

12

Biodiversity & Green Infrastructure



Chapter 12 Biodiversity and Green Infrastructure

Aim: To contribute towards the protection, conservation and management of the County's unique biodiversity including sites designated at national and EU level, protected species and habitats outside of designated sites and to promote the development of an integrated Green Infrastructure network in order to improve our resilience to climate change and to enable the role of Green Infrastructure in delivering sustainable communities.

12.1 Biodiversity

Biodiversity or biological diversity simply refers to the variety of all living things on earth – including people, plants, animals, fungi and microorganisms and the inter-relationship between them.

12.2 Biodiversity and Ecosystem Services

Biodiversity has intrinsic value, with each species having a value and a right to exist. It is important because all of life is interconnected and functions as part of a complex ecosystem, with a multitude of inter-dependencies required for species survival and well-being. The health of the planet depends on the health of our biodiversity and humans rely on biodiversity for food, clean air and water, healthy soils, clothing and building materials, as well as for medicines and places in which to unwind and reconnect with nature. Biodiversity underpins important economic sectors such as agriculture and tourism and provides many other benefits (ecosystem services) free of charge which can be grouped into four main categories:

- provisioning services—the production of food, fibre, and water
- regulating services—the control of climate and diseases
- supporting services—nutrient cycling and crop pollination
- cultural services—such as spiritual and recreational benefits.

In 2008 an Irish study 'The Economic and Social Benefits of Biodiversity', highlighted that the value of our national ecosystem services, in terms of their productive output and human utility, was estimated at over €2.6 billion per year.

The State of the Environment Report (EPA 2020), *an Integrated Assessment of the State of Ireland's Environment*, demonstrates that for biodiversity and the natural environment a deteriorating trend dominates, especially for EU protected habitats, with 85% of EU protected habitats having an unfavourable status. The picture for EU protected species is mixed, but 15% are in decline, with freshwater species most at risk. Threats to biodiversity and the natural environment comes from a range of development pressures, population growth agricultural intensification, exploitation of resources, land management practices and climate change.

A Climate Change and Biodiversity Loss Emergency was declared by the Irish Government in May 2019 following publication of a report by the Intergovernmental Panel on Biodiversity and Ecosystem Service on the state of the world's biodiversity and ecosystem services. Kildare County Council declared a Climate Change and Biodiversity Loss Emergency in June 2019.

12.3 Legislative Context

Ireland has signed and ratified several international conventions and agreements including the Convention on Biological Diversity, the Convention on the Conservation of European Wildlife and Natural Habitats (Bern) and the Convention on Wetlands of International Importance (Ramsar). These various obligations are given legal effect through both European and National legislation and have resulted in the designation of natural heritage sites throughout the country.

12.3.1 EU Habitats Directive

The Habitats Directive (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna) is the main legislative instrument for the protection and conservation of biodiversity within the European Union and lists certain habitats (Annex I) and species (II) that must be protected within wildlife conservation areas, considered to be important at a European as well as at a national level. A Special Area of Conservation or SAC is a designation under the Habitats Directive. The Habitats Directive sets out the protocol for the protection and management of SACs.

12.3.2 EU Birds Directive

The Birds Directive (Council Directive 79/409/EEC and Council Directive 2009/147/EC on the Conservation of Wild Birds) provides for a network of sites in all member states to protect birds at their breeding, feeding, roosting and wintering areas. This directive identifies species that are rare, in danger of extinction or vulnerable to changes in habitat and which need protection (Annex I species). Appendix I indicates Annex I bird species as listed on the Birds Directive. A Special Protection Area or SPA is a designation under The Birds Directive.

12.3.3 Appropriate Assessment

A Planning Authority must have regard to any European Site when considering any plan or project or making a decision in relation to a plan or project. Articles 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans and projects likely to affect Natura 2000 sites. Article 6(3) establishes the requirement for Appropriate Assessment (AA). This requirement is implemented in the Republic of Ireland by the European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477/2011) and the Planning and Development Act 2000, as amended. The Government published Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities in December 2009 (revised in February 2010).

12.3.4 Wildlife Acts 1976 - 2012

The primary domestic legislation providing for the protection of wildlife in general, and the control of some activities adversely impacting upon wildlife is the Wildlife Act of 1976. The aims of the Wildlife Act according to the National Parks and Wildlife Service are "... to provide for the protection and conservation of wild fauna and flora, to conserve a representative sample of important ecosystems, to provide for the development and protection of game resources and to regulate their exploitation, and to provide the services necessary to accomplish such aims." All bird species are protected under the Act. The Wildlife (Amendment) Act of 2000 amended the original Act to improve the effectiveness of the Act to achieve its aims.

12.3.5 Flora (Protection) Order, 2015

Sets out the current list of plant species protected by Section 21 of the Wildlife Act, 1976, as amended. It is illegal to cut, uproot or damage the listed species in any way, or to offer them for sale. This prohibition extends to the taking or sale of seed. In addition, it is illegal to alter, damage or interfere in any way with their habitats. This protection applies wherever the plants are found and is not confined to sites designated for nature conservation.

12.4 International Policy Context

12.4.1 EU Biodiversity Strategy for 2030

On 20 May 2020, the Commission adopted an EU Biodiversity Strategy for 2030 (European Commission, 2020). The strategy presents an ambitious agenda to arrest the trend in biodiversity loss with increasing emphasis on ecosystem restoration. Ecosystems are solutions, not only to protect biodiversity but also to enhance carbon uptake and contribute to climate change mitigation as well as to deliver essential benefits to people, agriculture, and the economy. The benefits derived from biodiversity are commonly referred to as Ecosystem Services. These ecosystem services are increasingly recognised as being integral to planning and land use policies.

The strategy contains specific commitments and actions to be delivered by 2030:

- Establishing a larger EU-wide network of protected areas on land and at sea (30%);
- Launching an EU nature restoration plan;
- Introducing measures to enable the necessary transformative change;
- Introducing measures to tackle the global biodiversity challenge.

12.4.2 The Aarhus Convention

Convention on Access to Information, Public Participation in Decision-Making, and Access to Justice in Environmental Matters, 1998 (The Aarhus Convention) lays down a set of basic roles to promote citizens involvement in environmental matters and improve enforcement of Environmental Law; its provisions are broken down into three Pillars: Access to information, Public Participation in environmental decision making and Access to Justice. Same has given rise to the European Directive 2003/4/EC on Public Participation, both of which have been transposed into Irish Law. Ireland ratified the Convention on 20th June 2012.

12.4.3 2030 Agenda for Sustainable Development (2015)

The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, sets out an ambitious framework of universal and indivisible goals and targets to address a range of global societal challenges. At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries - developed and developing - in a global partnership, see Figure 12.1.

Sustainable Development Goal 15 of the 2030 Agenda for Sustainable Development is devoted to *'protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss'*.

Biodiversity and ecosystems feature prominently across many of the Sustainable Development Goals (SDGs) and associated targets. They contribute directly to human

well-being and development priorities. Biodiversity is at the centre of many economic activities, particularly those related to crop and livestock agriculture, forestry, and fisheries. Globally, nearly half of the human population is directly dependent on natural resources for its livelihood, and many of the most vulnerable people depend directly on biodiversity to fulfil their daily subsistence needs.



Figure 12.1 - The 17 Sustainable Development Goals (SDGs)

12.4.4 Convention on Biological Diversity (1992)- UN Decade on Ecosystem Restoration

Ireland is a signatory to the UN Convention on Biological Diversity (CBD); the Cancun Declaration (CBD, 2016), which focuses on the need for governments at the national, sub-national and local levels to mainstream the conservation and sustainable use of biodiversity for human well-being. All parties to the Convention are required to prepare national biodiversity strategies and action plans.

The United Nations General Assembly has proclaimed the UN Decade on Ecosystem Restoration in June 2021. This declaration aims to halt the degradation of ecosystems and restore them to achieve global goals. Led by the United Nations Environment Programme (UNEP) and the Food and Agriculture Organization of the United Nations (FAO).

12.5 National Policy Context

12.5.1 National Biodiversity Plan(s)

Ireland's first National Biodiversity Plan was published in 2002. The second National Biodiversity Plan - Actions for Biodiversity 2011-2016 was published in November 2011. The Plan was developed in line with EU and International Biodiversity strategies and policies. It recognised that locally led action is critical in protecting biodiversity and ecosystem services and sets out the measures Ireland should take to ensure its conservation. The third National Biodiversity Action Plan 2017-2021 was published by the Department of Culture, Heritage, and the Gaeltacht in October 2017.

12.5.2 Eastern and Midlands Regional Spatial and Economic Strategy 2019-2031

The RSES acknowledges that the condition and conservation of our natural and semi-natural habitats impacts on the quality of life of residents and visitors to the Region, as well as making significant contributions to the economy and agriculture (ecosystem services). The strategy identifies the potential environmental impacts of spatial planning policy on habitats and species and promotes an Ecosystem Services Approach in the preparation of statutory land use plans. The strategy acknowledges the importance of identifying, protecting and enhancing Green Infrastructure (GI) as a core element of land use planning and considers that GI offers an opportunity to develop integrated strategies around economic development, urban placemaking and rural policy.

12.5.3 County Kildare Biodiversity Action Plan 2009-2014

The Council adopted its first Biodiversity Action Plan in April 2009 in accordance with the National Biodiversity Plan. The County Biodiversity Plan provides a framework for conserving biodiversity and natural heritage at a local level. It complements the Kildare Heritage Plan by including detailed actions to deliver positive outcomes focused on species and habitats. A key focus of the plan is gathering information on and managing the biodiversity resource, education, awareness raising and the promotion of effective cooperation between stakeholders. The County Kildare Biodiversity Plan will be reviewed during the lifetime of this plan.

Policy

It is the policy of the Council to:

BI P1	Integrate in the development management process the protection and enhancement of biodiversity and landscape features wherever possible, by minimising adverse impacts on existing habitats (whether designated or not) and by including mitigation and/or compensation measures, as appropriate.
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Objectives

It is an objective of the Council to:

BI O1	Require, as part of the Development Management Process, the preparation of Ecological Impact Assessments that adequately assess the biodiversity resource within proposed development sites, to avoid habitat loss and fragmentation and to integrate this biodiversity resource into the design and layout of new development and to increase biodiversity within the proposed development.
BI O2	Encourage and promote the retention and creation of green corridors within and between built up urban areas and industrial scale developments to protect wildlife habitat value including areas that are not subject to public access.
BI O3	Actively support the implementation of national biodiversity initiatives such as the All-Ireland Pollinator Plan 2021-2026

BI O4	Promote increased public participation in biodiversity conservation by supporting and encouraging community-led initiatives such as native tree planting, the removal of invasive species and the continued preparation of Local Biodiversity Actions Plans for settlements in County Kildare ¹ .
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Actions

It is an action of the Council to:

BI A1	Continue to implement natural heritage actions in the County Heritage Plan 2019-2025, the County Biodiversity Plan, the National Biodiversity Action Plan 2017 – 2021 and any subsequent plans, in partnership with the Department of Housing, Heritage and Local Government, relevant stakeholders and the community.
BI A2	Carry out habitat mapping on a phased basis and integrate biodiversity considerations and protection measures into the suite of mandatory Local Area Plans and to develop specific policies and objectives that could be incorporated into council programmes and activities.
BI A3	Review the County Kildare Biodiversity Plan within the lifetime of this Plan.
BI A4	Continue to prepare and roll-out Local Biodiversity Action Plans on an annual basis, in partnership, where appropriate with LEADER, subject to funding.
BI A5	Engage with Residents Associations to educate and encourage the roll out of the Pollinator and Biodiversity Plans, specifically working towards less spraying and more pollinator friendly practices.

12.6 Designated sites for nature conservation

12.6.1 Natura 2000 network

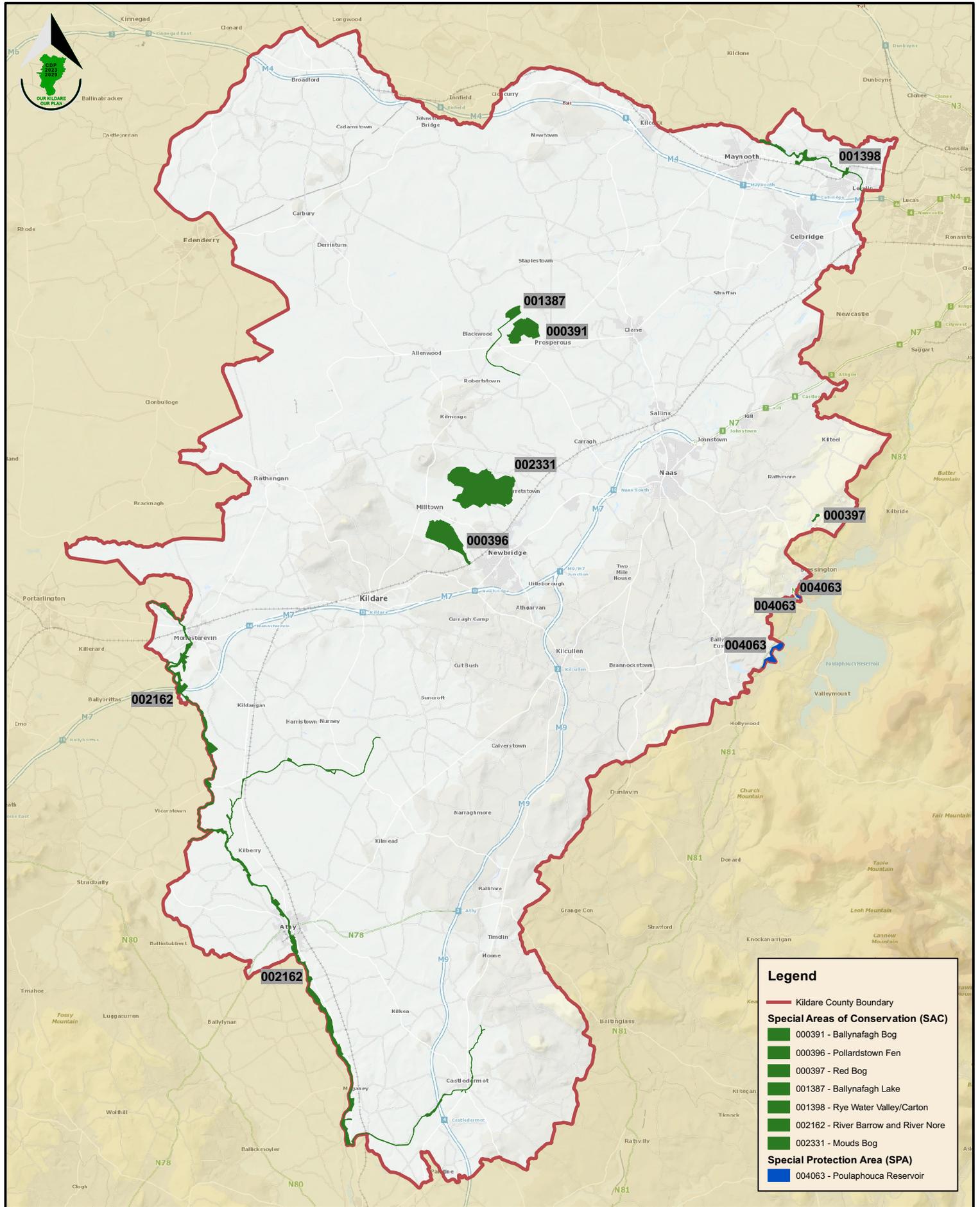
The EU Birds Directive (Council Directive 79/409/ EEC) and the EU Habitats Directive (European Directive 92/43/EEC) provides for the establishment of the Natura 2000 network of sites of highest biodiversity importance for rare and threatened habitats and species across the EU. The Natura 2000 network of European sites comprises Special Areas of Conservation (SAC), and Special Protection Areas (SPA). There are 8 Natura 2000 sites within the county, see Table 12.1 and Map 12.1 below.

