Chapter 6: Biodiversity and Green Infrastructure

Strategic Aim:

Protect and enhance Edenderry Town's natural assets of clean water, biodiversity, landscape, green infrastructure, natural heritage and agricultural land, while maintaining ecosystem services and improving resilience to climate change.

6.1 Introduction

Edenderry has an abundant stock of natural capital that in turn provide a wide range of ecosystem services to residents. In line with Regional Policy Objective (RPO) 3.4 of the Eastern and Midland Regional Spatial and Economic Strategy, the Council promotes an ecosystem services approach in the preparation of this Local Area Plan. The four main types of ecosystem services are provisioning, regulating, habitat and cultural, each of which are defined in Table 6.1 below.

Table 6.1 Definition of Each Type of Ecosystem Service

Type of Ecosystem Services	Definition
Provisioning services	Products obtained from ecosystems such as food, fresh water, wood, fibre, genetic resources and medicines.
Regulating services	Benefits obtained from the regulation of ecosystem processes such as climate regulation, natural hazard regulation, water purification, waste management, pollination and pest control.
Habitat services	Provision of habitats for migratory species and to maintain the viability of gene-pools.
Cultural services	Non-material benefits that people obtain from ecosystems such as spiritual enrichment, intellectual development, recreation and aesthetic values.

6.2 National and European Designations

Whilst there are a number of designated sites near the town of Edenderry, there currently are no Natura 2000 sites, Special Protection Areas or Special Areas of Conservation within the Plan Area.

The Grand Canal is a proposed Natural Heritage Area (pNHA) identified under the Wildlife (amendment) Act 2000 in recognition of its nationally important habitats, species and diversity of natural attributes. The ecological interest that underlies the pNHA is taken into account in decisions on planning applications. The designation of sites within Edenderry and subsequent protection afforded to them does not always preclude development from occurring. However, the Council's role is to ensure that development, when considered appropriate, is carried out in a manner that does not impede or disturb the biodiversity of the proposed/designated site.

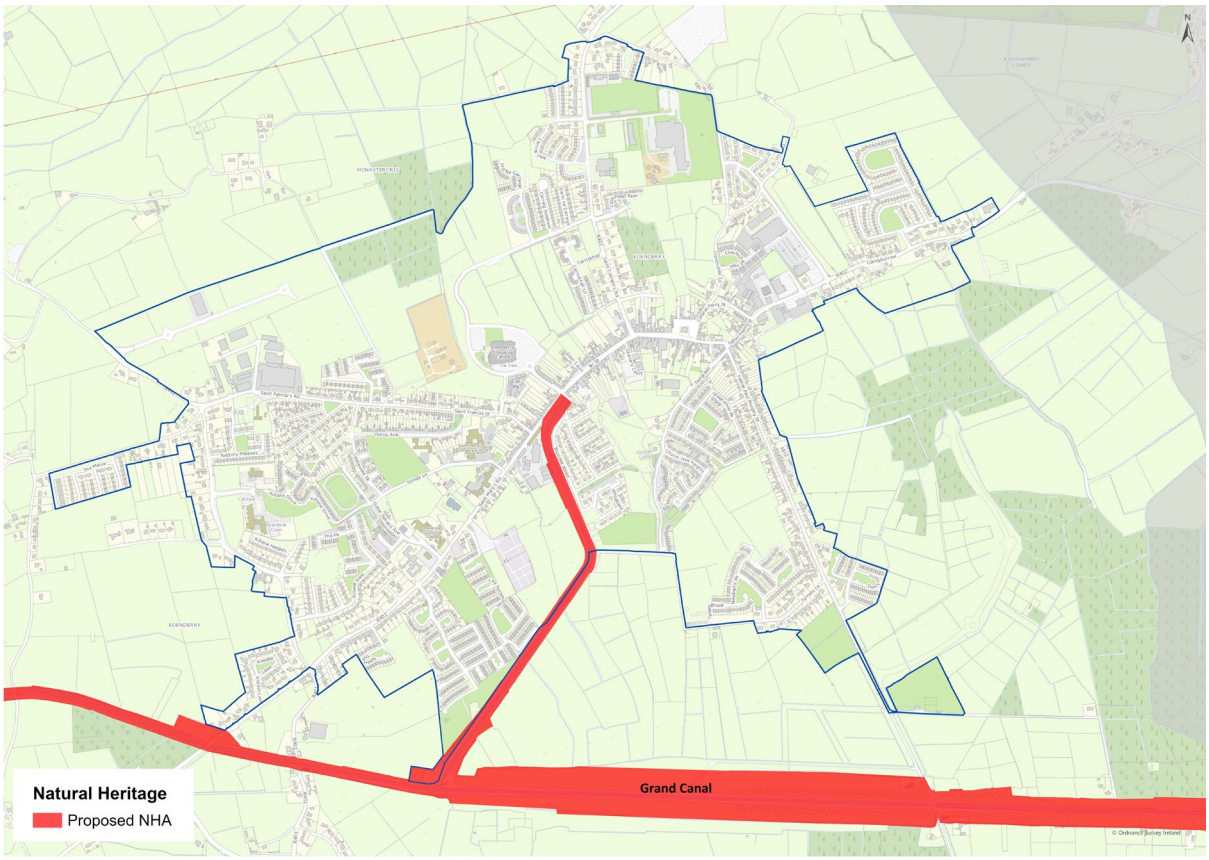

Figure 6.1 Proposed Natural Heritage Areas in Edenderry

6.4 Landscape Sensitivity

The Offaly County Development Plan 2021-2027 contains a Landscape Classification for the County that classifies the different landscapes of the County in relation to their different characteristics and values and their degree of sensitivity to various kinds of development.

