cork City whilst promoting connectivity with residential, historical and cultural locations within the city;
- Implement a traffic-free corridor for movement and biodiversity improvements, reinforcing the notion of naturalistic assets as 'destination spaces' within the city context;
- Enhance opportunities for active travel and long distance recreational routes, stretching from the River Lee Valley to Crosshaven;
- Reduce the dominance of the car by introducing GBI elements into public realm re-design;
- Provide a corridor for wildlife movement, protection of natural resources and associated green space buffer;
- Provide significantly improved facilities for cyclists and pedestrians along the Passage Railway Greenway route from Párc Uí Chaoimh to Mahon to improve its amenity value;
- Explore the feasibility to deliver a regional asset that attracts tourism, providing benefits for business, health and the environment; and
- Introduce riparian woodland planting along the route where space permits to increase the area of valuable habitat.

Details of initiative

14.76 The project will provide a coherent network of greenway for a wider range of users, including both recreational groups and commuters. Ensuring connections with existing sections of the route will also provide strategic benefits due to the potential increase in tourists using the long-distance route.

14.77 The opportunity exists to introduce direct access points along the route to small, medium and large employers, colleges, nurseries and primary schools, hospitals, music venues, sports clubs as well as the wider City Docklands strategic development.

14.78 The proposal will support the delivery of the Cork Cycle Network Plan and Cork City Walking Strategy which will enable the roll out of active travel infrastructure. The promotion of connectivity will also ensure that the route is well linked with other modes of sustainable transport such as train, buses and ferries.

14.79 Various infrastructure improvements are proposed; including the widening of the existing route from 3m to 5m over the entire length of the existing greenways from Párc Uí Chaoimh to Mahon, the provision of lighting and localised access improvements. The potential also exists to integrate biodiversity enhancements within the intervention as a central component to support pollinator populations, increase biodiversity and optimise the benefits for flora and fauna.

14.80 In general, access projects & link extensions for green transport corridors have a significant capital cost with regards to physical delivery. Delivery of the access & ecological packages may also need to be phased & assessed in order of priority (e.g. costs against greatest benefit for community & wider users), with appropriate delivery bodies working together within a coherent masterplan. However, small scale delivery by local bodies & interested parties could help to achieve the first links within a longer term plan.

Image source: Cork Cycling Campaign (https://corkcyclingcampaign.com/lee-to-sea-greenway/)

14.81 Liaison and promotion with key landowners will be important to secure 'buy in' and ensure the availability of land across the proposed route. A further consideration will be the sensitive design of the interface between the proposed route and existing land uses; including agricultural, woodland, watercourses and heritage land uses. The application of lighting to a traffic-free route to improve user navigation and discourage anti-social behaviour will also need to be discussed due to the potential effects of light pollution and adverse impacts on wildlife.

Delivery Partners:

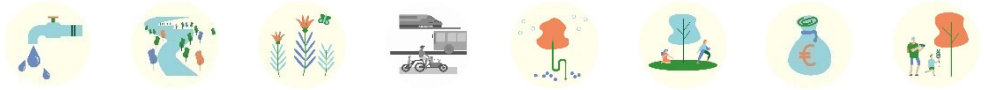
- The existing paths pass by numerous services and facilities including businesses, shops, schools, sports clubs, community centres, restaurants and cafes. This could be further exploited by connecting additional parts of the city, organisations, spaces and landmarks. Delivery Partners
  - The Council
  - Cork County Council
  - Cork Cycling Campaign
  - Transport and Mobility Forum Cork
  - Cork Environmental Forum
  - Green Schools
  - Healthy Cities
  - Bus Éireann
  - Cork Coca-Cola Zero® Bike Share Scheme
  - Cork City Climate Action Unit Manager
  - Cork City Tourism Officer

Recommended Professional Inputs:

- Cork City Parks and Landscape Officer
- Landscape Architects
- Hydrologists
- Cork City Engineers
- Civil Engineers
- Cork City Biodiversity Officer (TBC)
- Ecologists
- ECoW during implementation works within the bird nesting season