¹ LBAPS prepared Allenwood, Ballitore, Ballymore Eustace, Carbury, Celbridge, Clane, Kilcullen, Kill, Leixlip, Maynooth, Monasterevin, Newbridge, (a further 10 will be prepared in 2022)

Site Name	Site Code	European Designation	Qualifying Interests
Pollardstown Fen	000396	SAC	<ul style="list-style-type: none"> • Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> • Petrifying springs with tufa formation (Cratoneurion) • Alkaline fens • <i>Vertigo geyeri</i> (Geyer's Whorl Snail) • <i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) • <i>Vertigo moulinsiana</i> (Desmoulin's Whorl Snail)
Ballynafagh Bog	000391	SAC	<ul style="list-style-type: none"> • Active raised bogs • Degraded raised bogs still capable of natural regeneration • Depressions on peat substrates of the Rhynchosporion
Ballynafagh Lake	001387	SAC	<ul style="list-style-type: none"> • Alkaline fens • <i>Vertigo moulinsiana</i> (Desmoulin's Whorl Snail)
Rye Water Valley at Carton	001398	SAC	<ul style="list-style-type: none"> • Petrifying springs with tufa formation (Cratoneurion) • <i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) • <i>Vertigo moulinsiana</i> (Desmoulin's Whorl Snail)
Mouds Bog	002331	SAC	<ul style="list-style-type: none"> • Active raised bogs • Degraded raised bogs still capable of natural regeneration • Depressions on peat substrates of the Rhynchosporion

Site Name	Site Code	European Designation	Qualifying Interests
River Barrow and Nore	002162	SAC	<ul style="list-style-type: none"> • Estuaries • Mudflats and sandflats not covered by seawater at low tide • Reefs • Salicornia and other annuals colonising mud and sand • Atlantic salt meadows (Glaucopuccinellietalia maritimae) • Mediterranean salt meadows (Juncetalia maritimi) • Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation • European dry heaths • Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels • Petrifying springs with tufa formation (Cratoneurion) • Old sessile oak woods with Ilex and Blechnum in the British Isles • Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) • Vertigo moulinsiana (Desmoulin's Whorl Snail) • Margaritifera margaritifera (Freshwater Pearl Mussel) • Austropotamobius pallipes (White-clawed Crayfish) • Petromyzon marinus (Sea Lamprey) • Lampetra planeri (Brook Lamprey) • Lampetra fluviatilis (River Lamprey) • Alosa fallax fallax (Twaiite Shad) • Salmo salar (Salmon) • Lutra lutra (Otter) • Trichomanes speciosum (Killarney Fern) • Margaritifera durrovensis (Nore Pearl Mussel)
Red Bog	000397	SAC	<ul style="list-style-type: none"> • Transition mires and quaking bogs
Poulaphouca Reservoir	004063	SPA	<ul style="list-style-type: none"> • Greylag Goose (Anser anser)

Table 12.1 - Natura 2000 Sites in Co Kildare



Legend

- Kildare County Boundary
- Special Areas of Conservation (SAC)**
- 000391 - Ballynafagh Bog
- 000396 - Pollardstown Fen
- 000397 - Red Bog
- 001387 - Ballynafagh Lake
- 001398 - Rye Water Valley/Carton
- 002162 - River Barrow and River Nore
- 002331 - Mouds Bog
- Special Protection Area (SPA)**
- 004063 - Poulaphouca Reservoir



Kildare County Council
 Planning & Strategic
 Development Department
 Áras Chill Dara,
 Devoy Park, Naas, Co Kildare.

Draft County Development Plan 2023-2029

Special Areas of Conservation and Special Protection Areas

Stage	Date	Description
Draft County Development Plan	12/12/2021	Draft Plan Issued to the Elected Members
Draft County Development Plan	14/03/2022	Draft Plan Issued for Public Consultation

Scale: N.T.S.	Map Ref: V1-12.1
Date: Feb 2021	Drawing No.: 200/22/1239



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Drawn By: M O'Loughlin Date 23/02/2022	Checked By: L Crawford Date 23/02/2022	Approved By: C O'Donnell Date 23/02/2022
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This drawing is to be read in conjunction with the written statement

Policy

It is the policy of the Council to:

BI P2	Protect and maintain the favourable conservation status and conservation value of all-natural heritage sites designated or proposed for designation in accordance with European and national legislation and agreements. These include Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Natural Heritage Areas (NHAs), Ramsar Sites and Statutory Nature Reserves.
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Objectives

It is an objective of the Council to:

BI O5	Avoid development that would adversely affect the integrity of any Natura 2000 site located within and immediately adjacent to the county and promote favourable conservation status of habitats and protected species including those listed under the Birds Directive, the Wildlife Acts and the Habitats Directive, to support the conservation and enhancement of Natura 2000 Sites including any additional sites that may be proposed for designation during the period of this Plan and protect the Natura 2000 network from any plans and projects that are likely to have a significant effect on the coherence or integrity of a Natura 2000 Site.
BI O6	Ensure an Appropriate Assessment, in accordance with Article 6(3) and Article 6(4) of the Habitats Directive and with DEHLG guidance (2009), is carried out in respect of any plan or project not directly connected with or necessary to the management of a Natura 2000 site to determine the likelihood of the plan or project having a significant effect on a Natura 2000 site, either individually or in combination with other plans or projects and to ensure that projects which may give rise to significant cumulative, direct, indirect or secondary impacts on Natura 2000 sites will not be permitted (either individually or in combination with other plans or projects) unless for reasons of overriding public interest.
BI O7	Support the establishment of conservation measures and the preparation and implementation of management plans for the conservation of Natura 2000 sites by NPWS, as required by Article 6(1) of the Habitats Directive.

12.6.2 Natural Heritage Areas (NHAs) and Nature Reserves

Under the Wildlife (Amendment) Act 2000, Natural Heritage Areas (NHAs) are designated to conserve species and habitats of national importance and sites of geological interest. The designation of these sites is the responsibility of the National Parks and Wildlife Division of the Department of Housing, Local Government and Heritage and is an ongoing process as boundaries are revised and adjusted and new sites added.

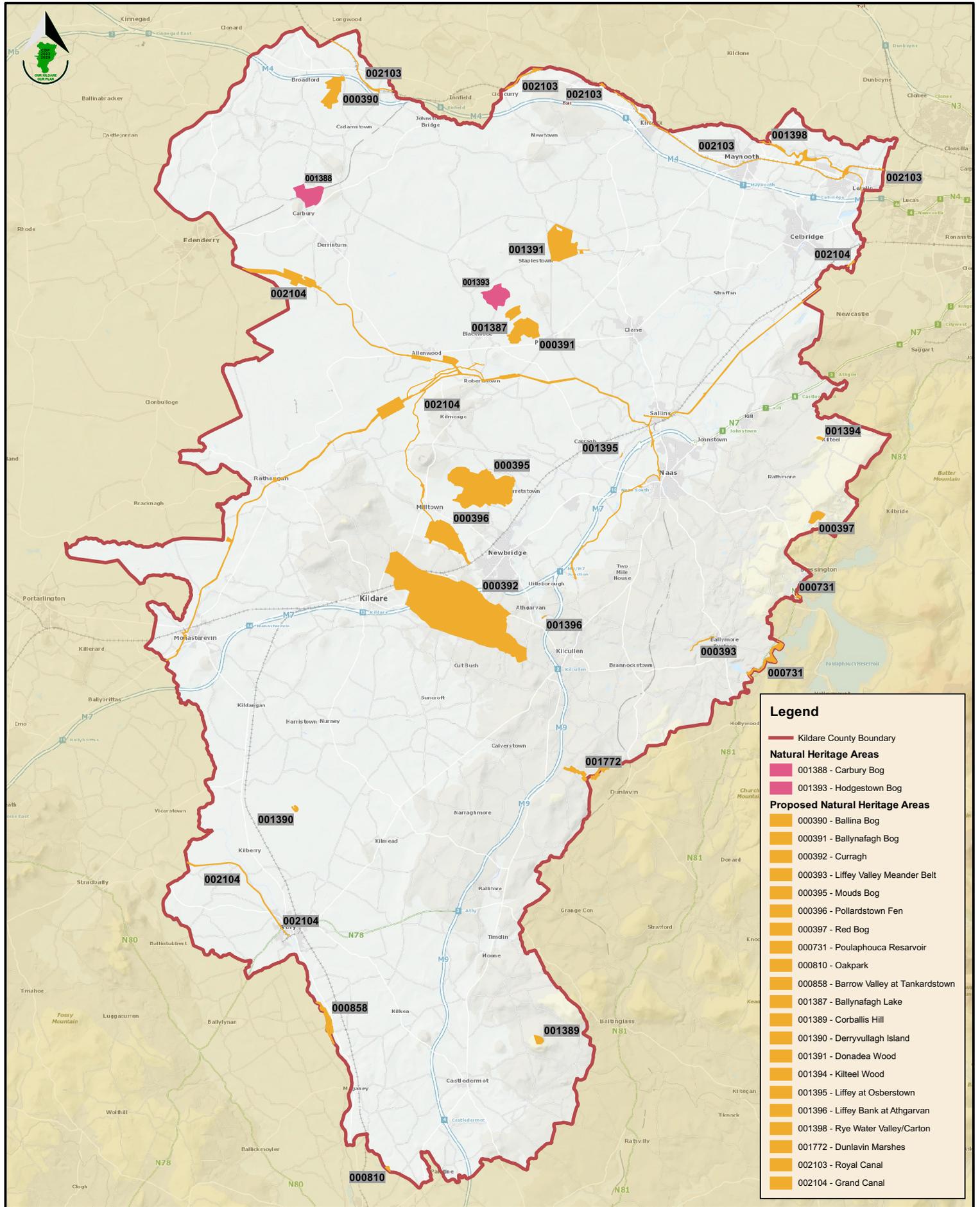
A nature reserve is an area of importance to wildlife, which is protected under Ministerial Order under Irish Legislation. Biogenetic Reserves, as designated by the Council of Europe, are protected areas characterised by one or more typical, unique, endangered or rare habitats, biocenoses or ecosystems.

Pollardstown Fen is designated as a nature reserve and as a Biogenic Reserve.

There are 23 designated or proposed Natural Heritage Areas (NHAs), within the county, see Table 12.2 and Map 12.2 below.

Site Name	Site Number
Carbury Bog	001388
Hodgestown Bog	001393
Ballina Bog	000390
Corballis Hill	001389
Curragh	000392
Derryvullagh Island	001390
Donadea Wood	001391
Dunlavin Marshes	001772
Grand Canal	002104
Kilteel Wood	001394
Liffey at Osberstown	001395
Liffey Bank at Athgarvan	001396
Liffey Valley Meander Belt	000393
Mouds Bog	000395
Oakpark	000810
Pollardstown Fen	000396
Poulaphouca Reservoir	000731
Red Bog	000397
Royal Canal	002103
Ballynafagh Bog	000391
Ballynafagh Lake	001387
Barrow Valley at Tankardstown	000858
Rye Water Valley /Carton	001398

Table 12.2 - Natural Heritage Areas in Co. Kildare



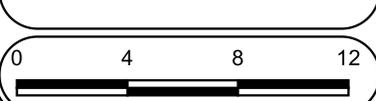
- Legend**
- Kildare County Boundary
 - Natural Heritage Areas**
 - 001388 - Carbury Bog
 - 001393 - Hodgestown Bog
 - Proposed Natural Heritage Areas**
 - 000390 - Ballina Bog
 - 000391 - Ballynafagh Bog
 - 000392 - Curragh
 - 000393 - Liffey Valley Meander Belt
 - 000395 - Mouds Bog
 - 000396 - Pollardstown Fen
 - 000397 - Red Bog
 - 000731 - Poulaphouca Reservoir
 - 000810 - Oakpark
 - 000858 - Barrow Valley at Tankardstown
 - 001387 - Ballynafagh Lake
 - 001389 - Corballis Hill
 - 001390 - Derryvullagh Island
 - 001391 - Donadea Wood
 - 001394 - Kilteel Wood
 - 001395 - Liffey at Osberstown
 - 001396 - Liffey Bank at Athgarvan
 - 001398 - Rye Water Valley/Carton
 - 001772 - Dunlavin Marshes
 - 002103 - Royal Canal
 - 002104 - Grand Canal

 Kildare County Council
 Planning & Strategic
 Development Department
 Áras Chill Dara,
 Devoy Park, Naas, Co Kildare.

**Draft County
 Development Plan
 2023-2029**

Stage	Date	Description
Draft County Development Plan	12/12/2021	Draft Plan Issued to the Elected Members
Draft County Development Plan	14/03/2022	Draft Plan Issued for Public Consultation

Scale: N.T.S. Map Ref: V1-12.2
 Date: Feb 2022 Drawing No.: 200/22/1239



Natural Heritage Areas

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Drawn By: M O'Loughlin Date 24/02/2022 Checked By: L Crawford Date 24/02/2022 Approved By: C O'Donnell Date 24/02/2022
This drawing is to be read in conjunction with the written statement

Policy

It is the policy of the Council to:

BI P3	Protect and maintain the favourable conservation status and conservation value of all natural heritage sites designated or proposed for designation in accordance with European and national legislation and agreements. These include Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Natural Heritage Areas (NHAs), Ramsar Sites and Statutory Nature Reserves.
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Objectives

It is an objective of the Council to:

BI O8	Require the preparation of an Ecological Impact Assessment (EclA) by a suitably qualified professional for proposals for development within or adjacent to a Natural Heritage Area (NHA) to ensure the development is designed and sited to minimise its impact on the biodiversity, ecological, geological and landscape value of the site, particularly plant and animal species listed under the Wildlife Acts.
BI O9	Support the establishment of conservation measures and preparation and implementation of management plans for the conservation of NHA sites by NPWS.