Much of Edenderry is classified as 'Low Sensitivity'. This class largely encompasses the Plan area's main urban and farming areas. These areas comprise natural enclosing features (e.g. topography, vegetation) which have the capacity to absorb a range of new development. These areas can effectively absorb appropriately designed and located development.

The Grand Canal, which runs in an east to west direction south of the town and harbour branch of same to the north east is classified as 'High Sensitivity'. These areas are vulnerable landscapes with extremely low capacity to absorb new development.

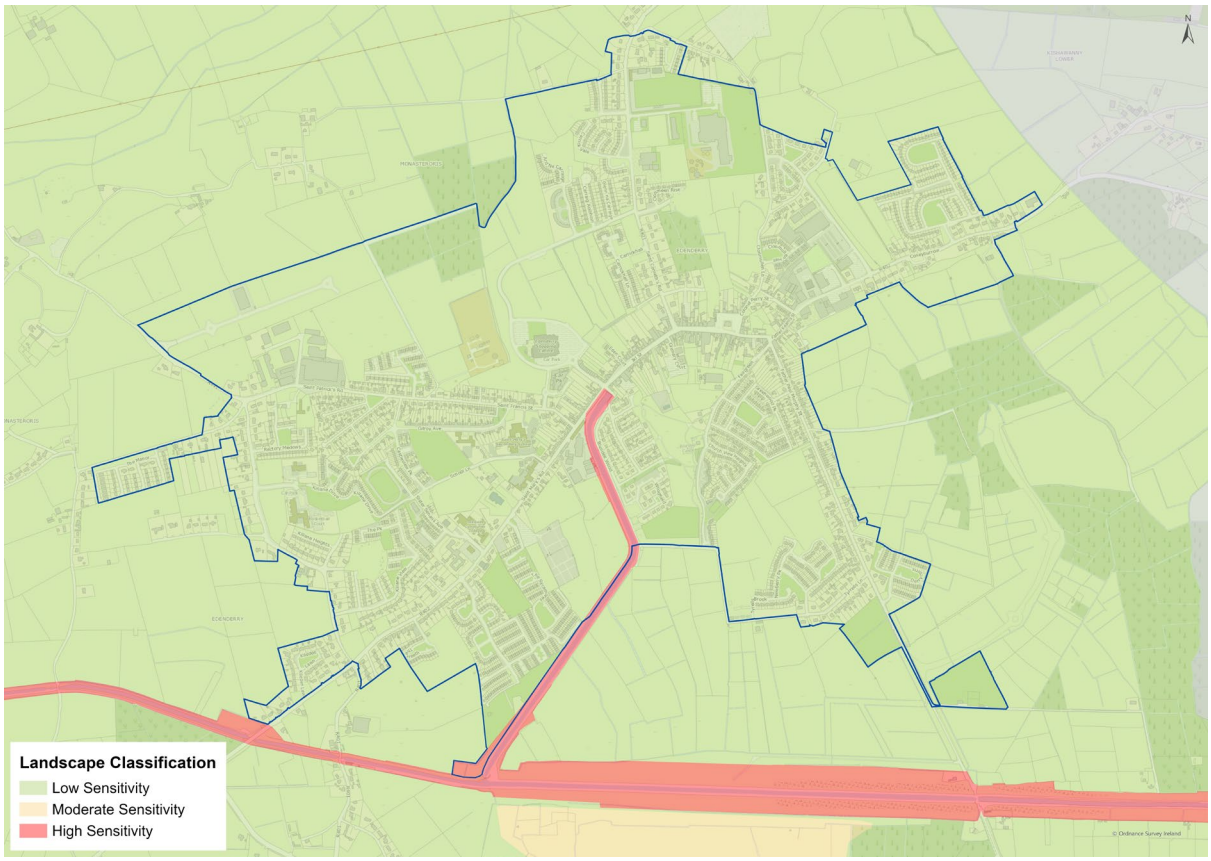

Figure 6.2 Landscape Classification

6.5 Green Infrastructure

The term Green Infrastructure (GI) can be broadly defined as integrated and interconnected networks of green space and water capable of delivering ecosystem services and quality of life benefits to people. It includes features such as parks, gardens, green roofs, blue roofs, green walls, rivers, lakes, canals, peatland, wetland landscapes, uplands, greenways, blueways, woodlands and farmlands in our countryside and settlements. This Local Area Plan takes a proactive approach towards planning and managing the GI network of Edenderry by seeking to maximise the benefits of the multi-functionality that GI provides. In protecting and enhancing the green infrastructure network of the town, important amenity and recreational spaces can be provided for communities, thereby contributing to the health and quality of life of residents and allowing for increased climate resilience within the town in the years ahead.

Article 10 of the Habitats Directive recognises the importance of ecological networks as corridors and stepping-stones for wildlife, including for migration, dispersal and genetic exchange of species of flora and fauna. The Directive requires that ecological connectivity and areas of ecological value outside the Natura 2000 network of designated ecological sites are maintained and it recognises the need for the management of these areas through land use planning and development policies. Ecological networks are important in connecting areas of local biodiversity with each other and with nearby designated sites to prevent islands of habitat from being disconnected entities. Ecological networks are composed of linear features, such as treelines, hedgerows, waterways, which provide corridors or stepping-stones for wildlife species moving within their normal range. They are particularly important for mammals, especially for bats and small birds.

6.5.1 Existing Green Infrastructure Network

As can be observed from Figure 6.4 below, which maps the town's GI Network, Edenderry benefits from GI assets that creates an attractive setting for residents and visitors alike.