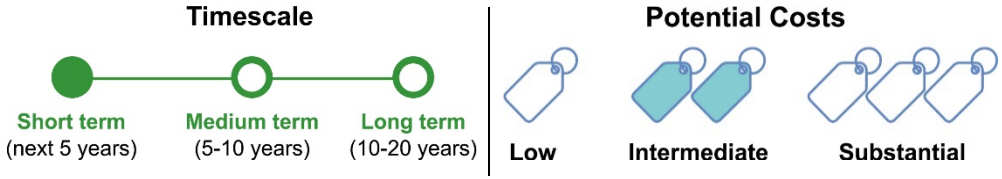
City Scale GBI Projects for Cork City – 'Destination Spaces'

Maritime Activities and Recreation Hub



Vision

Improve access to the River Lee by supporting the planning, design and delivery of a multi-use maritime activities centre within Marina Park, forming the gateway for aquatic and waterside activities in Cork City. The proposal should be in accordance with the Marina Park Masterplan.



Objectives

- Prepare a feasibility study which explores site-based optioneering for a new water-based recreational activity centre;
- Provide an operational base for recreational organisations requiring access to the river;
- Improve access to the waterside by increasing safe access points to the water and accommodating maritime boating activity along the riverside;
- Protect the landscape value of the proposed site by retaining the upper lands / escarpment and the availability of framed views of the riverside;
- Protect and enhance the biodiversity value of the river and river banks as part of the proposals;
- Promote the development of the lower lands for the purposes of boat-based activities, providing a direct frontage onto the pedestrianised Marina;
- Enhance the recreational, natural and cultural heritage value of the River Lee by promoting increased use and access of the water for recreational pursuits;
- Deliver a comprehensive programme of stakeholder engagement which seeks to promote increased accessibility to the waterside through the provision of a community based maritime facility;
- Promote physical activity and healthy lifestyles by enhancing the profile of aquatic sports within the Study Area;
- Promote the relationship between the maritime heritage of Cork City and its water-based GBI assets; and

- Deliver socially-inclusive, multi-functional and diverse community facilities which promote increased use of the riverside by a range of user-groups.

Details of initiative

The development of a Maritime Activities and Recreation Hub would aim to promote the recreational, natural and cultural heritage benefits of the River Lee. This would be achieved by enhancing safe access to the river for sports and activities including rowing, light craft and swimming, via an integrated public slipway / pontoon structure. In addition to improving physical access into the waterway, the project would enhance visual links with blue assets in the Study Area by creating high quality public realm and social facilities on the waterfront.

The project would consist of the following features:

- A central building, with storage and changing facilities to support rowing and swimming activities. The provision of swimming facilities will be subject to the results of a feasibility study examining the potential of a City Lido;
- A new integrated public slipway / pontoon structure, accessible for vehicle trailers which promotes increased access to the river;
- The provision of public open space which enhances the importance of the River Lee and the harbour in creating a unique sense of place; and
- Enhanced management of riparian vegetation within the riverine environment.

In order to maximise the GBI benefits of this, the following opportunities should be explored:

- Ensure that recreational activity does not result in detrimental impacts on biodiversity, with consideration given to existing nature conservation designations;
- Integration of community engagement, and where possible co-location and sharing of facilities with other community, enterprise and recreational facilities;
- Incorporation of public open space, allowing visual connectivity to the waterfront. This should include natural riparian and terrestrial habitats to enhance biodiversity.
- The maritime culture of the area should also be integrated into the design of the outdoor areas, including through the use of local artwork;
- Promotion of recreational access to the water environment from a combination of public programmes, community enterprise activities and private memberships;
- Adoption of sustainable design principles to ensure the sensitive design of the hub building; and
- Incorporation of water quality improvements, including monitoring.

Delivery Partners:

- Meitheal Mara;
- Blackrock Rowing Club;
- Sail into Wellness;
- Naomhóga Chorcai;
- Cork Dragons;
- Cork Arts 'n' Education;
- Men's Shed;
- Crew Fionnbarra;
- Cork Missing Persons Search and Recovery;
- Active Connections;
- Local Schools;
- Waterways Ireland;
- Cork Sports Partnership;
- Cork Harbour Festival;
- Marine Institute;
- Cork Environmental Forum; and
- Waterways Ireland.