12.7 Protected Habitats and species outside Designated Areas

County Kildare supports a range of plant, animal and bird species which are deemed to be rare and threatened under European and Irish legislation and which are known to exist outside of designated sites such as Natura 2000 sites or Natural Heritage Areas. This includes nationally rare plants, plants listed in the Red Data Lists of Irish Plants, Flora (Protection) Order of 2015 (or other such Orders) and their habitats and animals, and birds listed in the Wildlife Acts of 1976-2012 and subsequent statutory instruments.

Article 10 of the EU Habitats Directive states that Member States shall endeavour in their land use planning and development policies, to encourage the management of features of the landscape, which are of major importance for wild flora and fauna. Such features are those which by virtue of their linear and continuous structures such as rivers and riverbanks or hedgerows or by virtue of their functions as “stepping-stones” such as ponds or small woods are essential for the migration, dispersal and genetic exchange of wild species

12.7.1 Protected Habitats and Species Policy

It is the policy of the Council to:

BI P4	Ensure that any new development proposal does not have a significant adverse impact, incapable of satisfactory mitigation on plant, animal or bird species which are protected by law.
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Objectives

It is an objective of the Council to:

BI O10	Ensure that any new development proposal does not have a significant adverse impact on rare and threatened species, including those protected under the Wildlife Acts 1976 and 2012, the Birds Directive 1979 the Habitats Directive 1992 and the Flora Protection Order species.
BI O11	Ensure appropriate species and habitat avoidance and mitigation measures are incorporated into all new development proposals.
BI O12	Possibly require a derogation licence, issued by the DHLGH, in the event of a proposed development impacting on a site known to be a breeding or resting site of species listed in the Habitats Regulations or the Wildlife Acts 1976 -2012.
BI O13	Require all applications for new developments to identify, protect and sensitively enhance the most important ecological features and habitats, and incorporate these into the overall open space network, keeping free from development and to provide links to the wider Green Infrastructure network as an essential part of the design process and by making provision for local biodiversity (e.g. through provision of swift boxes or towers, bat roost sites, hedgehog highways ² , green roofs, etc.).

Action

It is an action of the Council to:

BI A6	Undertake surveys and collect data to provide an evidence-base to assist the Council in meeting its obligations under Article 6 of the Habitats Directives (92/43/EEC) as transposed into Irish Law, subject to available resources.
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12.8 County Biodiversity Sites

Many sites of biodiversity value within the County do not meet the criteria that would enable them to be designated at an international or national level. However, these sites are of immense importance at a regional, county and local level. To date, they have not been fully surveyed or recognised as such. In order to inform this process, the County Council has commissioned – and continues to commission – surveys of habitats such as hedgerows, wetlands and unimproved grassland.

² <https://www.hedgehogstreet.org/>

12.8.1 County Biodiversity Sites

Policy

It is the policy of the Council to:

BI P5	Identify and conserve locally important biodiversity sites in the county which contribute to the overall ecological network of County Kildare.
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Objectives

It is an objective of the Council to:

BI O14	Protect, in co-operation with the relevant statutory agencies and other relevant groups, sites of local biodiversity importance (County Biodiversity Sites), not otherwise protected by legislation.
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Action

It is an action of the Council to:

BI A7	Identify and map County Biodiversity Sites in cooperation with the relevant statutory agencies, other relevant groups and the general public, not otherwise protected by legislation.
BI A8	Develop Management Plans for County Biodiversity Sites where appropriate.
BI A9	Support the development, where appropriate and feasible, of biodiversity awareness signage in the county.
BI A10	Work with Teagasc and landowners throughout the county in order to identify suitable 'Hare's Corner' projects which would create pocket sized habitats in order to enhance biodiversity.

12.9 Trees, Woodlands and Hedgerows

12.9.1 Hedgerows

County Kildare's hedgerow network is a huge asset to the county, being valuable in terms of agriculture, landscape, wild flora and fauna, water quality, carbon sequestration and employment. Hedgerows are also a valuable component of Ireland's cultural and natural heritage. Most Irish hedgerows were planted during the 18th and 19th centuries, following Acts of Parliament obliging landowners to erect permanent boundaries between their properties. Hedgerows along townland boundaries often date from medieval times or even earlier, with some boundaries dating back to the Bronze Age bank-and-ditch enclosures. Older hedges made up of native trees and shrubs, tend to have greater value in wildlife and heritage terms, having larger banks and ditches and being richer in species diversity.

A survey of Kildare hedgerows was conducted in 2006 (Foulkes, 2006) where the total length of hedgerow in County Kildare was estimated at 10,305km. The average figure for hedgerow density as 5.92 km/km². It is estimated that 1.2% of the county was covered in hedgerows in 2006. County Kildare's hedgerows show a higher degree of fragmentation than those of other counties, largely due to the high degree of development in rural areas. This coupled with the fact that two thirds of hedges adjoin

intensively managed farmland, means that there are implications for the overall biodiversity potential of the resource.

Trees, woodlands and hedgerows make a valuable contribution to the landscape and visual amenity of County Kildare and provide wider environmental benefits that include carbon storage. Trees, either individually, as specimen trees, or in groups, also make an important contribution to the landscape of many of the country house demesnes throughout the county. Trees, woodlands and hedgerows perform many functions such as shelter from wind, act as a natural barrier, absorb pollutants and provide a biodiversity function in terms of provision of habitat and food sources and are important producers of oxygen and act as carbon sinks.

In urban settings trees or groups of trees can contribute significantly to the local landscape or townscape and to the successful integration of new buildings into the landscape. The planting or retention of mature trees can contribute to amenity and more attractive developments as well as providing important wildlife habitats. The retention of trees should be considered at the earliest possible design stage in any new or redevelopment proposal.

Under Section 37 of the Forestry Act 1946, as amended, with certain exceptions, it is illegal to uproot a tree over ten years of age or cut down a tree of any age unless notice of intention to do so has been given in accordance with the Forestry Act. Except for an area located within the boundaries of a town or borough council area, a tree felling licence from the Forest Service of the Department of Agriculture and Food is required if it is proposed to fell trees.

The 2008 NPWS Native Woodlands Survey reports that there are 4,970 ha of native woodland in Kildare, representing 2.93% of the county land cover. The Tree Register of Ireland maintains a register of champion trees and lists 57 champion trees for County Kildare by virtue of their age, height and girth. Many of these trees are found within demesne landscapes which covered a significant area of land cover in the county in the past.

When planting hedgerows, species indigenous to the area should be used. The County Kildare Hedgerow Survey (2006) identified the predominant hedgerow species in Kildare. These species are listed in Chapter 16, Development Management Standards.

12.9.2 Tree Preservation Orders

The local Government (Planning & Development) Act 1963 provides for the making of Tree Preservation Orders (TPOs) by the Planning Authority where it is considered desirable to preserve trees on amenity grounds. This Act was amended by the 1976 Planning Act, Section 14, which was amended by the 1992 Planning Act, Section 20 which was further amended by the 2000 Planning Act which outlined the legal framework and procedures in relation to the making of a TPO. TPOs prevent the cutting down, topping, lopping or wilful destruction of trees without the specific consent of the Planning Authority. Such TPOs do not apply to the cutting of trees which are dead or dying or have become dangerous, or to the cutting of trees in compliance with statutory obligations to prevent or abate nuisance. There are a number of existing Tree Preservation Orders in the county (See Table 12.3). The Tree Preservation Guidelines (1994) which outline the means by which the Development Plan can assist the

Planning Authority in achieving the preservation and enhancement of the amenity value of trees has also informed this section of the Plan.

Location	TPO reference	Map reference (OS map No)
Clane	1987/1	OS 6"14
Ballymore Eustace	1991/1	OS 6"29
Clogheen (Moore Abbey)	1988/1	OS 6"28
Clongowes	1987/1	OS 6" 14

Table 12.3 - Tree Preservation Orders in Co. Kildare

Policy

It is the policy of the Council to:

BI P6	Recognise the important contribution trees and hedgerows make to the county biodiversity resource climate mitigation, resilience and adaptation.
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Objectives

It is an objective of the Council to:

BI O15	Prevent, in the first instance, the removal of hedgerows to facilitate development. Where their removal is unavoidable, same must be clearly and satisfactorily demonstrated to the Planning Authority. In any event, removal shall be kept to an absolute minimum and there shall be a requirement for mitigation planting comprising a hedge of similar length and species composition to the original, established as close as is practicable to the original and where possible linking to existing adjacent hedges. Native plants of a local provenance should be used for any such planting. Removal of hedgerows and trees prior to submitting a planning application will be viewed negatively by the planning authority and may result in an outright refusal.
BI O16	Promote the integration of boundary hedges within and along development sites into development design so as to avoid "trapped hedges" located to the boundary of houses within the development layout. Encourage the planting of woodlands, trees and hedgerows as part of new developments and as part of the Council's own landscaping works using native plants of local provenance.
BI O17	Require the undertaking of a comprehensive tree survey carried out by a suitably qualified arborist where development proposals require felling of mature trees; the tree survey shall assess the condition, ecological and amenity value of the tree stock proposed for removal as well as mitigation planting and a management scheme. It should be noted that rotting and decaying trees are an integral part of a woodland ecosystem and can host a range of fungi and invertebrates, important for biodiversity. While single or avenue trees that are decaying may be removed, others that are part of group or cluster may be subject to retention.
BI O18	Ensure a Tree Management Plan is provided to ensure that trees are adequately protected during development and incorporated into the design of new developments.

BI O19	Restrict the cutting of hedges during the bird-nesting season (1st March until 31st August), except in certain legally defined circumstances, in accordance with the provisions of the Wildlife (Amendment) Act 2000.
BI O20	Protect trees which are the subject of Tree Preservation Orders (see Table 12.3) and the 57 Champion and Heritage Trees in Kildare, which are identified on the Tree Register of Ireland.

Actions

It is an action of the Council to:

BI A11	Carry out a survey of trees within the main urban settlements as part of the preparation of Habitat Mapping for local area plans and to include policies for the protection of trees and hedgerows within local area plans where appropriate.
BI A12	Identify and include additional trees and stands of trees on the TPO register that are deemed to be of particular significance during the life of the plan.
BI A13	Encourage the awareness and engagement of the public in the identification and submission of trees for consideration for Tree Preservation Orders.
BI A14	Develop, in conjunction with the Parks Department of Kildare County Council a Tree Strategy for the county which would include policies on tree pruning, tree removals, tree planting, tree preservation and the treatment of trees in relation to services and utilities.
BI A15	Review the County Kildare Hedgerow Survey (2006), over the life of the Development Plan, as appropriate.
BI A16	Develop a pilot project to demonstrate traditional hedgerow management skills including hedge laying.

12.10 Inland Waters: Lakes, Rivers, Streams and Groundwater

Over 112 km of the canals, the Grand Canal, Royal Canal and the Barrow Line, extend across Kildare. Once the lifeline of the local economy, forming the main transport routes in Kildare, these waterways and their towpaths now support a large eco-system of diverse plant and animal species along with a significant leisure resource in the county. Kildare is also traversed by some of the more productive and important salmonid systems in the region, the River Liffey, the River Barrow and the River Boyne.

Rivers and streams should be maintained in an open, semi-natural condition. Their corridors and valleys provide effective measures to protect and maintain biodiversity and to help manage fluvial and pluvial flooding while supporting a quality, multi-functional green network generating multiple benefits for the environment, tourism and society. Groundwater is important for supplying water and maintaining wetlands and river flows in dry periods. Groundwater resources should be protected and managed in a sustainable manner.

12.10.1 Riparian zones

Riparian zones are vegetated areas bordering rivers and other bodies of surface water. They are particularly important, as they contain a range of habitats and species which are different from the surrounding landscape and the riparian corridor also acts as a wildlife corridor, enabling species to move from place. They include flood plains and buffer zones which play a key role in protecting/improving water quality in associated watercourses (streams, rivers, and lakes), thus providing environmental benefits.

Riparian zones are particularly vulnerable to damage from inappropriate development. A key requirement of an integrated watercourse protection strategy is the set-aside of sufficient land along the river margin or corridor. The buffer zone, if sufficiently large and managed will:

- Filter out pollutants and sediments from overland surface run off;
- Provide bank stabilisation which can assist in preventing fluvial erosion;
- Provide a refuge for animals with close affinity to rivers;
- Create habitat necessary for aquatic life;
- Provide amenity and recreation to local people and visitors to the area;
- Enhance flood alleviation.

Where developments are proposed adjacent to waterways, on private or publicly owned land, the Planning Authority will require a setback distance of an absolute minimum of 10m from the water's edge, however, the actual set-back will be determined by the scale and importance of the River, with up to 100m or more being required along the larger and more important rivers such as the Liffey, Barrow and Boyne (except on town centre/regeneration sites where there is a history of development or where there is a key public infrastructure required for public benefit). Riparian Zones are defined in Planning for Watercourses in the Urban Environment (IFI, 2020) as having three zones, (see Figure 12.2). These zones have distinct characteristics and can facilitate different uses as per Table 12.4. The buffer zone is dependent on the nature and design of the development, with development only occurring within 48m from the water's edge.