Figure 6.3 Open Space and Woodlands at Castleview Park, Edenderry

The primary GI assets in the town are the extensive grounds of the Blundell Park in the centre of the town, the Grand Canal, the River Boyne and large tracts of agricultural land. These primary assets are supported by a wide range of playing pitches, public open spaces, agricultural grassland, woodlands and grassy strips between footpaths and road surfaces, all of which perform different GI functions.

Table 6.2 Typologies of Green Infrastructure in Edenderry

Category	Examples in Plan Area
Agricultural land	Land managed for agriculture, including grazing lands and crop production fields, to the south and west of the Plan Area allow for food production, act as ecological corridors and stepping-stones.
Green areas for water management	Lands designated Constrained Land Use to protect urban areas from flood damage and help adapt to changing climate patterns. These areas are also suitable for important walkways for local residents.
Blue Areas	The Grand Canal and the River Boyne comprise the town's most significant water bodies providing many benefits; supporting tourism, forming part of storm surge and flood management providing recreation and exercise space and biodiversity.
Parks, gardens and public open space	Blundell Park, playing pitches, public open spaces within residential and business park developments, woodlands, and shrub lands efficiently bring biodiversity into the town and provide recreation space for residents improving quality of life.

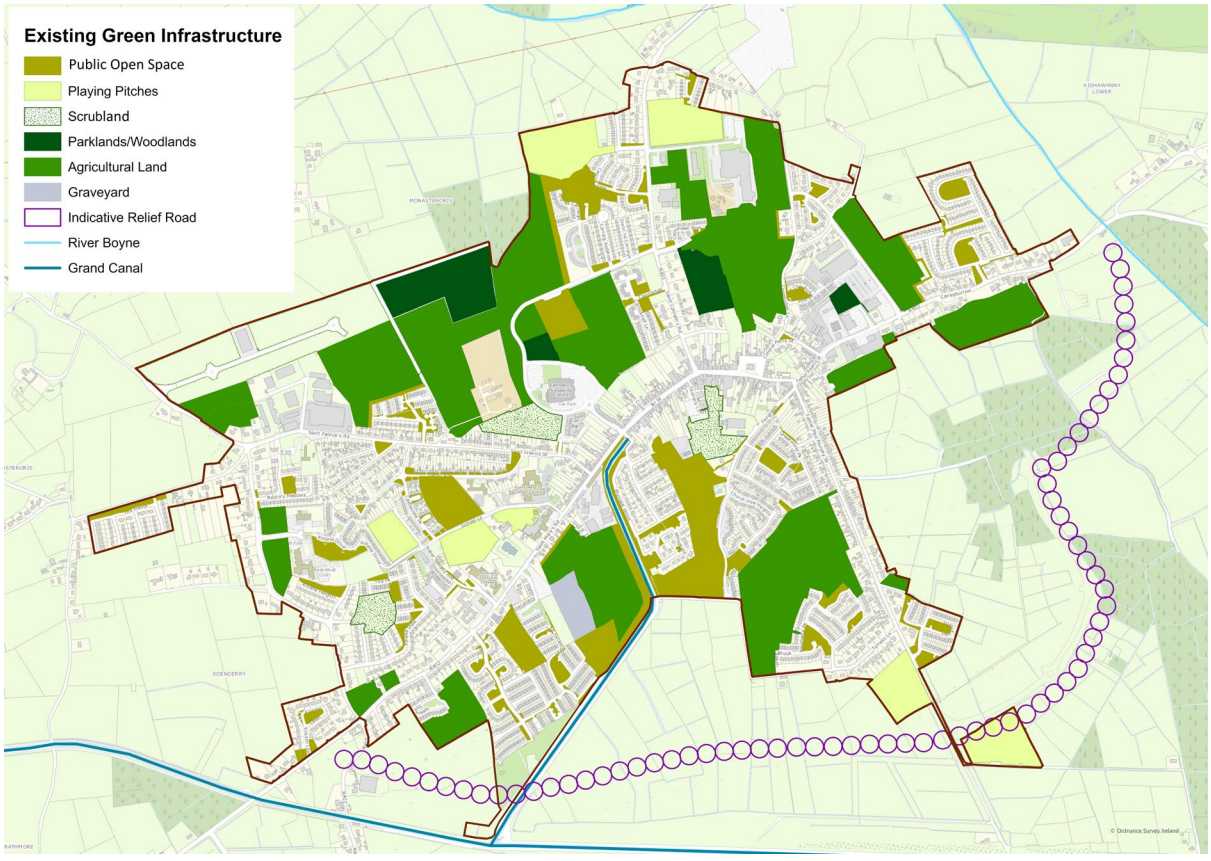

Figure 6.4 Existing Green Infrastructure in Edenderry

Blundell Park

Blundell Park occupies an area of approximately 9 hectares on elevated ground within the centre of the town and provides magnificent views of the surrounding landscape, in particular, impressive views to the south-west extending along the Grand Canal. Blundell Park is a rich biodiversity and GI asset with its extensive parklands and grasslands, clusters of early mature mixed trees to the southeast and north of the castle ruins and to the south of the church along with mature beech trees along the southern side of Blundell Wood.

Figure 6.5 Blundell Park, Edenderry

Blundell Park has huge potential with its town centre location to become a safe and attractive recreation and natural play space, as well as an educational resource for heritage, climate action and biodiversity.

In addition, the development of the wider Blundell Masterplan Area (see Section 3.3) presents an opportunity to incorporate the park as the town centre's green space, in addition to creating green streets and public realm providing a more diverse urban environment and connected town ecosystem for people and wildlife. Enhancing the setting of the castle through high quality landscaping will transform the experience of the castle, creating an attractive town landmark.