Recommended Professional Inputs:

- Cork City Heritage Office;
- Cork City Archaeologist;
- Cork City Engineers;
- Cork City Planners;
- Cork City Biodiversity Officer (TBC);
- Hydrologists;
- Ecologists;
- ECoW during implementation works within the bird nesting season;
- Landscape Architects;
- Cork City Tourism Officer; and
- Consultation and Engagement Specialists.

Chapter 15
Development Plan Policy Recommendations

Project Ireland 2040 National Planning Framework and the RSES for the Southern Region provide strong support for protecting, enhancing and managing GBI in an integrated and coherent manner and outline how planning for GBI should inform the preparation of development plans. This section sets out a series of recommendations to ensure the principles of a GBI approach to land-use planning are embedded as a cross cutting theme in the policies and objectives of the Cork City Development Plan 2022-28.

15.1 Planning policy can play a critical role in the delivery of GBI, by setting clear expectations for it as part of long-term development plans. The Council has a duty to act on climate change, generate employment, maintain healthy functioning ecosystems, maximise physical and mental wellbeing, and protect and promote cultural and heritage assets. The GBI opportunities identified in this Strategy will help achieve these aims. GBI will form part of the overall mitigation for planned site allocations and other future development that comes forward for determination. However, despite the recognised

multiple benefits of GBI, it can often be difficult to deliver policy expectations due to competing policy priorities and concerns about viability. As such, GBI is often treated as a lower tier requirement at the application stage.

15.2 There is potential to strengthen the Council's GBI policy approach in the emerging Development Plan that will designate zonings for housing and employment uses, designate sites for environmental protection and contain policies to guide and manage development up to 2028. When designing a set of replacement policies, it is important to ensure that GBI is fully embedded within the Development Plan rather than dealt with through an isolated policy alone. An updated dedicated GBI policy should be accompanied by a Development Plan structure which 'mainstreams' GBI by weaving references throughout various policy areas. This will allow it to move outside any policy 'siloes' and support (and be supported by) other agendas, including health, economic and social policy areas.

GBI Policy Assessment Tool

15.3 Hislop, Scott and Corbett (2019)[204] developed a policy assessment tool to assess the quality of planning policies for GBI in 19 local development plans within the Central Scotland Green Network (CSGN) area. In accordance with the tool, two principles should guide replacement policies, focusing on providing both breadth and depth of policy coverage:

- Functional coverage i.e., the extent to which GBI is covered across all other chapters, including the introduction and vision for the Plan; and,
- Strength of policy wording i.e., the phrasing used to articulate the treatment of GBI.

15.4 A multi-criteria framework was developed comprising 23 assessment criteria which enabled a systematic approach to GBI assessment covering design, wider context, biodiversity, water, access, greenspace functions and stewardship (see Figure 15.1). The GBI policy recommendations in this chapter are guided by the literature review, baseline evidence, and findings of this Strategy, as well as the GBI policy assessment framework tool.

[204] Hislop, M., Scott, A., & Corbett, A. (2019) What Does Good Green Infrastructure Planning Policy Look Like? Developing and Testing a Policy Assessment Tool Within Central Scotland UK, Planning Theory & Practice, DOI: 10.1080/14649357.2019.1678667

Figure 15.1: Assessment criteria used to assess GBI policies in CSGN area

It is recommended that the Council considers supporting the Development Plan GBI-related policies by preparing a GBI Technical Guide to provide guidance on addressing GBI needs and what will be expected to be delivered through development. In addition to setting out and providing detail on the expectations for the City, the Technical Guide would also provide the opportunity to summarise design considerations and standards for GBI (including open spaces and play space), providing examples and precedents where appropriate.

Embedding GBI in Development Plan Policy

15.5 The **protection, enhancement, creation and linking of GBI assets to enhance the social, environmental and economic benefits of GBI** should thread throughout the Development Plan, including being identified as an aim and/or strategic objective of the Development Plan. The overarching aim of the GBI policy should be to **develop an integrated and multi-functional GBI network**. The Council should require all Local Area and Land Use Plans to protect, enhance, manage, and create GBI in an integrated and coherent manner.