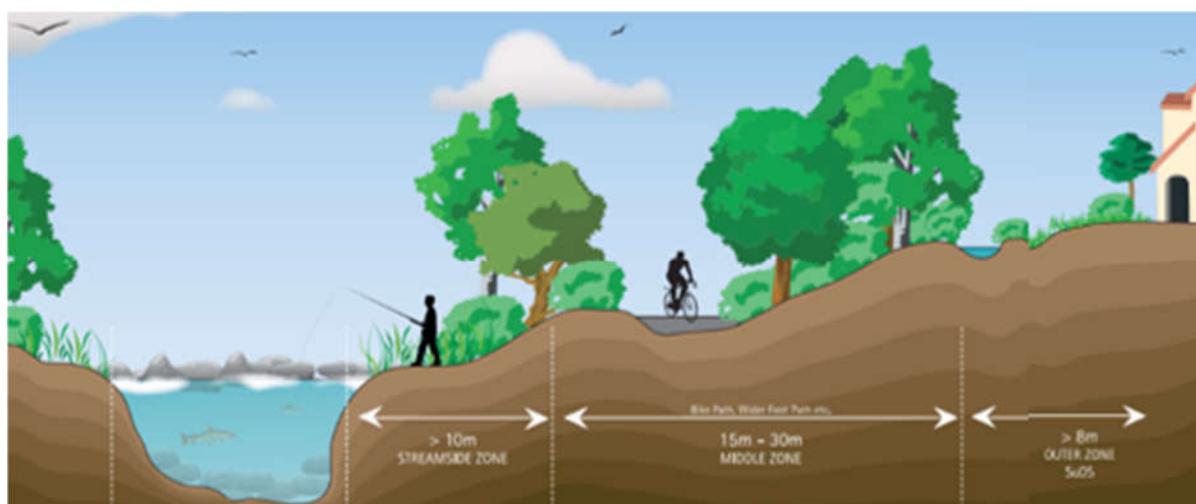


Figure 12.2 - Riparian Buffer zones (Source: *Planning for Watercourses in the Urban Environment*, IFI, 2020)

Characteristics	Streamside zone >10m	Middle zone 15m-30m	Outer zone >8m
Function	Protect the physical integrity of the stream ecosystem	Provide distance between upland development and streamside zone. Acts as a sump/filter for nutrients and sediment	Prevent encroachment and filter hard surface runoff
Width	Minimum 10m plus wetland and other habitat	15-30m depending on stream	8m minimum setback to structures
Vegetative target	Native riparian vegetation	Managed woodland, some clearing/open space allowed	Woodland encouraged, but usually turfgrass
Allowable uses	Very restricted except for fishing or walking trails	Restricted, e.g. some recreational uses such as bike path or larger footpaths can function as a flood zone	Unrestricted e.g. residential uses, including lawn, swales, most stormwater treatment will occur here

Table 12.4 - Recommended riparian buffer zones illustrating the sub-zones and their functional uses (adapted from: *Planning for Watercourses in the Urban Environment*, IFI, 2020)

The width of the riparian/buffer zone will depend on factors such as existing land use, land topography (e.g. slope), soil type, channel width/gradient and critical habitats to be protected. It is important that the buffer zone is large enough to protect the ecological integrity of the river (including emergent vegetation) and the riparian zone (bankside vegetation including trees) and has regard to the historical use of the area. The width of the buffer zone shall be determined having regard to the OPW's Strategic Flood Risk Assessment Maps (SFRAMs), historical flood maps and/or following input from an ecologist.

Key public infrastructure may be permitted within the riparian zone where there are no alternatives available or where it enhances the public and civic amenity or tourism potential of a site, such as a slipway, jetty, pontoon, angling platform, mooring post, etc.

Policy

It is the policy of the Council to:

BI P7	Protect rivers, streams and other watercourses and, wherever possible, maintain them in an open state capable of providing suitable habitats for fauna and flora while discouraging culverting or realignment.
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Objectives

It is an objective of the Council to:

BI O21	Ensure the protection of rivers, streams and other watercourses and, wherever possible, maintain them in an open state capable of providing suitable habitats for fauna and flora while discouraging culverting or realignment. Endeavour to re-open previously culverted streams and watercourses through any future development/redevelopment proposals.
BI O22	Require the preparation and submission of an Ecological Impact Assessment (EclA) including bat and otter surveys for developments along river or canal corridors.
BI O23	Consult with Inland Fisheries Ireland (IFI) in relation to any development (greenfield development or redevelopment of brownfield sites) that could potentially impact on the aquatic ecosystems and associated riparian habitats while taking account of 'Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites' (IFI, 2004) and 'Planning for Watercourses in the Urban Environment' (IFI, 2020).
BI O24	Have regard to the riparian buffer zones and potential uses as identified in Table 12.4 when considering potential development and proposed development layouts within or adjacent to waterways.
BI O25	Consult with Inland Fisheries Ireland (IFI) in relation to any structures designed for crossing fisheries waters. In this regard consideration must be given to the following biological criteria: <ul style="list-style-type: none"> • species of fish required to safely pass • size of fish required to pass (life stage) • time of year in which fish passage is required • high and low design passage flows etc.
BI O26	Require that expert advice is sought from a suitably qualified bat expert, in developing lighting proposals along river and stream corridors, to mitigate impacts of lighting on bats and other species. The use of artificial lighting shall be avoided in streamside zones (see Figure 12.2) and artificial lighting should be restricted unless absolutely necessary in the middle zone (See Table 12.4). LEDs should, where permitted, be warm white to minimise disturbance to wildlife.
BI O27	Ensure that any runoff from developed areas does not result in any deterioration of downstream watercourses or habitats and require that pollution generated by a development is treated within the development area prior to discharge to local watercourses.
BI O28	Generally, prohibit infilling of land adjacent to rivers, including natural floodplains, prior to or during any development. This will only be permitted, where, in the opinion of the planning authority, there is an overriding public interest in order to provide a key public infrastructure or to provide a more coherent design approach (in line with an approved urban design strategy) but, it will be subject to ensuring that adequate compensatory flood storage (if necessary) is provided elsewhere.
BI O29	Ensure the protection, improvement or restoration of riverine floodplains and to promote strategic measures to accommodate flooding at appropriate locations including nature-based solutions, in order to protect ground and surface water quality and build resilience to climate change.

BI O30	Avoid developing walking/cycling trails through sensitive ecological habitats. A multi-disciplinary team including an ecologist and flood risk expert shall review all riverine sites to determine the appropriate zonation (ref Table 12.4) and permissible uses.
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12.11 Wetlands and Ramsar Sites

County Kildare contains a wide range of wetlands of international and national importance. Due to the topography, hydrology, climate and soils present it has wetland habitats ranging from raised bogs, fens, marshes, large riverine systems, a variety of lake types, wet woodlands and many more. They support a variety of habitats and species, function in the protection of water quality and/or flood control, are important carbon stores contributing to climate resilience and provide open space and recreational opportunities.

The most notable wetland sites in the county include Pollardstown Fen, one of Ireland's largest and natural fen ecosystems, and Ballynafagh Bog and Mouds Bog, which both represent internationally significant areas of intact raised bog, a habitat that has been lost throughout much of the Irish midlands. The County Kildare Wetland Survey 2012-2014 identified 231 wetlands for local biodiversity interest in Kildare 125 of which are rated A (International), B (National), C+ (County) and C (Local) importance (See Tables 12.5 & 12.6).

As developments sited on peatlands have the potential to increase overall carbon losses, potentially undermining expected carbon savings (in the case of renewable energy developments) and damaging rare habitats of European importance, these factors must be considered in any environmental or ecological impact assessment prepared to accompany any planning applications.

Planning and Development (Amendment) (No. 2) Regulations 2011 require that work or development involving the drainage or reclamation of a wetland greater than 0.1 Ha requires planning permission. For drainage or reclamation of wetlands greater than 2 Ha, an Environmental Impact Assessment is required. The Council will require that an ecological assessment (including where necessary EIA) is carried out at the appropriate level in relation to proposals for drainage or reclamation of wetlands.

Ramsar Sites are designated for the conservation of wetlands, particularly those of importance to waterfowl. These sites were designated under the Ramsar Convention on Wetlands of International Importance. Pollardstown Fen is designated as a Ramsar Site.

County Kildare Wetland Survey Sites - Rating of Importance of Ecological Sites

<p>A Internationally important</p> <ul style="list-style-type: none"> • Sites designated (or qualifying for designation) as SAC or SPA under the EU Habitats or Birds Directives. • Undesignated sites containing good examples of Annex I priority habitats under the EU Habitats Directive. Sites designated (or qualifying for designation) as SAC for salmonids or Annex II species under the EU Habitats Directives. • Major salmon river fisheries. Major salmonid (salmon, trout or char) lake fisheries.
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County Kildare Wetland Survey Sites - Rating of Importance of Ecological Sites

B Nationally important

- Sites or waters designated or proposed as an NHA* or statutory Nature Reserves.
- Undesignated sites containing good examples of Annex I habitats (under EU Habitats Directive).
- Undesignated sites containing significant numbers of resident or regularly occurring populations of Annex II species under the EU Habitats Directive or Annex I species under the EU Birds Directive or species protected under the Wildlife (Amendment) Act 2000.
- Major trout river fisheries.
- Water bodies with major amenity fishery value. Commercially important coarse fisheries.

C+ County value

- Area of Special Amenity.
- Area subject to a Tree Preservation Order.
- Area of High Amenity, or equivalent, designated under the County Development Plan.
- Resident or regularly occurring populations (assessed to be important at the County level) of the following:
 - Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;
 - Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;
 - Species protected under the Wildlife Acts; and/or Species listed on the relevant Red Data list.
- Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.
- County important populations of species, or viable areas of semi-natural habitats or natural heritage features identified in the National or Local BAP, if this has been prepared.
- Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.

C High value, locally important

- Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or significant populations of locally rare species.
- Sites containing any resident or regularly occurring populations of Annex II species under the EU Habitats Directive or Annex I species under the EU Birds Directive.
- Small water bodies with known salmonid populations or with good potential salmonid habitat.

D Moderate value, locally important

- Sites containing some semi-natural habitat or locally important for wildlife.
- Small water bodies with some coarse fisheries value or some potential salmonid habitat.
- Any water body with unpolluted water (Q-value rating 4-5).

County Kildare Wetland Survey Sites - Rating of Importance of Ecological Sites

E Low value, locally important

- Artificial or highly modified habitats with low species diversity and low wildlife value.
- Water bodies with no current fisheries value and no significant potential fisheries value.

Table 12.5 - County Kildare Wetland Survey Sites - Rating of Importance of Ecological Sites

KWS Site Code	Site Name	Easting	Northing	Ranking
14	Ballynafagh Bog SAC	281000	228000	A
53	Barrow Canal - River Barrow	268500	192700	A
5	Pollardstown Fen SAC	277068	216169	A
7	Rye Water Valley/Carton SAC (Kildare)	297322	237635	A
8	Ballynafagh Lake SAC	281000	228900	A
44	Barrow Valley at Tankardstown Bridge - River Barrow	270558	188087	A
13	Leixlip Cold Spring, Louisa Bridge – Rye Water Valley / Carton SAC	299500	236800	A
4	Mouds Bog SAC	279032	218913	A
73	Pollardstown Wood - Pollardstown Fen SAC	276700	215800	A
19	Poulaphouca Reservoir Spa cNHA (Kildare)	295415	209133	A
6	Red Bog SAC	297971	217277	A
11	River Barrow and River Nore SAC (Kildare)	265709	197314	A
10	Arckill Bog - Carbury Bog NHA	269400	235400	B
24	Ballina Bog cNHA	270767	241372	B
139	Ballybought (Naas South By)	291337	207010	B
28	Ballysooghan Bog cNHA – Ballydermot (Kildare)	264516	222206	B
2	Carbury Bog NHA	269614	235511	B
239	Corbally Branch - Grand Canal cNHA	286865	218196	B
25	Curragh (Kildare) cNHA	277000	212000	B
46	Derryvullagh Island cNHA - Kilbarry	268595	200600	B
30	Donadea Wood cNHA	283559	232509	B
43	Grand Canal (Kildare) - Grand Canal cNHA	296969	229262	B
22	Grand Canal cNHA (Kildare)	267958	230958	B
188	Haggard Bog	268150	236819	B
95	Harristown Common cNHA	288100	213100	B
3	Hodgestown Bog NHA	280000	230000	B
32	Hortland Bog cNHA	279216	235308	B
136	Kingsbog Common	271198	209488	B
42	Liffey at Osberstown cNHA - River Liffey (Kildare)	287000	220800	B
41	Liffey Bank Above Athgarvan cNHA - River Liffey (Kildare)	282516	211488	B

KWS Site Code	Site Name	Easting	Northing	Ranking
64	Liffey Oxbow - River Liffey (Kildare)	294964	230721	B
15	Liffey Valley Meander Belt cNHA - River Liffey (Kildare)	291072	209916	B
1	Lodge Bog cNHA - Lodge	271564	226045	B
49	Lullybeg Butterfly Reserve - Ballydermot (Lullymore)	268262	225588	B
34	Lullymore West cNHA	269302	226083	B
69	Moods - Grand Canal cNHA	280590	225039	B
112	Mulgeeth Bog	276381	236751	B
26	Oakpark cNHA (Kildare)	273788	180169	B
87	Rathangan - Grand Canal cNHA	268694	219799	B
63	Rathcor Spring - Grand Canal cNHA	284300	213800	B
40	River Liffey (Kildare) cNHA	290766	229341	B
36	Royal Canal (Kildare) - Royal Canal cNHA	299874	237169	B
21	Royal Canal cNHA (Kildare)	272339	242112	B
18	Suncroft Fen cNHA	277074	207475	B
211	Timahoe North	276100	234938	B
78	Allenwood North - Timahoe South	274793	227772	C+
110	Allenwood North East Cutover	276700	228000	C+
81	Allenwood Road Wood	276967	226551	C+
100	Allenwood South East Bog	275000	225500	C+
194	Ballina Ponds / Moyvalley Golf Club	271791	240517	C+
79	Ballindoolin Bog Wood	265100	238000	C+
214	Ballydermot (Lullymore)	269027	225145	C+
27	Ballymore Eustace cNHA	292608	209553	C+
109	Ballynakill Lower Bog	272700	230500	C+
60	Ballysax	279000	208500	C+
102	Ballyteige South Bog	274500	222700	C+
91	Bishopsland	293660	208798	C+
152	Blackrath West	280941	200764	C+
89	Blacktrench	280922	220372	C+
97	Bog of Allen Nature Centre	270610	225884	C+
168	Carnalway	286736	212114	C+
92	Dunshane Common	287873	212829	C+
12	Dysart Thermal Springs cNHA	279200	238200	C+
247	Hobartstown West	277715	188263	C+
98	Lodge Bog South cNHA - Lodge	270974	225064	C+
33	Lullymore East Bog Woodland cNHA	270768	225264	C+
80	Martinstown	278900	206400	C+
129	Oghil Bog	266182	209556	C+
246	Rahin Wood	261650	238573	C+
57	St Bridget's Well / Japanese Garden	273500	211000	C+
56	St Patricks Well 1	282975	219144	C+
58	St Peters Well	281710	233140	C+