Grand Canal

The Grand Canal is one of Edenderry's prime amenity assets providing regional connections and future aspirations, along the Grand Canal Greenway, to link Edenderry with Tullamore, Lough Boora Discovery Park and the River Shannon.

The canal is also an incredibly important wildlife and biodiversity corridor, providing a huge variety of habitats such as reed and sedge swamps along the margins of the canal in addition to grasslands along the canal banks which act as a transition zone between terrestrial and aquatic habitats. Rye Grass, Meadow Grass and a colourful array of flowers such as meadowsweet, Field Scabious, Ladies' Bedstraw, Bird's Foot Trefoil, Ox-Eye Daisy all occur during the summer. Ash and willow are among the most common tree species found along the canal banks.

Figure 6.6 Grand Canal, Edenderry Branch

A bridge across the canal would improve connectivity, linking the canal and the park with the town. The addition of new pedestrian and cycle links across the canal will provide opportunities for people to cycle and walk to local facilities and recreational attractions and to access a much wider network of natural ecosystems.

Whilst the Grand Canal offers significant opportunities for recreation and amenity, these provisions must be appropriate to the role of the Canal as a key biodiversity corridor.

River Boyne

The River Boyne is located to the north and east of Edenderry and forms the boundary between County Kildare and County Offaly at that point. The river in addition to being a strong ecological corridor containing a valuable biodiversity resource, is also recognised as one of Ireland's premier game fisheries offering a wide range of angling. This Plan recognises the importance of protecting and enhancing water quality and the multitude of benefits to the local community in Edenderry that good water quality supports.

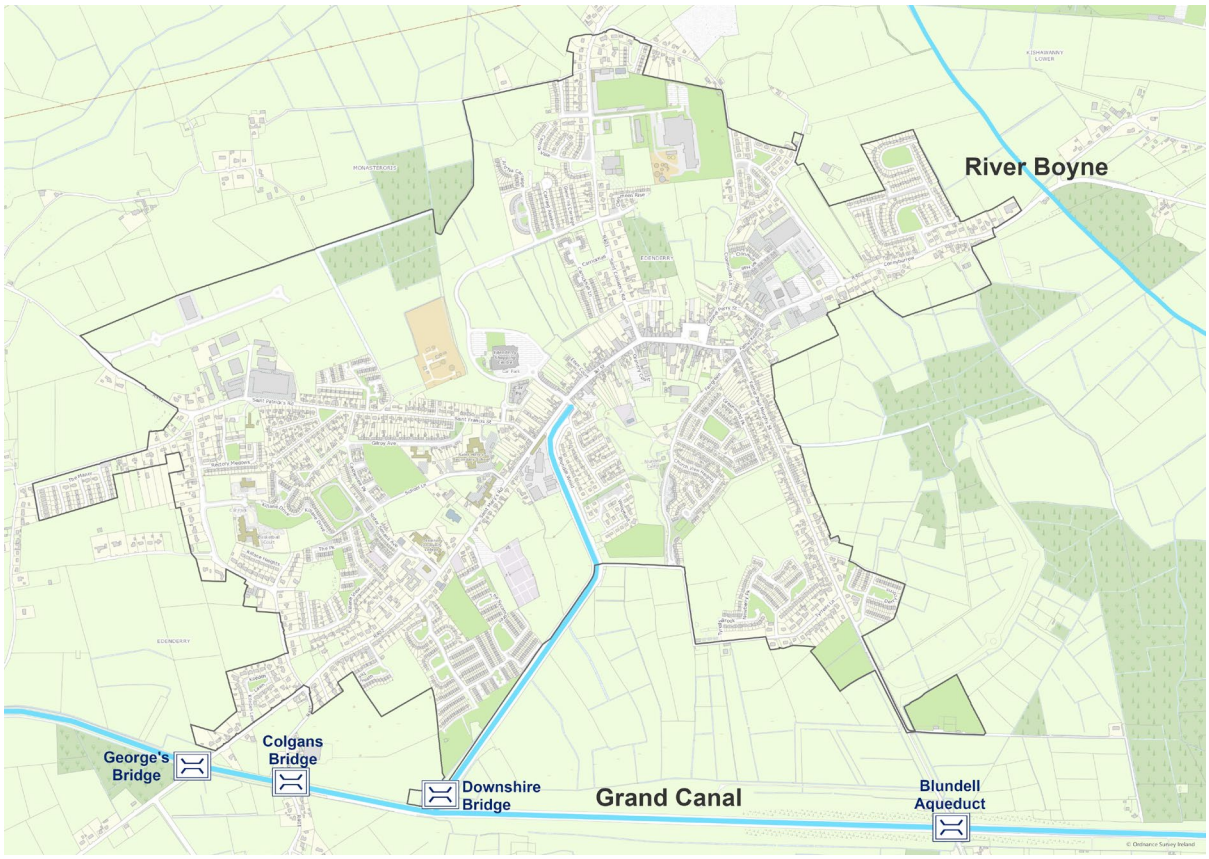

Figure 6.7 Significant water bodies in Edenderry

Figure 6.8 Existing pocket park at Kishowanny, Edenderry

There exists an opportunity to extend the existing pocket park at Kishowanny Bridge, adjacent to the River Boyne, in the east of the town, to provide a eco-friendly looped walkway or nature trail, which would greatly contribute to the town's green infrastructure providing vital amenity and recreational space for the local community.

The planting of appropriate and suitable native trees along riverbanks is important as they provide shade and shelter for fish, help stabilise riverbanks, and help regulate floods while their leaves provide food for aquatic creatures.