15.6 The Development Plan should define what constitutes GBI and the wide range of ecosystem services provided by GBI. The GBI network comprises high-quality open spaces, parks, amenity spaces, woodlands, nature reserves, community allotments, trees, green roofs, green walls, gardens, hedgerows, waterways and waterbodies. It encompasses sites designated for their biodiversity value as well as wild, semi-natural and developed environments. It also includes the routes and corridors that link such sites, such as greenways, blueways, and other paths. GBI covers all land containing these features, regardless of ownership, condition or size. The wide range of invaluable ecosystem services provided by GBI include:

- biodiversity management and enhancement;
- flood and water quality regulation / sustainable drainage;
- carbon capture / local climate regulation;
- food, timber and other primary production;
- air quality and noise regulation;
- recreation and tourism;
- physical and mental health and wellbeing / social inclusion;
- economic development;
- setting of and access to cultural heritage assets;
- environmental education and awareness; and,
- visual amenity and sense of place.

15.7 The following sections outline recommendations for the GBI policy and for embedding GBI into the various sections of the Development Plan.

Design Principles and Placemaking for the GBI network

15.8 GBI planning involves a holistic approach. GBI should be considered 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 it is not treated as a 'nice to have but not essential' feature in the list of requirements for new development.

15.9 The development of a GBI checklist to enable project auditing will embed the expectations required of developers from the outset. In this way, expectations will be clear and GBI features can be designed in at an early stage rather than retrofitted later. This approach would also provide valuable certainty to the developer. It should also be recognised that some features – such as the integration of routes for hedgehogs, bat boxes and 'swift bricks' – do not imply significant cost but require consistent up-front design expectations of developers.

An example of best practice is the 'GI Checklist' prepared by Falkirk Council which summarises the key principles that developers should have regard to when designing new developments (see Figure 15.2). The Council should consider developing a similar GBI Checklist to include in the Development Plan or as part of a GBI Technical Guide document.

15.10 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. Development proposals should integrate new GBI effectively and coherently with the GBI network immediately surrounding the site and also create linkages with the wider network, where possible.

15.11 Development proposals should be designed to ensure new GBI assets are multi-functional rather than merely mono-functional landscaping, and should perform a range of functions including (but not limited to):

- water management, contributing to minimising surface water run-off, climate change adaptation and improvement of the ecological quality of watercourses and water bodies;
- interconnectivity of spaces allowing the free movement of people and species through the urban and rural environment;
- habitat enhancement, delivering the requirement for at least no net loss of biodiversity and contributing positively to biodiversity conservation; and,
- provision of high-quality open space to promote healthy, active and inclusive lifestyles.

15.12 Development proposals which would result in the loss or fragmentation of the GBI network should be refused. In exceptional circumstances, where proposals will result in the loss of an element of the GBI network, high quality on-site or off-site replacement of GBI should be required to compensate

for any GBI lost or reduced as a result of the development. In such cases, the onus should be on the developer to demonstrate that this would not result in detriment to the overall GBI network. Where it is not possible to provide on-site or off-site replacement GBI, a financial contribution towards improving the GBI network should be sought from the developer, having regard to the scale, nature and location of the proposed development.

15.13 The Development Plan should seek to safeguard designated and potential sites and corridors that form part of the network of GBI across the City and should only permit development either within or adjacent to such sites and corridors where it does not prejudice the retention, use, enhancement or further development of the network. Such development proposals should, where appropriate, incorporate access to the GBI network.