KWS Site Code	Site Name	Easting	Northing	Ranking
242	Swordlestown South	290157	213350	C+
172	Swordlestown South Transition Mire	290433	213604	C+
52	Timahoe Bog - Timahoe North	275835	234674	C+
245	Usk Created Wetlands	283854	202778	C+
234	Walshestown	292753	215147	C+
77	Carrick	263600	236500	C
61	Carrick Hill	263405	237332	C
119	Castletown Demesne Ponds	297641	234187	C
135	Coolnafearagh (Kildare)	260853	210935	C
111	Corkeragh Bog	282879	230425	C
83	Crabtree River - Ballydermot	267613	224024	C
93	Crohane	262655	197813	C
106	Cushaling East Wet Heath - Ballydermot	267500	227500	C
217	Cushaling River Valley	267006	227822	C
94	Derryoughter East	265723	202532	C
146	Downings North Bog	280999	226744	C
70	Drehid Wood - Timahoe North	274600	234000	C
116	Drumachon Bog - Timahoe North	275200	233400	C
117	Drumcahon Cutaway - Timahoe South Cutaway	275000	232000	C
47	Drumsru Bog - Lodge	271896	224275	C
54	Golden Falls Reservoir	293400	208600	C
71	Greatconnell	282700	214600	C
75	Heritage Park Wood	270000	225000	C
59	Hill of Allen	275717	220526	C
62	Kilbrook Spring	281460	242200	C
190	Kilglass	268706	239063	C
196	Kilrainy	266057	240728	C
123	Kilwoghan Wetland	295621	234528	C
66	Knocknacree Wood	279600	180800	C
237	Lakelands Ponds	289343	218795	C
76	Loughnacush - Timahoe South	273000	232600	C
202	Lullybeg Cutaway - Ballydermot (Lullymore)	268706	225308	C
96	Lullymore East Cutaway - Lodge	271400	224500	C
86	Lullymore Wetlands - Ballydermot (Lullymore)	269380	224990	C
118	Lyreen River	293962	238314	C
137	Maddenstown South	273437	208154	C
67	Moone Woodlands	279200	192800	C
99	Mulgeeth Cutaway - Timahoe North	275400	236400	C
147	Mylerstown (Connell By)	279966	225657	C
50	Newtowndonore Bog	280000	223300	C
103	North of Heritage Park	270100	225500	C
177	Osberstown Attenuation Pond	288169	221260	C

KWS Site Code	Site Name	Easting	Northing	Ranking
23	Plantation Fen cNHA - Ballydermot (Lullymore)	269500	225000	C
90	Punchers Grange	274329	220561	C
249	Punchestown Racecourse Wetlands	292062	215502	C
51	Rathmore Bog	270000	231500	C
38	River Barrow Floodplain (Kildare)	264119	200887	C
74	Royal Oak - Ballina Bog cNHA	270448	241942	C
17	St. Patricks Hill Thermal Spring cNHA	294400	231600	C
210	Timahoe South	274814	230287	C
227	Walterstown	270903	207827	C
104	West of Lugherra River	266700	226500	C
101	Allenwood South West Bog - Lodge	272600	225500	D
140	Alliganstown	290484	206346	D
183	Ardclogh	295127	227592	D
108	Ballybrack Bog	271370	219987	D
215	Ballydermot	266580	224269	D
88	Ballyhagan	267963	231643	D
240	Ballymadeer / Backweston Campus Ponds	299728	233646	D
125	Ballysax Great	280158	209366	D
157	Ballysax Great Quarry	280155	208825	D
84	Bog of Allen Killinthomas - Ballydermot	265400	224300	D
185	Boherhole	286440	232228	D
191	Brackagh	264305	239415	D
85	Brockagh	277363	226807	D
65	Burton Hall Demesne	278700	179900	D
45	Cappagh Bog	282510	242283	D
120	Celbridge Abbey / Simmonstown house ponds	297052	232405	D
122	Celbridge Pond	295951	234390	D
128	Claremount	265870	239345	D
142	Cloney Bog - Kilbarry	267253	201584	D
150	Colbinstown	283157	198845	D
170	Coolsickin Or Quinsborough	263625	213219	D
127	Cornamucklagh	267386	240400	D
132	Curragh (Ed Ballysax East) North - Curragh (Kildare) cNHA	279462	212056	D
134	Derrylea	259646	214969	D
31	Doogary Cross Roads cNHA	280600	224000	D
16	Dunlavin Marshes cNHA (Kildare)	284680	202682	D
175	East Kildare Sandpits	297477	216713	D
233	Flemingtown South	289970	214117	D
232	Flemingtown South Or Tonaphuca	290000	213366	D
209	Gilltown	279513	232740	D
154	Gilltown (Naas South By)	286232	207419	D

KWS Site Code	Site Name	Easting	Northing	Ranking
155	Grangemore	286970	208028	D
189	Hodgestown (Ed Kilcock)	286499	238709	D
138	Ironhills	274178	206622	D
238	Jigginstown Lake	286632	217783	D
244	Kennycourt Wetlands	288532	206528	D
220	Kilbarry	268996	200891	D
250	Kilkea Castle Golf Course Ponds	274714	188466	D
184	Ladycastle Lower / K Golf Club	291581	229128	D
212	Lodge	272000	225075	D
55	Lyreen Angling Center	294300	238600	D
205	Merville and Milltown (Kildare)	285036	201172	D
153	Moortowncastle	280328	206343	D
160	Newabbey	284966	209104	D
72	Newbridge School Wood	280778	215238	D
228	Oghil	268358	211286	D
236	Oldstown Demesne Lake	289153	220671	D
241	Parsonstown Ponds	299150	234661	D
82	Pluckerstown	273278	221512	D
35	Prosperous Bog	283540	229699	D
121	Quarry Pond Celbridge	297585	232863	D
161	Sallymount Demesne	287137	209112	D
148	Shanrath West	269622	192724	D
207	Tober Demesne Wetlands (Kildare)	288909	204509	D
222	Ummeras	262909	215374	D
133	Ummeras More	264276	215772	D
243	Usk Quarry Ponds	285004	201656	D
225	Alliganstown North	290675	206641	E
224	Alliganstown South	290961	206156	E
216	Ballydermot (Derrybrennan)	270103	228263	E
159	Ballyfarsoon	264554	208839	E
199	Ballyonan	268236	243374	E
144	Ballysaxhills	280614	208945	E
163	Ballysaxhills Farm Pond	280415	209513	E
158	Ballysaxhills Quarry	281246	208833	E
208	Balrinnet Quarry	267599	239860	E
176	Boherkill	269976	217509	E
226	Boleybeg	289687	206874	E
182	Boston	294981	227263	E
169	Corbally (Connell By)	284975	212327	E
248	Craddockstown West	291027	215951	E
164	Curragh (Ed Ballysax East) Pond	281218	209673	E
145	Curragh (Waverley Cottages)	280324	209566	E
126	Curragh Cutover - Curragh (Kildare) cNHA	278103	210616	E
186	Derrycrib	281841	234736	E

KWS Site Code	Site Name	Easting	Northing	Ranking
130	Dysart	279576	237077	E
251	Halverstown Gravel Pit	282025	205679	E
131	Hortland	280390	236704	E
230	Hybla Or Ballyneage	264227	211910	E
195	Killickaweeny	285322	240574	E
206	Kilmalum and Burgage (Kildare)	296853	212751	E
193	Kilrathmurry	265279	240531	E
166	Kineagh	282386	210153	E
229	Lackaghmore	267370	211846	E
141	Loughabor Bog - Kilbarry	271217	200871	E
252	Lowtown Gravel Pit	27792	224565	E
213	Lullymore	271094	226931	E
181	Millicent South	286917	224393	E
218	Mouds	280674	222260	E
231	Mountrice	265266	213163	E
149	Moyleabbey	281020	197349	E
201	Moyvally	271064	243994	E
143	Mullaghmoynne West	275623	204443	E
187	Mylerstown (Carbury By)	270399	236531	E
173	Newtown Great	294459	215754	E
156	Nicholastown (Kilcullen By)	284872	208437	E
178	Osberstown	288626	223198	E
180	Palmerstown Demesne	292310	223601	E
192	Pitchfordstown	287164	239811	E
203	River Griese Wetland	279432	193311	E
37	Sillagh Marsh cNHA	291328	213487	E
171	Swordlestown South Pool	290911	213295	E
221	Ticknevin	267616	230634	E
39	Usk Marshes	284282	202093	E
174	Walshestown (Naas South By)	292780	215877	E

Table 12.6 - County Kildare Wetland Survey Sites

Policy

It is the policy of the Council to:

BI P8	Ensure that Kildare's wetlands and watercourses are retained for their biodiversity and flood protection values and maintain good ecological status of wetlands and watercourses in support of the provisions of the Water Framework Directive and Ramsar Convention.
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Objectives

It is an objective of the Council to:

BI O31	Protect wetland sites that have been rated A (International), B (National) C+ (County) and C (Local) importance as identified in the County Kildare Wetlands Survey 2012-2014, (See Tables 12.5 & 12.6).
BI O32	Prevent infilling and drainage, where possible, of wetlands identified as part of the County Kildare Wetland Survey 2012-2014, (See Table 12.6).
BI O33	Ensure that an ecological assessment undertaken in conjunction with proposals involving drainage or reclamation of wetland identified in Table 12.6. Impact assessment of all developments on peatlands shall consider peatland stability, carbon emissions balance, Hydrology and Ecology.
BI O34	Support the implementation of the recommendations of the National Peatlands Strategy 2015, as they relate to County Kildare.

12.12 Invasive Species and Noxious Weeds

Invasive species, both invertebrate and plants, can represent a major threat to local, regional, and national biodiversity. Terrestrial and aquatic habitats can be negatively affected, resulting in significant damage to environment and economic interests, such as agriculture, forestry and civil infrastructure.

Prohibitions are in place in relation to the introduction or dispersal of certain invasive species as set out in the Third Schedule of the European Communities (Birds and Habitats Regulations 2011 (S.I. 477/2011) and as set out in EU Regulations 1143/2014 on the Prevention and Management of the Introduction and Spread of Invasive Alien Species.

Thistle, Ragwort, Dock, Common Barberry, Male Wild Hop plant & Wild Oat are scheduled as noxious weeds under the Noxious Weeds Act, 1936. Noxious weeds, most of which are native plants of disturbed ground, impact adversely on agriculture. They may compete for space, harbour pests or diseases, or be injurious to livestock or human beings. It is important to note that, as native species, noxious weeds are part of our natural biodiversity and are utilized by a range of invertebrate and bird species. The management objective for these native species should be control and not complete eradication. The loss of such species will also result in the loss of species that depend on them as a food source. Creeping thistle (*Cirsium arvense*) for example, is a food plant for over twenty species of butterfly and moth, with four species of moth depending on the genus *Cirsium* as their sole food plant. Thistle seed is also an

important food resource for goldfinch. Ragwort (*Senecio jacobea*) has four species of moth dependant on it including the day-flying cinnabar moth.

Policy

It is the policy of the Council to:

BI P9	Support measures for the prevention and/or eradication of invasive species within the county and the control of noxious weeds.
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Objectives

It is an objective of the Council to:

BI O35	Require all development proposals to address the presence or absence of invasive alien species on proposed development sites and (if necessary) require applicants to prepare and submit an Invasive Species Management Plan where such species exist, in order to comply with the provisions of the European Communities (Birds and Natural Habitats) Regulations 2011-2015.
BI O36	Encourage, through Citizen Science, the public's awareness in the identification and eradication of invasive species and to provide training with respect to potential threats caused by invasive species, particularly their methods of dispersal and appropriate control and removal measures in association with relevant authorities.

Actions

It is an action of the Council to:

BI A17	Prepare a programme of mapping of invasive species in the county.
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12.13 Geology

The Geological Survey of Ireland (GSI), in partnership with the National Parks and Wildlife Service, is seeking to identify geological and geomorphological sites of national significance for statutory designations as Natural Heritage Areas. Other geological sites of national or local importance are being identified as Sites of Geological Importance and by virtue of their recognition in Development Plans will be protected from potentially damaging development. An audit of the Geological Heritage of County Kildare was carried out in 2005, which identified 20 geological sites of interest in the county. The list of Sites of Geological Importance is set out in Table 12.7

Site Name	Geological Interest	Location
Chair of Kildare	Precambrian – Devonian Palaeontology	Carrickanearla, Conlanstown, Cannonstown.
Dunmurry Hill	Precambrian - Devonian Palaeontology	Dunmurry
Hill of Allen	Cambrian-Silurian	Barnacrow
Slate Quarries	Cambrian-Silurian	Slate Quarries Ballysax
Ballysax	Quaternary	Curragh

Site Name	Geological Interest	Location
Glen Ding	Quaternary	Blessington, Athgarrett, Newtown Great, Newtown Park
Pollardstown Fen and Springs	Quaternary	Scarlettstown, Roseberry, Rathbride, Cornelscourt
Moorhill	Quaternary	Kilcullen
The Curragh	Quaternary	St. Ledgers Bottoms
Ballykane Hill	Lower Carboniferous	Kilrainy
Carbury Castle	Lower Carboniferous	Carbury
Carrick Hill, Edenderry	Lower Carboniferous	Carrick
Liffey Oxbow	Fluvial/Lacustrine Geomorphology	Celbridge
Liffey Valley	Fluvial/Lacustrine Geomorphology	Ballymore Eustace-Kilcullen
Kilbrook Spring	Hydrogeology	Kilbrook
Louisa Bridge Springs (Cold and Warm)	Hydrogeology	Leixlip
St Brigid's Well – Japanese Gardens	Hydrogeology	Kildare
St. Patrick's Well (1)	Hydrogeology	Barrettstown, Naas
St. Patrick's Well	Hydrogeology	Ardrass Lower
St. Peter's Well	Hydrogeology	Dunmurraghill

Table 12.7 - Sites of Geological Importance

Policy

It is the policy of the Council to:

BI P10	Maintain and protect the conservation value of geological sites of national or local importance and seek the sustainable management of the county's geological heritage resource as listed in Table 12.7.
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Objectives

It is an objective of the Council to:

BI O37	Consult with the Geological Survey of Ireland regarding any development proposals within or likely to have an impact on Sites of Geological Importance set out in Table 12.7.
BI O38	Contribute towards the protection from inappropriate development of Geological Natural Heritage Areas that become designated during the lifetime of this Plan.

Action

It is an action of the Council to:

BI A18	Publish the findings of the audit of Geological Heritage of County Kildare on completion.
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12.14 Green Infrastructure (GI)

12.14.1 EU Policy

Responding to the Biodiversity Strategy, the EU published 'Building a Green Infrastructure for Europe' and 'Green Infrastructure: Enhancing Europe's Natural Capital' Strategy (2013), which sets out 'to promote the deployment of Green Infrastructure in the EU in urban and rural areas'. The strategy aims to promote and facilitate Green Infrastructure (GI) projects. The EU GI strategy is made up of the following four main elements:

- Promoting GI in the main EU policy areas;
- Supporting EU-level GI projects;
- Improving access to finance for GI projects,
- Improving information and promoting innovation.

12.14.2 National Policy

In August 2010, Comhar - The Sustainable Development Council, published 'Creating Green Infrastructure for Ireland: Enhancing Natural Capital for Human Wellbeing'. This document proposes an approach and a set of principles that should be followed in Green Infrastructure planning.

12.14.3 Green infrastructure general

The environmental and heritage resources are vital for our county and can be described as the county's 'Green Infrastructure'. Green Infrastructure is broadly defined as "a strategically planned and managed network featuring areas with high quality biodiversity (uplands, wetlands, peatlands, rivers and coast), farmed and wooded lands and other green spaces that conserve ecosystem values which provide essential services to society" (Comhar, 2010).