6.5.2 Pocket Parks, Community Gardens and Allotments

Pocket parks, community gardens and allotments utilise small spaces efficiently to bring biodiversity into urban areas, provide high-quality recreation spaces for residents and improving quality of life for all. The Council considers that there exists potential for the provision of pocket parks, community gardens and allotments in the Plan Area at the following locations:

- Tyrell's Brook, adjacent to Grand Canal link route;
- West of Edenderry Shopping Centre;
- West of Gael Scoil and Scoil Bhríde;
- At site of former Killane Chapel;
- At River Boyne Bridge/R402;
- At Famine Graveyard, Sr. Senan Court;
- West of St Mary's Cemetery adjacent to the Grand Canal.

Pocket Parks and Allotments are shown on Figure 6.13 below.

6.5.3 Pollination Zones/Biodiversity Zones

The Council supports pollinator friendly planting and wildlife strips or Biodiversity Zones to enhance biodiversity at approaches to the town, roundabouts, peripheral open space areas in residential areas, along inner relief roads, within the Edenderry Business Park and areas connected to woodlands/farmlands/riparian zones throughout the plan area in accordance with the recommendations of the All Ireland Pollinator Plan. In this regard, the Plan promotes the use of pesticide-free used by the Council on public land and will seek to progress the reduction, and ultimate cessation, of use of such pesticides.

Figure 6.9 Pollinator friendly planting at Derrycorris, Edenderry

6.6 Sustainable Urban Drainage Systems (SuDS)

The impact of extreme rainfall events is increasing with climate change and this is significantly increasing both the level of pollution from urban runoff and the flood risk arising from the greater volume of that runoff from the largely impermeable urban area.

A fundamental part of SuDS is the provision of adequate levels of treatment of surface water prior to discharging to a watercourse. SuDS aims to address both quality and quantity of runoff whereby both the rate and volume of discharge are reduced.

Whilst Irish Water maps for Edenderry show that the town is mainly served by combined foul-surface water networks, this Plan encourages new developments to consider nature-based solutions to the management of rainwater and surface water runoff to reduce pollution and reduce flood risk as well as to improve biodiversity and provide a greener more pleasant urban environment. Developers are advised to consult with the Nature-based Solutions to the Management of Rainwater and Surface Water Runoff in Urban Areas – Water Sensitive Urban Design Best Practice Interim Guidance Document (DHLGH, 2021) which seeks to mimic the natural water balance of rural areas through water sensitive urban design. This can be achieved through the replacement of impermeable surfacing with nature-based planted areas that are designed to absorb, retain, store and treat urban runoff prior to discharge back into the environment.

SuDS proposals for Edenderry town could include the:

- Replacement of impervious surfacing in car parks with pervious pavements;
- Incorporation of rain gardens into traffic calming measures or upstream/in place of existing gullies. Rain gardens allow runoff to pond temporarily on the surface before filtering through vegetation and underlying soils;
- Replacement of gullies with tree pits;
- Use of swales and linear wetlands to slow the flow of water and where infiltration characteristics of the soil are favourable, reduce the quantity of surface water runoff. They are ideal for use alongside car parks and roadways;
- Provision of planted channels which can provide conveyance routes and intercept flows and which can be incorporated into the landscape design to form boundaries;
- Provision of storage areas within public open spaces. These can include landscaped depressions, ponds and wetlands; and
- Provision of green roofs on bus shelters, bicycle shelters and on roof space on all large commercial, industrial, institutional and large apartment blocks.

Whilst there is scope for limited attenuation capacity within the SuDS measures listed above, there are better opportunities to provide storage areas within public open spaces in the form of landscaped depressions, ponds and wetlands where possible. Where space constraints apply, underground modular attenuation structures should be considered.