Figure 15.2: Falkirk Council's GI Checklist

APPENDIX 1: GREEN INFRASTRUCTURE AND NEW DEVELOPMENT CHECKLIST

	Compliance (Yes/No/Not Relevant)	Comments
Process		
Design team assembled with appropriate qualifications, experience and accreditation.		
Site appraisal carried out to appropriate level		
Pre-application engagement with relevant stakeholders		
Pre-application discussions on conceptual design carried out		
Planning applications submitted with necessary green infrastructure supporting information		
Well Being: Open Space		
Appropriate multifunctional open space incorporated in design		
Open space properly integrated into layout		
Recreational needs of development provided for in terms of different categories of provision (playspace, parks, sports areas, natural greenspace/green corridors, guided by local open space audit)		
Any loss of open space compensated appropriately		
Well Being: Active Travel		
Active travel provision integrated into development providing access to active travel network and local facilities		
Active travel links are safe, convenient and direct		
Active travel links cater for different types of users		
Additional infrastructure is provided where appropriate		
Severance/impediments to existing active routes is avoided		
Specification of routes appropriate to level of use, users, and location		
Access plan produced and submitted		

Well Being: Landscaping		
Landscape led approach taken		
Landscape plan produced which is consistent with other plans		
Development achieves a good landscape fit		
Trees and planting incorporated into proposals, designed to achieve multiple benefits		
Species choice appropriate		
Water: Sustainable Drainage		
Surface water management and flood risk considered at the outset of the design process		
Water used positively and creatively within the layout		
SUDS requirements incorporated, following relevant guidance		
Scottish Water's Surface Water Policy taken into account		
Water: Water Environment		
Water environment safeguarded and enhanced where opportunities arise		
Appropriate buffers provided between development and any water bodies		
Unnecessary engineering works in the water environment avoided		
Enhanced public access provided to water bodies provided where appropriate		
Wildlife		
Biodiversity enriched in and around the site		
Approach informed by site audits, survey work and LBAP		
Existing habitats integrated into landscape design following the five stage approach		
Opportunities to create new habitat have been maximised		
Wildlife corridors, buffers and stepping stones created or safeguarded		
Management and Maintenance		
Common areas such as playspaces, connecting paths, landscaped areas etc. have been designed to be well managed and maintained		
Landscape Management and Maintenance Plan (LMMP) submitted with all required information		
SUDS maintenance arrangements set out within the drainage strategy and cross referenced to the LMMP where appropriate		

GBI and the Water Environment

15.14 The management of surface water and flood risk should be considered at the outset of the design process. Development proposals should be required to integrate naturalised and biodiverse SuDS into the landscape framework for the site and wider GBI network. Schemes should replicate natural drainage 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 roofs on buildings to large areas of open space. SuDS features should be designed to provide safe access, enhance landscape character and biodiversity, and improve the aesthetic and amenity value of the development. The Development Plan should ensure the GBI network is able to contribute to future changes and expansion for climate change adaptation. Development proposals should integrate areas with potential for natural flood alleviation into the landscape framework for the site.

15.15 The Development Plan should seek to create or improve access to the City's water resources for amenity and recreational purposes, through the creation of greenways and blueways, to allow access for a wide range of users. The Development Plan should ensure an appropriately sized buffer zone (e.g., not less than 10 metres from the top of banks of all watercourses), between development and waterbodies to maintain natural fluvial processes and to protect the water environment. Greenways / blueways within the protection zone should be considered on a case-by-case basis, subject to appropriate safeguards and assessments, as these routes increase the accessibility of the GBI network. Development proposals should enhance the GBI network by deculverting, remeandering, removing redundant structures or barriers to fish passage and enhancing bankside habitat, where appropriate.

GBI and Biodiversity

15.16 Development proposals should be designed to protect, enhance and expand the existing GBI network, as well as

creating 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 should focus on the priority habitats and species identified in the Cork Biodiversity Action Plan and should include native species of Irish or local provenance in landscaping as these are biodiversity rich.

As an example of best practice, the UK Government's 25-Year Environment Bill205 sets a target for new developments to demonstrate a 10% increase in biodiversity on or near development sites, supported by a minimum 30-year legacy, habitat management plan and landowner agreement. BNG is "an approach to development that leaves biodiversity in a better state than before"206. The aim is to minimise losses of biodiversity and help to restore ecological networks. Although not a legal requirement in Ireland, the Council should consider prescribing in planning policy a locally appropriate BNG target where development proposals should achieve BNG by providing a percentage of on-site or off-site biodiversity rich GI, linking to the surrounding GBI network.