Green Infrastructure planning involves a holistic approach and should be provided as an integral part of sustainable development. GI planning promotes a multifunctional and spatially connected land use perspective in contrast to the 'grey' (man-made, constructed) infrastructure approaches that serve one single objective. An area of land can perform several functions and offer multiple benefits if its ecosystems are in a healthy state. GI aims to enhance nature's ability to deliver multiple valuable ecosystem goods and services, potentially providing a wide range of environmental, social, climate change adaptation and mitigation benefits – including water purification, air quality, carbon sequestration, space for biodiversity, recreation and amenity.

Strategic Green Infrastructure planning will assist in meeting statutory obligations under EU directives and national legislation, such as the Water Framework Directive, Strategic Environmental Assessment (SEA), Floods Directive and Birds and Habitats Directives.

Policy

It is the policy of the Council to:

BI P11	Recognise the importance of Green Infrastructure in Kildare and to put measures in place to protect this valued biological resource.
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Action

It is an action of the Council to:

BI A19	Protect and maintain a Green Infrastructure network in the county.
BI A20	Map tree canopy coverage in urban areas in conjunction with the preparation of statutory Local Area Plans with a view to increasing same by, where possible, 30%, as a minimum.

12.14.4 Green Infrastructure approach to spatial planning

Green Infrastructure comprises an interconnected network of natural, semi-natural and artificial habitats, green spaces and ecological areas that traverse our urban and rural areas. GI can include parks, open spaces, rivers, farmland, playing fields, woodlands, allotments and private gardens which surround and intersperse our towns and villages. Individually, each Green Infrastructure site has an important role and benefit in both urban and rural areas which can be strengthened and enhanced when the sites are linked together into a network of Green Infrastructure. Many social, economic and environmental benefits can be achieved especially when the Green Infrastructure is proximate to where people live and work.

The benefits of Green Infrastructure include the following:

- Attracting businesses and inward investment by creating an attractive environment;
- Access nature, outdoor recreation and for social interaction;
- Space for nature and wildlife to flourish;
- Recreational, tourism and cultural roles;
- Climate change adaptation - for example flood alleviation and cooling urban heat islands,
- Forestry, crop production, agriculture and energy development;
- Local food production - in allotments, gardens and through agriculture;
- Provides green buffers /green wedges between built up areas;
- Improves air quality;
- Environmental education
- Improves health and well-being;
- Creating a sense of place and local distinctiveness
- Encouraging physical activity and improved health and well-being by providing quality green spaces for walking and cycling and other physical activity.

Policy

It is the policy of the Council to:

BI P12	Recognise the importance of Green Infrastructure in Kildare and protect this valued biological resource, the ecosystem services it provides and the contribution to climate resilience.
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Objectives

It is an objective of the Council to:

BI O39	Ensure the protection, enhancement and maintenance of Green Infrastructure in Kildare.
BI O40	Support the development of a Regional Green Infrastructure Strategy and the identification, management, development and protection of strategic GI connections in co-operation with Kildare's neighbouring counties and the Midland and Eastern Regional Assembly.
BI O41	Develop a strategy, to identify a series of greenbelt/green spaces (in addition to those identified in this CDP) between the growing settlements within Kildare during the lifetime of the Plan with particular attention to the undeveloped areas between Celbridge, Leixlip and Maynooth and to collaborate with South Dublin County Council, where appropriate.
BI O42	Require that all Local Area Plans protect and manage the Green Infrastructure network in an integrated and coherent manner and add additional local Green Infrastructure corridors where possible.
BI O43	Provide for the incorporation of underpasses and/or Green Bridges at ecologically sensitive locations on the county's road and rail corridors (including those along disused railway corridors) that will facilitate the free movement of people and species through the urban and rural environment.
BI O44	Promote a network of paths and cycle tracks to enhance accessibility to the Green Infrastructure network across the County, while ensuring that the design and operation of the routes respect, and where possible, enhance the ecological potential of each site.

Actions

It is an action of the Council to:

BI A21	Complete the mapping of Green Infrastructure for each town and village in County Kildare and to develop specific policies and objectives for each town specifically by incorporating green infrastructure policies and objectives into the various Local Area Plans as they are being prepared.
BI A22	Work with Bord Na Mona to prepare a Green Infrastructure Masterplan that will inform the delineation of core areas, stepping stones and corridors (long distance peatways) as identified in Sections 12.14.6, 12.14.7 and 12.14.8, that may inform the designation of an interconnected Bog of Allen Nature Reserve, Special Amenity Area Order and/or National Peatlands Park.

12.14.5 Kildare County Council's Green Infrastructure Strategy

There are three key components to Kildare's Green Infrastructure Strategy:

- 1. Core Areas:** These are large geographical areas of influence and importance, for reasons of ecology, landscape, designation, heritage, environmental management and ecosystem services.
- 2. Stepping Stones:** These are smaller geographical areas but either critically important because of their environmental quality (i.e., local native woodlands, intact bogs/peatlands, wetlands), local amenity value (i.e., urban parks) or because of their scale as undeveloped areas, such as Coillte forestry plantations.
- 3. Corridors:** These are the connectors providing vital linkages in the networks, for example, canals, stream/river corridors and the associated riparian corridors or valleys, disused railway lines, etc.

12.14.6 The Core Areas

Lying within the centre of the County close to Kildare, Newbridge and Milltown lies the Curragh, Pollardstown Fen and Maud's Bog – each of which are individually distinct, with their own unique habitats. To the south of the Curragh, lies both disused and operational sand and gravel pits with some distinctive environmental characteristics and on the edge of these sites site the Royal Site of Dun Ailinne – an impressive heritage and hilltop location with a large enclosed circular ditch; and south of this again is the Old Kilcullen Hill (heritage site). The sites are in relative proximity to each other, with just 1.5 kilometres separating the larger three sites from each other (the Curragh, Pollardstown and Mouds Bog). Collectively, these areas represent an important Core Area of the GI Strategy.

Other Core Areas in or adjoining the plan boundary are identified in 12.14.6.4 and 12.14.6.5.

12.14.6.1 The Curragh

The Curragh is a relatively flat open plain of almost 2,000 Hectares of common land situated between Newbridge and Kildare Town. The Curragh Aquifer is a very important aquifer that feeds the nearby Pollardstown Fen. The good drainage of sandy soil is noted for its open aspect, rare plant species and a history of horse training and sheep grazing.

12.14.6.2 Pollardstown Fen

The Fen is a National Nature Reserve located approximately 3km west of Newbridge. It is the largest remaining calcereous spring-fed fen in Ireland, extending over 220 hectares a large proportion of which is State owned. It comprises important fen ecosystem with unique and endangered plant communities.

12.14.6.3 Mouds Bog

Mouds Bog is an important and largely intact raised bog and Special Area of Conservation.

12.14.6.4 Poulaphouca Reservoir

While only a small portion of the Blessington Lakes/Poulaphouca Reservoir lies within the Kildare County boundary, this is a part of a large Special Protection Area in County Wicklow and is fed by the River Liffey and the adjoining Wicklow Mountains.

12.14.6.5 Bog of Allen

Bog of Allen this is a very extensive area that extends from Monasterevin, Rathangan, Allenwood and Prosperous in the south northwards to Johnstown Bridge, Moyvalley and Broadford in the north and it extends further west into County Offaly (south of Edenderry). Due to the intensive industrial scale turf cutting operations of Bord Na Mona over the past 70 years, the remnants of intact raised bog habitat throughout its former range has greatly diminished yet there are still a number of important areas such as Ballynafagh Bog (SAC), Ballynafagh Lake (SAC), Carbury Bog (NHA), Hodgestown Bog (NHA), Staplestown Bog (pNHA) and Ballina Bog (pNHA) in addition to a number of smaller 'left over' areas of prime bogland habitat. The area also includes the Lullymore Heritage and Discovery Park, the Irish Peatland Conservation Council (which manages Lodge Bog, a Butterfly Reserve at Lullymore West and that Bog of Allen Nature Centre in Lullymore). Even where intensive scale peat extraction has occurred, many areas are characterised as wetlands, important in regulating water run-off and these and other areas have demonstrated a certain natural resilience and are naturally re-wilding and forming very important habitat in the form of species rich open areas or first generation woodland (scrub-woodland comprised of birch, sally, alder and pine) that are very rich in species diversity – wildflowers, moths, butterflies, insects, birdlife and mammals.

In 2020, Bord Na Mona announced an end to peat extraction throughout its estate of some 86,878 hectares nationally and in line with Environmental Protection Agency measures it is required to prepare a plan for the permanent rehabilitation of the cutaway boglands within its licensed area. Rehabilitation may comprise of stabilisation of bogs, with natural colonisation with or without targeted management.

Bord Na Mona has also embarked on a programme of Peatlands Enhanced Decommissioning, Rehabilitation and Restoration Scheme (also known as Peatlands Climate Action Scheme – PCAS) – supported by the Climate Action Fund, administered by the Department of Environment, Climate and Communications (DECC), while the National Parks and Wildlife Service (NPWS) will act as the Scheme regulator. To date, 6 bogs within County Kildare have been selected for the programme of Peatlands Enhanced Decommissioning, Rehabilitation and Restoration – including parts of Timahoe North, Timahoe South, Ummeras Bog, Lodge Bog, Ticknevin and Ballydermot Bog. The works planned will create large areas of new and semi-natural habitats, such as reed swamp, poor fen, wet woodland, heath, scrub and embryonic sphagnum rich raised bog peatland.

While Bord Na Mona has clear intentions of developing extensive areas to meet government renewable targets – in the form of wind and solar farms - nonetheless, the Bog of Allen represents a unique opportunity for nature based solutions on a grand scale to address the national biodiversity crisis and climate change mitigation.

Within the Bord Na Mona landownership complex there will be a need to develop a separate masterplan that will identify its own Core Areas, Stepping Stones and Connections/Corridors. This masterplan should, at a minimum, include the following 'core areas' – one should centre around Lullymore Heritage Park, Lullybeg Wetlands, Butterfly Reserve, Lodge Bog – with an extensive buffer zone; a second core area would focus on Ballynafagh Bog, Ballynafagh Lake and Hodgestown Bog; a third area would focus on Killinthomas Wood (Coillte owned), Ballydermot Bog East; a fourth would focus on Ummeras. Each of these would be connected either through the Grand Canal Greenway or the Barrow Blueway/Slate River and/or new and broad Peatway Corridors (the Connectors) and elsewhere there will be other 'stepping stones' in the form of key wetlands, intact raised bogs, woodlands, etc. A number of proposed long distance peatways that could connect the Royal Canal with the Grand Canal/Barrow Blueway are listed below in Section 12.14.8.8. It is expected that 50% of the Peatland Area will remain free from any development.

12.14.6.6 Kilberry Bog

Although this is an industrially harvested peatland, it is geographically more isolated than the Bog of Allen peatlands and has commenced a natural regeneration process. While other new uses like energy production may be sought on the site, it is important that a substantial are of the site is retained open, natural and free from development in the future (i.e., 50% or more).

12.14.6.7 Narraghmore Bog

Similar to Kilberry Bog, this is a Bord Na Mona owned bog that is currently a Nature Reserve; given its smaller size and geographical isolation, it should be maintained free from development.

12.14.6.8 Ummeras Bog

This area is proposed for a Peatlands National Park, which is supported by the Council.

12.14.6.9 The Six Hills

North of Kildare Town and east of Rathangan there are six distinctive elevated hill-top areas that provide panoramic views north across the Bog of Allen and southwards over the Curragh, Pollardstown Fen, Moud's Bog and countryside beyond. These hills comprise of:

- Crosspatrick Hill
- The Hill of Allen
- Boston Hill
- Grange Hill
- Dunmurray Hill, and
- Red Hill.

Given their close proximity and their elevated nature, there is an opportunity to link these areas as a Green Infrastructure Core Area, maintaining relatively free from development and ensuring any future development proposals are carefully considered and managed as with all areas identified as part of the overall GI network.

12.14.7 Nodes/Stepping Stones:

The key nodes in the County include the following features:

- Wetlands
- NHAs, pNHAs, SPAs and SACs outside of the 'Core Areas' (above)
- All native and mixed woodlands, such as those in State/Coillte ownerships (such as Donadea Wood, Mullaghreelan, Moore Abbey, etc.);
- Protected Demense landscapes such as Carton and Castletown House – including the avenues/vistas towards the Wonderful Barn and Conolly's Folly
- Coillte Forestry Areas (commercial plantations);
- Larger public parks (existing and proposed), such as St. Catherine's Park, Kerdiffstown Park, Sallins Amenity Park, and Oldtown Demense/DeBurgh's.
- Racecourses (such as Punchestown, the Curragh and Naas); and
- Disused and abandoned quarry pits where re-wilding and natural regeneration has occurred or may form part of a remediation plan in line with this plan.

12.14.8 The Corridors (Connections)

12.14.8.1 The River Liffey Corridor

The River Liffey Corridor enters Kildare County Council via the Poulaphouca Reservoir (a designated Special Protection Area – a core area just outside the plan area in County Wicklow) – it runs eastwards to Ballymore Eustace and into Kilcullen, before meandering northwest into Newbridge and from there it heads northeast immediately west of Sallins, north to Clane and northeast through Straffan, Celbridge and Leixlip and into Dublin City. It serves 8 towns and villages in the County.

12.14.8.2 The River Barrow Corridor

The Slate and Figile Rivers start in County Kildare and join in County Offaly to form the Barrow River which flows along the eastern County boundary through Monasterevin, Athy and south to Carlow eventually leading joining the Nore River north of New Ross.

12.14.8.3 The Grand Canal

The Grand Canal runs southwest from Dublin City (South) to Sallins, where it splits with its main line heading westwards to Edenderry and beyond and a second arm that runs from Sallins south to Naas and ending at Corbally Harbour (approx. 8km south of Naas).

From Robertstown the Grand Canal splits again with another southern arm that runs from Lowtown (Robertstown) south to Rathangan and Monasterevin where it links up with the Barrow waterways.

12.14.8.4 The Royal Canal

The Royal Canal runs from Dublin (North) westwards serving Leixlip, Maynooth and Kilcock and continues to Mullingar and Longford.

12.14.8.5 The Lyreen & Rye Rivers

The Lyreen River in the north of the County flows through Maynooth and joins the Rye River that commences east of Kilcock and runs east to Leixlip before joining the River Liffey.

12.14.8.6 The Blackwater

This river commences c. 9 kilometres south of Enfield and runs north towards Longwood and feeds the River Boyne.

12.14.8.7 The Morel River

– This river commences near Punchestown and runs east of Naas and Kerdiffstown and north to join the River Liffey just south of Straffan. For the Rivers Liffey and Barrow, the GI River Corridor should, generally, be kept free from development (unless it is a proposal of significant public benefit in terms of utilities or recreational amenities) and as such a minimum set-back is proposed of 250m for any future development proposal (or greater if the areas are within a recognised floodplain/OPW CFRAMs Maps) for areas outside of zoned areas. For the other river and canal corridors, the GI River Corridor should, generally, be kept free from development (unless it is a proposal of significant public benefit in terms of utilities or recreational amenities, or an appropriate tourism initiative as determined by the Planning Authority) and as such a minimum set-back is proposed of 50m for any future development proposal (or greater if the areas is within a recognised floodplain/OPW CFRAMs Maps) for areas outside of zoned areas.