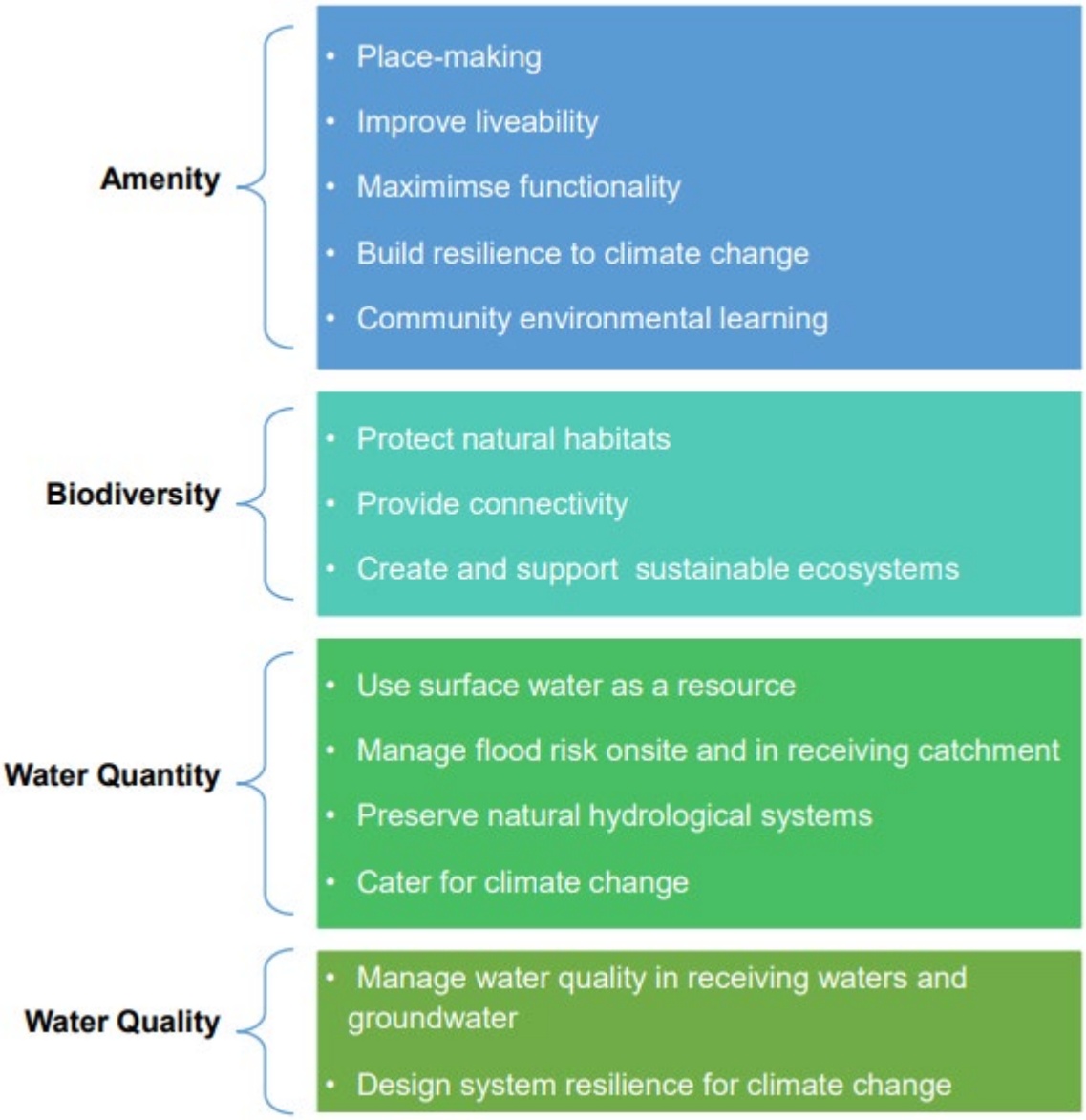

Figure 6.10 Purpose of SuDs

(Source: Nature-based Solutions to the Management of Rainwater & Surface Water Runoff in Urban Areas, DHLGH, 2021)

SuDs is also addressed in Chapter 3 Town Centre and Regeneration, Chapter 8 Climate Action and Chapter 9 Critical Infrastructure.

6.7 Constructed Wetlands and Community Ponds

There is considerable potential to develop wetlands near the rivers that flow through the Plan Area to provide extra water storage in the countryside, habitat for wildlife and help reduce flood risk. Wetlands have been shown to be effective at removing pollutants from water and can double up as nature reserves as they attract a range of wildlife species. In addition, constructed wetlands can be used in the treatment of polluted water which otherwise may contaminate a local watercourse. They can be used where water treatment has not been fully effective, for a variety of reasons, (e.g., where tertiary treatment is not available) and can 'polish' the water by removing contaminants. Small ponds can also be crucial habitats for a range of wildlife from dragonflies and water hens to frogs and newts.

These in turn, support other species of wildlife such as grey heron, otters and bats. Figure 6.13 below shows a number of specific areas where wetlands could potentially be developed during the life of this Plan.

6.8 Building Green

This Plan recognises the ability of green walls, green roofs, green terraces and facades to lower temperatures in urban areas, absorb carbon from the atmosphere, as well as make buildings more habitable through noise reduction, air filtration and creating attractive places.

A green roof or terrace is one that is planted with different types of vegetation, which can include grasses, flora, herbs and vegetables. Green roofs can be incorporated into new developments and installed on older buildings in order to secure a variety of benefits. They can contribute to climate change resilience, helping to improve air quality and temperature while also retaining and filtering storm water to alleviate pressure on drainage infrastructure. Depending on the mix of plants used green roofs can also help contribute to local biodiversity, as well as provide new public and private amenity spaces and increase property values. Green walls, also known as plant walls, living walls or vertical gardens, are vertical structures that have different types of plants or other greenery attached to them.

The Dublin City Green and Blue Guide 2021 is an effective guide on the technical specifications and design considerations for such structures in this regard.

6.9 Burial Grounds and Gardens of Remembrance

This Plan recognises that burial grounds while providing culturally sensitive space for burial and remembrance also have significant value as recreational spaces similar to parks for nature conservation and the promotion of biodiversity. Grass cutting management and planting programmes will be considered for each site to provide access to the burial grounds while also allowing for the flowering of plants in certain areas.

Burial grounds such as (1) Castropetre Church Graveyard (2) St. Mary's Cemetery (3) Edenderry Quaker Burial Ground (4) St. Vincent's Paupers Graveyard and (5) Killane Burial Ground are considered a type of green infrastructure in Edenderry. The locations of these cemeteries and gardens of remembrance are shown below in Figure 6.11.