GBI and Access / Connectivity

15.17 Proposals for new developments should promote healthy environments that support and encourage active travel which maximise connections to the city's network of GBI. Active travel provision should be fully integrated into the design process for developments from the outset rather than retrofitted at a late stage.

15.18 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 appropriate. Where appropriate, development proposals should provide additional infrastructure such as seating, signage, cycle parking, showers etc.

15.19 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.

15.20 Development proposals should be accompanied by an Access Plan showing existing and proposed routes, and specification. The specification of new and upgraded routes

[205] Environment Bill 2020. Available at: https://publications.parliament.uk/pa/bills/cbill/58-01/0220/200220.pdf

[206] https://cieem.net/i-am/current-projects/biodiversity-net-gain/

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.

15.21 The Council should work with neighbouring local authorities to coordinate the delivery of GBI along strategic routes in order to strengthen the overall integrity of the network.

GBI and Landscape / Historic Environment

15.22 Existing GBI (e.g., mature trees and hedgerows) should be identified at the initial stages of the planning process for development and should guide the design of an appropriate site layout. Landscaping Management Plans should be submitted as part of development proposals illustrating how existing GBI, and opportunities to create more linkages, have informed and been incorporated into the development, layout and, if appropriate, management proposals. New GBI should be implemented at an early stage in the development to allow adequate time to become successfully established.

15.23 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.

15.24 GBI should thread through and surround the built environment and connect the urban area to its wider rural hinterland. The Development Plan should support the greening of urban centres, which will not only provide valuable connections from urban centres to the wider countryside thereby strengthening the GBI network but will also provide a range of other benefits: screen unsightly views, act as green lungs which mitigate air pollution, buffer from noise, improve microclimate and contribute to climate change adaption for the development by providing shelter, summer shading/cooling.

15.25 The Development Plan should support the use of temporary greening of land awaiting development, where appropriate. Consideration should be given to whether greening of a site could bring about a positive impact to the local environment and overall amenity of the area, without prejudicing the effectiveness and viability of the site, if it is allocated for development in the longer term.

GBI and People, Communities and Health and Wellbeing

15.26 Although all types of GBI asset are multifunctional, some features are more closely aligned with the provision of benefits for people, communities, health and wellbeing. 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. The scale and type of open space and GBI provided should be commensurate with the size and needs of the development and the character of the area.

15.27 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 associated informal play and recreation and to encourage active travel.

15.28 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. Where appropriate, development proposals should provide additional infrastructure such as seating, signage, and accessible toilet facilities for those with mobility issues, etc. Where there is a recognised need for new open space in an area, this should complement and/or contribute to the existing open space provision and GBI network.

15.29 Allotments, community gardens and urban farms form important GBI assets and contribute to the health and wellbeing of society through increased physical activity, social interactions and increased community resilience. Development proposals should be designed to provide community food growing spaces. The Council should support residual land in developments being used for the provision of GBI including community food programmes (allotments) and areas for pollination.

Maintenance & Management of GBI

15.30 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 the outset, the range of benefits associated with GBI will reduce quickly over time.

15.31 The Council considers 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 should require a Landscape Management and Maintenance Plan as part of the Council's approval prior to the development commencing. The Plan should detail management and maintenance requirements for GBI, including SuDS and any natural flood alleviation, and GBI on or off site. This is to facilitate ongoing site management and should detail the resourcing and long-term stewardship.

GBI Funding

15.32 Beyond funding from developer contributions, GBI opportunities could be delivered from a diverse range of funding mechanisms. Funding will be dependent on the type of scheme, its origins and functions. Some proposals will need capital funding to establish a GBI asset and subsequently revenue funding to secure its long-term management. A new SuDS installation, for example, will require capital investment to initially create the scheme as part of development proposals, as well as revenue funding for its long-term maintenance and management to secure its functionality.

15.33 Potential sources of funding for different forms of GBI could include:

- EU Rural Development Programme;
- EU Structural Funds;
- EU INTERREG VB Atlantic Area – Transnational Cooperation Programme; and,
- EU INTERREG VB North-West Europe – Transnational Cooperation Programme.

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