12.14.8.8 Peatways

- As part of the Green Infrastructure Strategy, it is proposed to provide a number of 'Peatway Corridors' that would seek to maintain some degree of connectivity and continuity throughout the Bog of Allen and would seek to connect natural areas of raised bog with naturally regenerating areas and in so doing it would provide for long distance amenity and recreation routes with very significant tourism potential. A number of routes have been selected – based on the route of Bord Na Mona private roads, but mostly on the former industrial railway lines that criss-cross the Bog of Allen but with the intention of establishing broader Countywide Green Infrastructure links to connect the Royal Canal with the Grand Canal. Rather than just developing a singular 'peatway trail' for walkers, it is envisaged that these would be substantial landscape corridors of c. 1 – 2 kilometres wide (i.e. 500m – 1000m either side of the railway or pedestrian trail), that will provide connections for amenity, ecology/ecosystem services.

The Peatway Trails and Corridors will provide a strategically planned network of natural and semi-natural areas (bogs and rewilded areas) with other environmental features (such as re-wetted peatlands, wetlands, lakes and ponds) designed and managed to deliver a wide range of ecosystem services such as air quality, space for recreation and climate mitigation and adaptation. They will also provide important wildlife corridors and will be free for energy infrastructure such as solar farms and wind turbines.

There are three primary Peatway Corridors proposed:

1. From Rathangan Town/Killinthomas Wood north to Ticknevin (where it will meet the Grand Canal Corridor) – with an option for a link to Edenderry via the Derries (subject to co-operation and consideration with Offaly County Council).
2. From Rathangan/Killinthomas to Lullymore (linking the Grand Canal Corridor) and from there to Allenwood North (Allenwood Community Development Association

Ltd.) and continuing north via Timahoe Bog (Timahoe West) and onto the townland of Doogary/Cooltree a few kilometres south of Johnstown Bridge/Enfield and the Royal Canal Greenway.

3. From Edenderry to Carbury Bog following the path of the former disused railway line and from there north to Martinstown/Blackwater Aquaduct on the Royal Canal Greenway.

12.14.8.9 The East Kildare Uplands Corridor

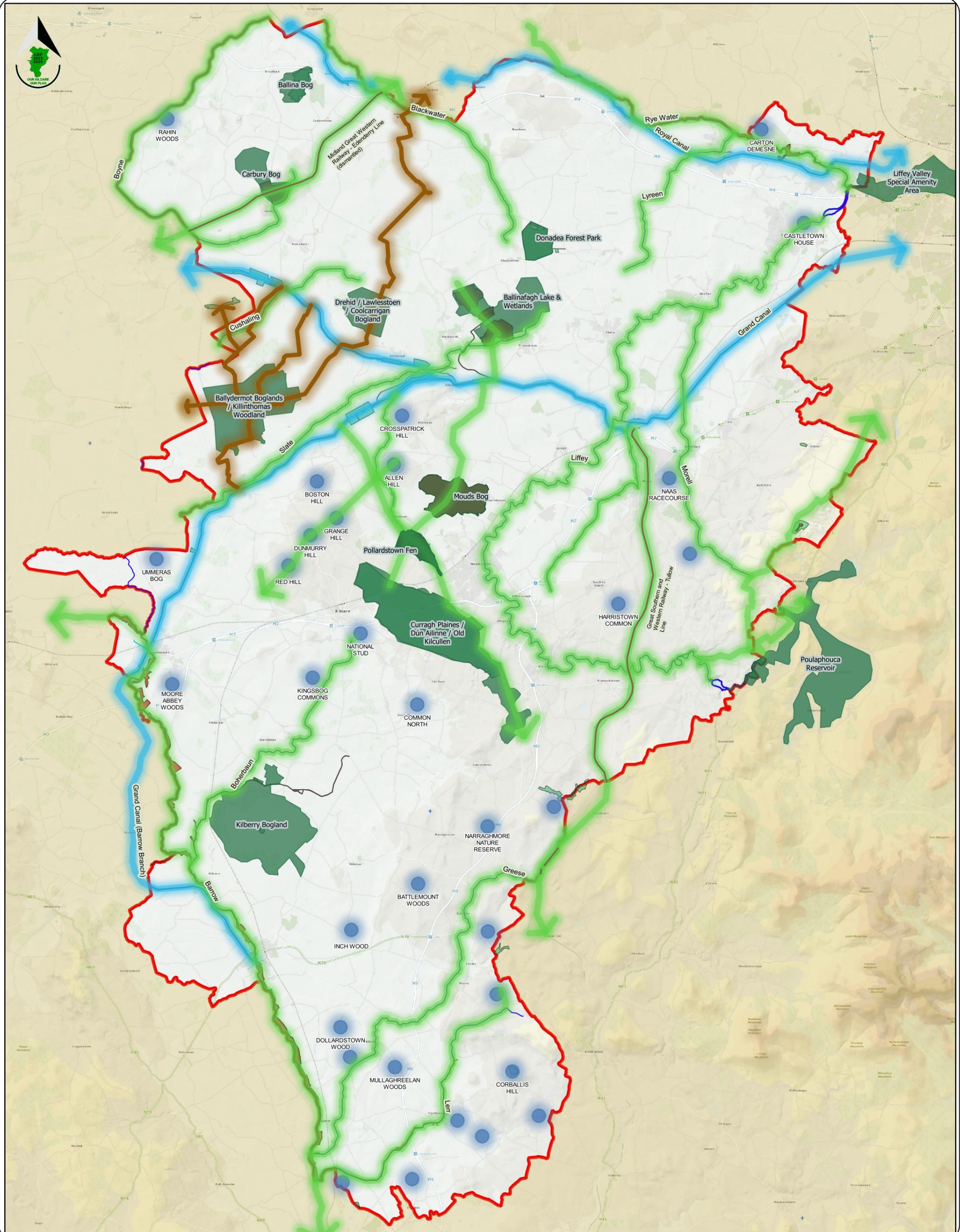
This corridor builds on the South Dublin County Council corridor (refer to the Draft South Dublin County Development Plan 2022-28) that runs south to Saggart Hill (close to the Kildare County border) and continues it southwards to Blessington and the Poulaphouca Reservoir – following the ridge line that generally divides parts of Kildare to the west and Wicklow to the east.

It includes some of the most elevated areas of the County with significant views over the plains of Kildare to the west and views of the Wicklow Mountains and Poulaphouca Reservoir to the east. This proposed GI Corridor includes, for example Cupidstown Hill - Kildare's highest point, Rathbane, Caureen (public right of way along the ridge line) and leads southwards to incorporate the Red Bog SAC (including ponds – a wildlife hotspot) and links up with the Glending Wood/Deerpark (County Wicklow). Subject to the cooperation of Wicklow County Council, the GI Corridor could then follow the local stream and associated ponds that run to the east of Blessington, through Kilmalum (Kildare) before entering Poulaphouca Reservoir (SPA). From Glending Wood, the corridor so is proposed to run through the elevated townlands of Newtown Park, Slieveroe, Glenmore, Carrigeen, Russborough Demense and reconnecting again with Poulaphouca Reservoir.

In addition to the features highlighted above, this GI Corridor includes a number of woodland and commercial forestry areas as well as a significant number of active and disused quarries, where after use activity should promote uses compatible with Green Infrastructure Strategy.

12.14.8.10 Disused Tullow Railway Line

This corridor extends from south of Naas to Grangebeg/Tober Lower just north of Dunlavin (County Wicklow).



Legend

County Boundary	Blueways / Greenways
Core Areas	Special Areas of Conservation (SAC)
Stepping Stones	Special Protection Areas (SPA)
Green Corridors	Proposed Natural Heritage Areas (pNHA)
Peatways	Natural Heritage Areas (NHA)



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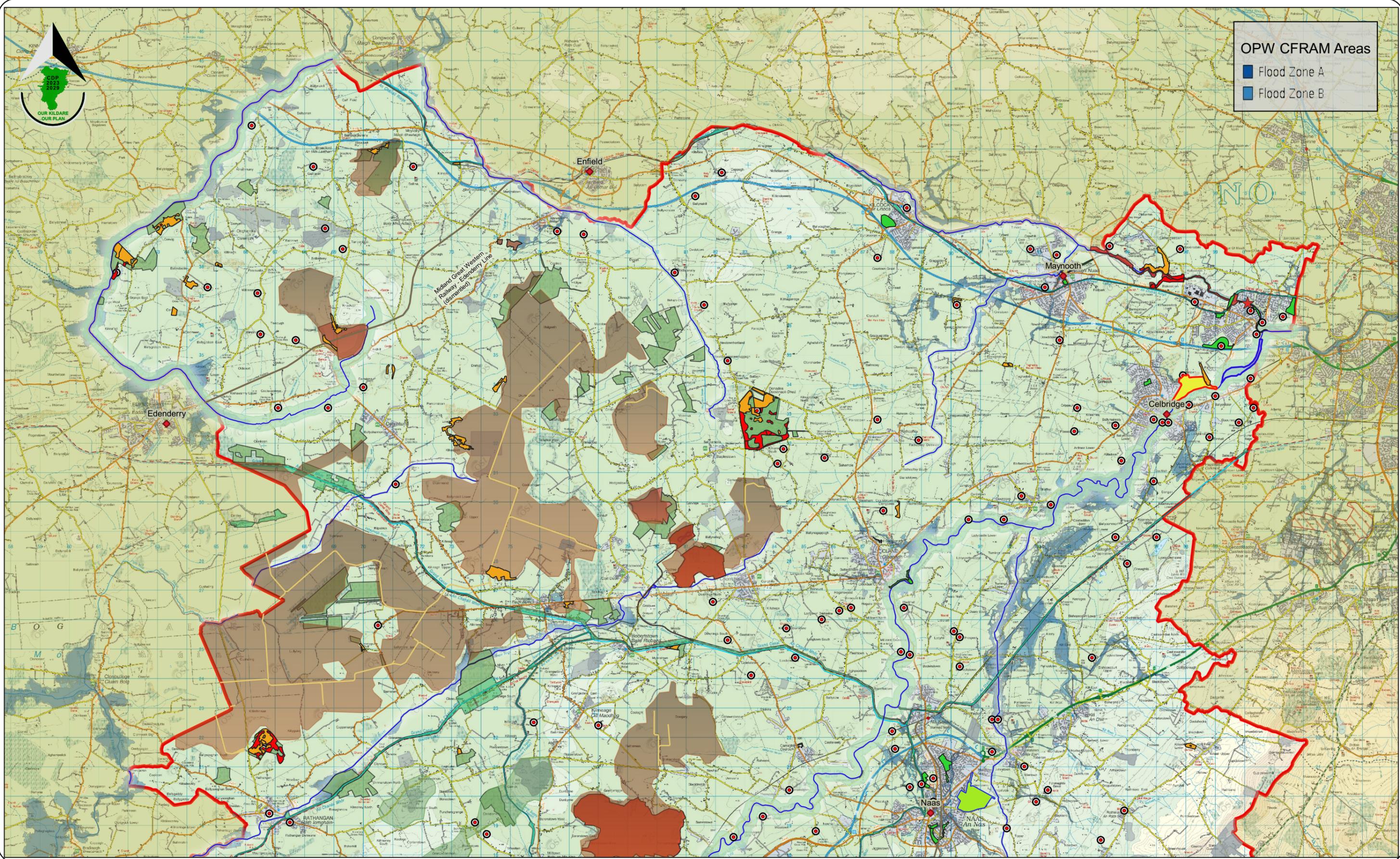
**Green Infrastructure
 Concept Map**

Stage	Date	Description
Draft County Development Plan	12/12/2021	Draft Plan Issued to the Elected Members
Draft County Development Plan	14/02/2022	Draft Plan Issued for Public Consultation

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Scale: N.T.S.	Map Ref: V1-12.3
Date: Feb 2021	Drawing No.: 200/22/1245
Drawn By: M O'Loughlin Date 08/03/2022	Checked By: L Crawford Date 08/03/2022
Approved By: C O'Donnell Date 08/03/2022	

This drawing is to be read in conjunction with the written statement



OPW CFRAM Areas

- Flood Zone A
- Flood Zone B

Legend

- County Boundary
- Special Areas of Conservation (SAC)
- Natural Heritage Area (NHA)
- Proposed Natural Heritage Area (pNHA)
- Special Protection Areas (SPAs)
- Bryophytes Location (NPWS)
- National Survey of Native Woodlands (NPWS)
- Ancient Long Established Woodland (NPWS)
- Commonage Areas (NPWS)
- Equine Sites
- Coillte Woodland
- Kildare County Council Parks
- Castletown House OPW
- Peat Bogs / Wetlands
- Quarries (active and disused)
- NIAH Survey of Historic Gardens and Designed Landscapes
- Bord na Móna Rail Network
- Important Hills
- Tree Preservation Orders
- River Buffer Areas
- Canal
- River
- Lake

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1 2 3 4 5 km

Draft County Development Plan 2023-2029

Green Infrastructure Kildare North

Stage	Date	Description
Draft County Development Plan	12/12/2021	Draft Plan Issued to the Elected Members
Draft County Development Plan	14/02/2022	Draft Plan Issued for Public Consultation