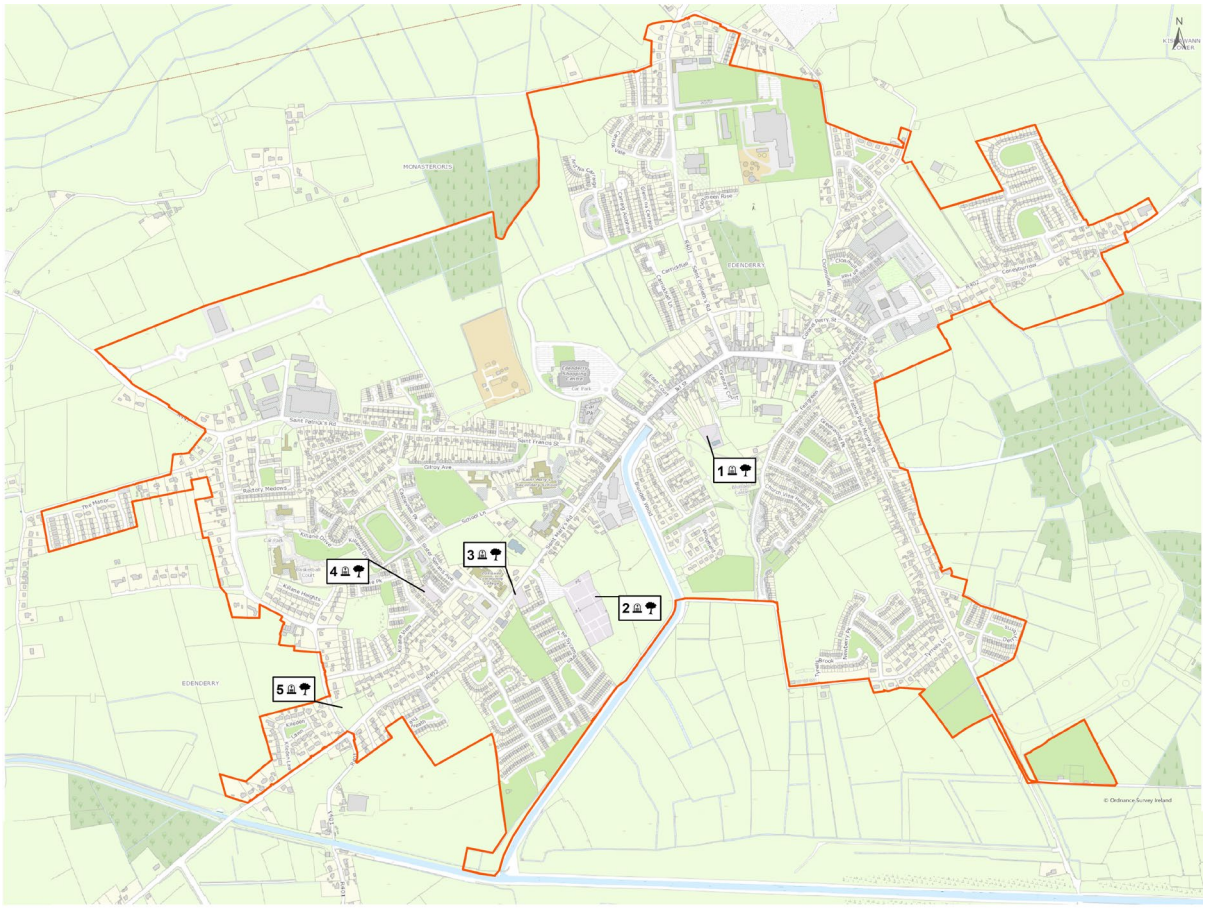

Figure 6.11 Location of existing cemeteries and gardens of remembrance within Plan Area

6.10 Control of Invasive Species

Invasive species such as Himalayan Balsam and Japanese Knotweed can be a particular problem along rivers leading to a loss of biodiversity and even destabilised riverbanks through increased erosion. The Council will seek to continue the implementation of non-native invasive species control within Edenderry including along the Boyne River and the Grand Canal and to co-ordinate control measures with other stakeholders, wherever possible, to ensure a collaborative approach in relation to removal and monitoring.

6.11 Potential Green Infrastructure Projects

There is an opportunity to enhance the green links and ecological connectivity between open spaces throughout Edenderry. This Plan seeks to establish a coherent, integrated and evolving green infrastructure network which:

- Extends from Edenderry GAA Grounds through the new school site;
- From Blundell Park all the way to the Grand Canal Greenway;
- Provides a looped walkway or nature trail along the banks of the river Boyne;

- Extends the length of the future Bypass to the south and east of the town;
- Extends from Edenderry Business Campus through the proposed section of the Inner Relief Road to the recently constructed section of the Inner Relief Road, connecting to north south corridor; and
- Provides ecological corridors and habitats for wildlife, air and water filtration, surface water management, recreational and tourism opportunities and 'greener' neighbourhoods.

Figure 6.12 Existing Green Infrastructure in Edenderry Business Park

Figure 6.13 below shows the potential GI projects that could be developed in the town in the Plan Period.