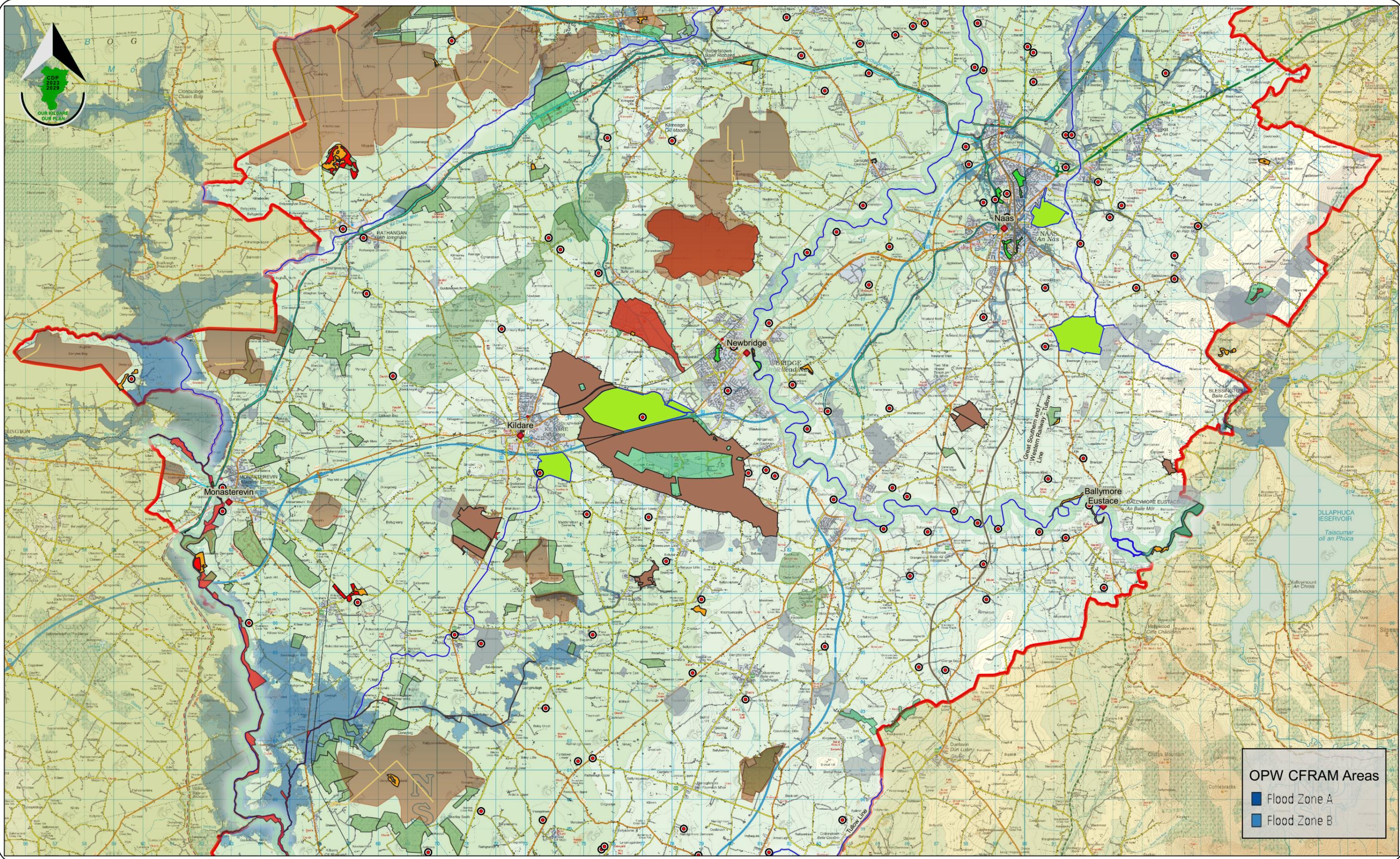
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Date: Feb 2021 Drawing No.: 200/22/1245

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This drawing is to be read in conjunction with the written statement



OPW CFRAM Areas

- Flood Zone A
- Flood Zone B

Legend

- County Boundary
- Special Areas of Conservation (SAC)
- Natural Heritage Area (NHA)
- Proposed Natural Heritage Area (pNHA)
- Special Protection Areas (SPAs)
- Bryophytes Location (NPWS)
- National Survey of Native Woodlands (NPWS)
- Ancient Long Established Woodland (NPWS)
- Commonage Areas (NPWS)
- Equine Sites
- Coillte Woodland
- Kildare County Council Parks
- Castletown House OPW
- Peat Bogs / Wetlands
- Quarries (active and disused)
- NIAH Survey of Historic Gardens and Designed Landscapes
- Bord na Móna Rail Network
- Important Hills
- Tree Preservation Orders
- River Buffer Areas
- Canal
- River
- Lake

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1 2 3 4 5 km

Draft County Development Plan 2023-2029

Green Infrastructure Kildare Middle

Stage	Date	Description
Draft County Development Plan	12/12/2021	Draft Plan Issued to the Elected Members
Draft County Development Plan	14/02/2022	Draft Plan Issued for Public Consultation

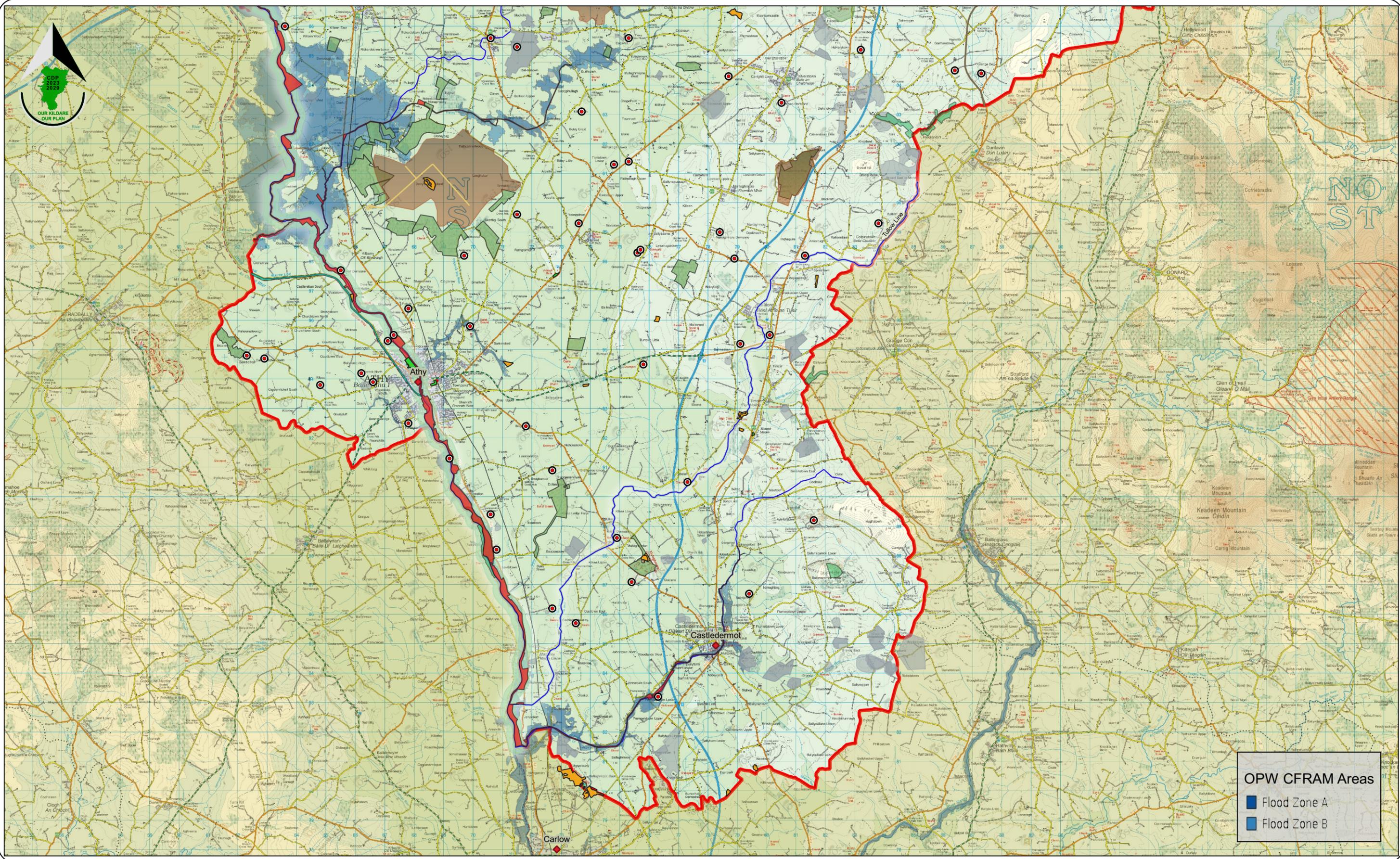
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Scale: N.T.S. Map Ref: V1-12.5

Date: Feb 2021 Drawing No.: 200/22/1245

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Legend

- County Boundary
- Special Areas of Conservation (SAC)
- Natural Heritage Area (NHA)
- Proposed Natural Heritage Area (pNHA)
- Special Protection Areas (SPAs)
- ★ Bryophytes Location (NPWS)
- National Survey of Native Woodlands (NPWS)
- Ancient Long Established Woodland (NPWS)
- Commonage Areas (NPWS)
- Equine Sites
- Coille Woodland
- Kildare County Council Parks
- Castletown House OPW
- Peat Bogs / Wetlands
- Quarries (active and disused)
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- Canal
- River
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**Draft County
 Development Plan
 2023-2029**

**Green Infrastructure
 Kildare South**

Stage	Date	Description
Draft County Development Plan	12/12/2021	Draft Plan Issued to the Elected Members
Draft County Development Plan	14/02/2022	Draft Plan Issued for Public Consultation

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OPW CFRAM Areas

- Flood Zone A
- Flood Zone B

Scale: N.T.S. Map Ref: V1-12.6

Date: Feb 2021 Drawing No.: 200/22/1245

Drawn By: M O'Loughlin Date 08/03/2022
 Checked By: L Crawford Date 08/03/2022
 Approved By: C O'Donnell Date 08/03/2022

This drawing is to be read in conjunction with the written statement

12.14.9 Urban Green Infrastructure

Green Infrastructure within urban areas provides valuable connections from the urban centres to the wider countryside thereby strengthening the Green Infrastructure Network. Urban Green Infrastructure potentially includes residential gardens, the parkland settings of enterprise parks and employment areas, street verges, open spaces and parks, woodlands, hedgerows, cemeteries and allotments.

All of these areas collectively contribute to a strengthened Green Infrastructure network and to the benefits afforded to urban areas such as the greening of our urban areas, the creation of attractive open spaces, providing local distinctiveness and better health and human well-being. Biophilia is that innate love and genetically determined affinity of human beings with the natural world. The biophilia hypothesis proposes that we long for nature and without connecting to it, our health would suffer. Biophilic design is an applied solution to appease this desire for nature by integrating natural elements and processes into the built environment.

Policy

It is the policy of the Council to:

BI P13	Recognise the importance of Urban Green Infrastructure in addressing a broad range of urban challenges, such as conserving biodiversity, adapting to climate change, supporting the green economy and improving social cohesion and to seek to protect and enhance this resource.
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Objectives

It is an objective of the Council to:

BI O45	Ensure that the Green Infrastructure Strategy and Network identified in this County Development Plan and Local Area Plans is used to inform the development management process to ensure that new residential areas, business/ industrial development and other relevant projects contribute towards the protection, management and enhancement of the existing Green Infrastructure in terms of design, layout and landscaping.
BI O46	Identify existing Green Infrastructure at the initial stages of the planning process and to use this information to guide the overall design of an appropriate site layout which is reflected in the developments landscaping plan. The landscaping plan submitted with an application should clearly illustrate how existing Green Infrastructure, and opportunities to create more linkages, have informed and been incorporated into the development, layout and, if appropriate, management proposals
BI O47	Ensure that the design of new development does not cause fragmentation of the Green Infrastructure network.
BI O48	Encourage the use and incorporation of Biophilic design into all new development schemes, increasing proximity and/or views to nature, landscape and landscape features, in the interests of public health.

12.14.10 Green Infrastructure within Public Open Spaces and Parks

Local networks of high quality, well managed and maintained open spaces, sports and recreational facilities help to enhance the urban environment, contribute to a high-

quality living environment and strengthen the Green Infrastructure network in the county. These areas provide habitats for ecological processes, a focal point for active and passive recreation, promote community interaction and help mitigate the impacts of climate change.

The Kildare Open Space Strategy was prepared to inform this Plan and has identified a hierarchy of open space within the county (See Chapter 14 and Appendix 3)

Policy

It is the policy of the Council to:

BI P14	Protect and enhance the Green Infrastructure network throughout the county
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Objectives

It is an objective of the Council to:

BI O49	Strengthen ecological networks between urban areas to create greater linkages to Natura 2000 sites, proposed Natural Heritage Areas, parks and open spaces and the wider regional Green Infrastructure network.
BI O50	Require multifunctional open space provision within all new developments; this includes provision for ecology and sustainable water management.

12.14.11 Green Infrastructure and Sustainable Urban Drainage Systems

Sustainable Urban Drainage Systems (SuDS) drain surface water in an environmentally friendly way by replicating natural systems in managed environments. SuDS systems seek to collect, store and release surface water back to the environment using natural systems in a slow and controlled way, thereby reducing the risk of fluvial and pluvial flooding. SuDS represents a critical move away from the conventional practice of piping all surface water directly to the nearest watercourse or river towards an approach where water is either infiltrated or conveyed more slowly to water courses via constructed wetlands, permeable surfaces, filter strips, ponds, swales and basins, all of which contribute to more environmentally friendly and aesthetically pleasing methods of controlling surface water.

A Nature Based solutions approach to SuDS (or Natural Water Retention Measures) has come more into prominence, in response to the water, climate and biodiversity crisis. The benefits of taking a nature-based approach includes not just flood risk management benefits, but also improved water quality (e.g. can filter out >80% heavy metal pollutants), biodiversity (e.g., provide habitat for range of species) and Climate adaptation and mitigation (resilience, micro-climate cooling, carbon sequestration, etc.). Nature-based solutions are critical in climate change adaptation; they can play an important role not only for biodiversity and ecosystems, flood prevention and carbon sequestration, but also in temperature regulation, water quality, erosion prevention, and filtering pollutants from the air and water. Nature-based solutions are used in a smart, 'engineered' way to provide sustainable, cost-effective, and adaptable measures that support climate resilience.

Kildare County Councils Climate Change Adaptation Strategy 2019-2024; Climate Resilient Kildare identifies a number of objectives and actions for which green infrastructure and nature-based solutions have a role to play. This includes the incorporation of green infrastructure, including urban greening into the design, planning and construction of roads, community, and public realm projects, and as a mechanism to promote biodiversity, reduce habitat fragmentation, and for carbon offset.

Policy

It is the policy of the Council to:

BI P15	Promote and support the development of Sustainable Urban Drainage Systems (SuDS) to ensure surface water is drained in an environmentally friendly way by replicating natural systems.
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Objectives

It is an objective of the Council to:

BI O51	Promote and support the development of Sustainable Urban Drainage Systems (SuDS) such as integrated constructed wetlands, permeable surfaces, filter strips, ponds, swales and basins at a site, district and county level and to maximise the amenity and bio-diversity value of these systems.
BI O52	Integrate nature-based solutions and climate change considerations into the design, planning, and implementation of infrastructure provision/ works and development proposals at the earliest possible stage of the design process.
BI O53	Actively promote and encourage nature-based approaches and green infrastructure solutions as viable mitigation and adaptation measures to surface water management.
BI O54	Promote the provision of Green Roofs and/ or Living Walls in developments where expansive roofs are proposed.

Action

It is an action of the Council to:

BI A23	Showcase good examples of Sustainable Urban Drainage Systems (SuDS) which maximise amenity and biodiversity through the use of systems such as (but not limited to) swales, rain gardens as part of local authority developments.
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