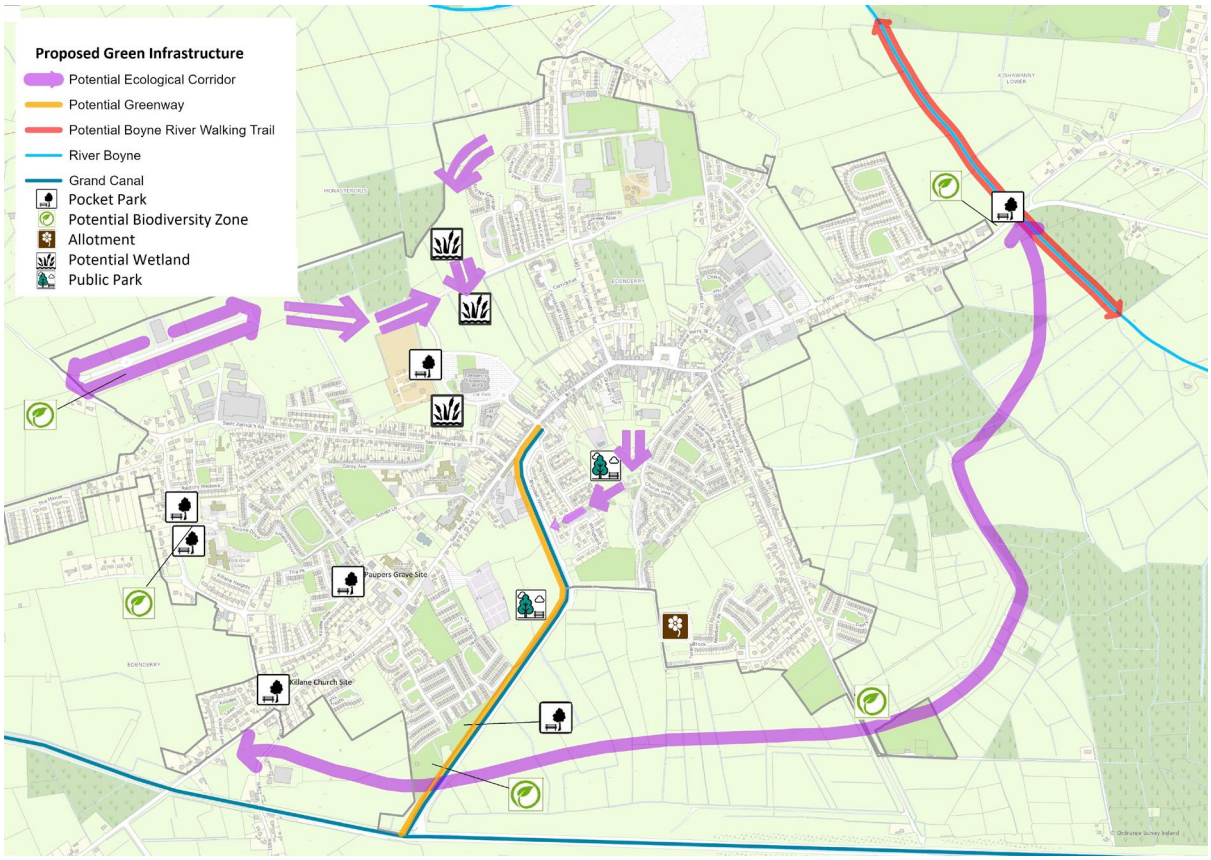

Figure 6.13 Potential Green Infrastructure projects

6.12 Biodiversity and Green Infrastructure Policies

It is Council policy to:

Overarching

BGIP-01 Protect, conserve and enhance Edenderry's biodiversity and natural heritage that includes wildlife (flora and fauna), habitats and landscapes of importance to wildlife, especially along the River Boyne, Grand Canal and Blundell Park, which in-turn can contribute to climate action.

BGIP-02 Prohibit any development that would be harmful to or that would result in a significant deterioration of habitats and/or disturbance of protected species within Edenderry and to support/co-operate with statutory authorities and others in support of measures taken to manage proposed or designated sites in order to achieve their conservation objectives.

BGIP-03 Support the role that biodiversity and green infrastructure plays in the Plan Area in relation to ecosystem services along with climate change mitigation and adaptation.

Native Hedgerow and Tree Species

BGIP-04 Promote the protection and preservation of existing hedgerows and to encourage planting of native hedgerow and tree species.

6.13 Biodiversity and Green Infrastructure Objectives

It is an objective of the Council to:

Networks

BGIO-O1 Further develop an integrated and coherent Green Infrastructure network for the Plan Area by requiring the retention of substantial networks of green space in urban, urban fringe and adjacent countryside areas to serve the needs of communities now and in the future including the need to adapt to and mitigate climate change.

BGIO-02 Integrate existing green infrastructure as shown in Figure 6.4 and potential GI projects as shown in Figure 6.13 as an essential component of all new developments and to discourage development that would fragment, damage or prejudice the integrity of the green infrastructure network.

BGIO-03 Promote a network of pedestrian and cycle paths to enhance accessibility to the green infrastructure network, while ensuring that the design and operation of the routes responds to the ecological protection needs of each site, including the undertaking of Appropriate Assessment where relevant.

River Boyne Linear Park

BGIO-04 Provide a Linear park adjacent to the River Boyne at Kishowanny and to provide an eco-friendly looped walkway or nature trail along the river bank.

Wetland Amenity Area

BGIO-05 In conjunction with the appropriate prescribed bodies, to investigate the feasibility of providing Wetland Amenity Area at locations shown on Figure 6.13 taking into account the environmental sensitivities of the site and Inland Fisheries Guidance document, Planning for Watercourses in the Urban Environment.

Cultural and Heritage Assets

BGIO-06 Provide attractive and safe routes linking parks, open spaces and other related features such as cultural sites and heritage assets as an integral part of Green Infrastructure provision, where appropriate and feasible, including taking into account the findings of Appropriate Assessment.

Pocket Parks, Community Gardens and Allotments

BGIO-07 Provide opportunities for Edenderry residents to engage in food production through allotments, community gardens and the provision of food foraging areas in new parks and Green Infrastructure proposals where appropriate.

BGIO-08 Support the provision of pocket parks, community gardens and allotments as outlined in Figure 6.13.

Biodiversity Zones/Pollination Zones, Mini-Woodlands and Wildlife Strips

BGIO-09 Continue to promote and support re-wilding and pollinator initiatives within the Plan Area in support of the National Pollinator Plan and ensure that the management of the Council's open spaces and parks is pollinator-friendly, provides more opportunities for biodiversity, and is carried out without the use of pesticides where possible.

BGIO-10 Develop linked corridors of small urban 'Miyawaki' native mini woodlands, a minimum of 100 m^2 in size, to capture carbon and encourage biodiversity in suitable existing built-up areas, in low grade public open space areas and other areas of zoned lands where deemed suitable and appropriate.

BGIO-11 Encourage the provision of Biodiversity Zones/Pollination Zones in the locations outlined in Figure 6.13.

Control of Invasive Species

BGIO-12 Continue the control programs of invasive species with all relevant stakeholders and landowners to control the key invasive species.