Comhairle Contae
Fhine Gall
Fingal County
Council

# FINGAL BIODIVERSITY ACTION PLAN

## 2023-2030

**OCTOBER 2023**

*Photography by Danny Green*

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**Comhairle Contae Fhine Gall**
Fingal County Council

UNITED NATIONS DECADE ON ECOSYSTEM RESTORATION 2021-2030

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# Foreword

## A Message from the Mayor

I am delighted to be associated with the publication of the Fingal Biodiversity Action Plan. It establishes an exciting vision for biodiversity in Fingal, while also setting a framework within which Fingal can grow sustainably.

Dáil Éireann declared a biodiversity crisis in 2019, reflecting the urgency to deal with the significant loss of habitats and species nationwide. We all realise that a step-change is required to halt the loss of biodiversity through implementing new ideas, collective action and more innovative nature conservation models. Nature must be prioritised as we plan for Fingal's future, for the benefit of the environment as well as the quality of life of our residents. It is an issue that is integral to so much of the Council's work. It is how we design for nature in new housing estates, how we design and manage our open space, how we include for Nature Based Solutions and natural processes when developing flood mitigation and coastal defence schemes. By making space for nature in places where we live and work, we can bring nature back into our lives. By creating a more wildlife-friendly environment in our towns, our countryside and along our coast, we can help tackle the Biodiversity emergency.

On behalf of Fingal County Council, I want to extend a sincere thank you to all of those who have contributed to the development of this plan.

The hard work continues with the County Council, environmental NGO's, State agencies, landowners, businesses and local communities working together to pursue all the actions in the Biodiversity Plan. Its successful implementation will ensure that future generations can enjoy the diverse range of habitats, plants and animals that we take for granted today.

**Adrian Henchy**
**Mayor of Fingal**

# Foreword

## A Message from the County Manager

Fingal has a rich biodiversity with its coast, countryside and urban centres. This variety is the basis of our daily lives and livelihoods and makes up the resource which our families, communities and future generations depend upon. The challenge for Fingal is to develop and grow in a way that maintains and enhances biodiversity for future generations.

The Fingal Biodiversity Action Plan will play a key role in our efforts to protect the natural environment in Fingal over the next 8 years. It sets out an ambitious framework for biodiversity action aimed at protecting and enhancing a wide range of habitats, plants and animals and halting the loss of biodiversity in Fingal. Ecosystem Restoration and Bringing Nature back into our Lives are important themes in the Fingal Biodiversity plan. The restoration of our terrestrial, freshwater and marine ecosystems in Fingal as well as working with local communities to enhance our urban environment for biodiversity, will be key priorities for the next 8 years.

The Biodiversity Plan provides an excellent opportunity for the County Council to examine its own work practices and lead the way by developing demonstration projects on how to design nature inclusive housing estates, managing parkland and open space for biodiversity and how to improve the water quality in our rivers and estuaries. This will help us to integrate the protection of biodiversity in the Council's day-to-day operations and will encourage others to do so too.

Fingal County Council has now adopted the Biodiversity Action Plan. The delivery of the plan and the associated Ecological Network are ambitious targets that require significant resources to be fully implemented. The Council has committed to resourcing the plan and setting up a Biodiversity team within the Planning and Strategic Infrastructure Department. Many other departments within the Council will also be contributing to the delivery of the plan. I look forward to the implementation of the plan, which will bring significant benefits for our biodiversity resource and for the people in Fingal.

**AnnMarie Farrelly**
**Chief Executive of Fingal County Council**

# Executive Summary

*Photography by Eddie Dunne*

# Biodiversity in Fingal

Biodiversity or 'Biological Diversity' is the variety of all life. Biodiversity includes all living things from the smallest of creatures such as ants to the mighty basking shark and from the tiniest algae to the giant oak trees. Biodiversity is not restricted to rare or threatened species, but includes the whole of the natural world from the commonplace to the critically endangered. Biodiversity also includes the range of places where plants and animals live, from the local park just around the corner to the world's deepest seas and oceans.

Our coastline, countryside and urban centres harbour a surprising variety of habitats, plants and animals, including many rare and protected habitats and wildlife species. This variety is the basis of our daily lives and livelihoods and makes up the resources which our families, communities and future generations depend upon. The coastline is our most important wildlife resource with most of the protected sites and protected wildlife species in the county found along our coast.

## Biodiversity Loss in Fingal

Despite the important role Biodiversity plays in everyday life, there is a serious concern for biodiversity in Ireland and throughout the world. The pattern of biodiversity loss in Fingal mirrors the global pattern as our local habitats are lost and subject to degradation and species numbers have declined. The loss of biodiversity is considered a threat of equal size to the climate emergency. The main drivers of biodiversity loss in Fingal are habitat loss & fragmentation due to development, recreational disturbance, climate change, water pollution, lack of habitat management and alien invasive species.

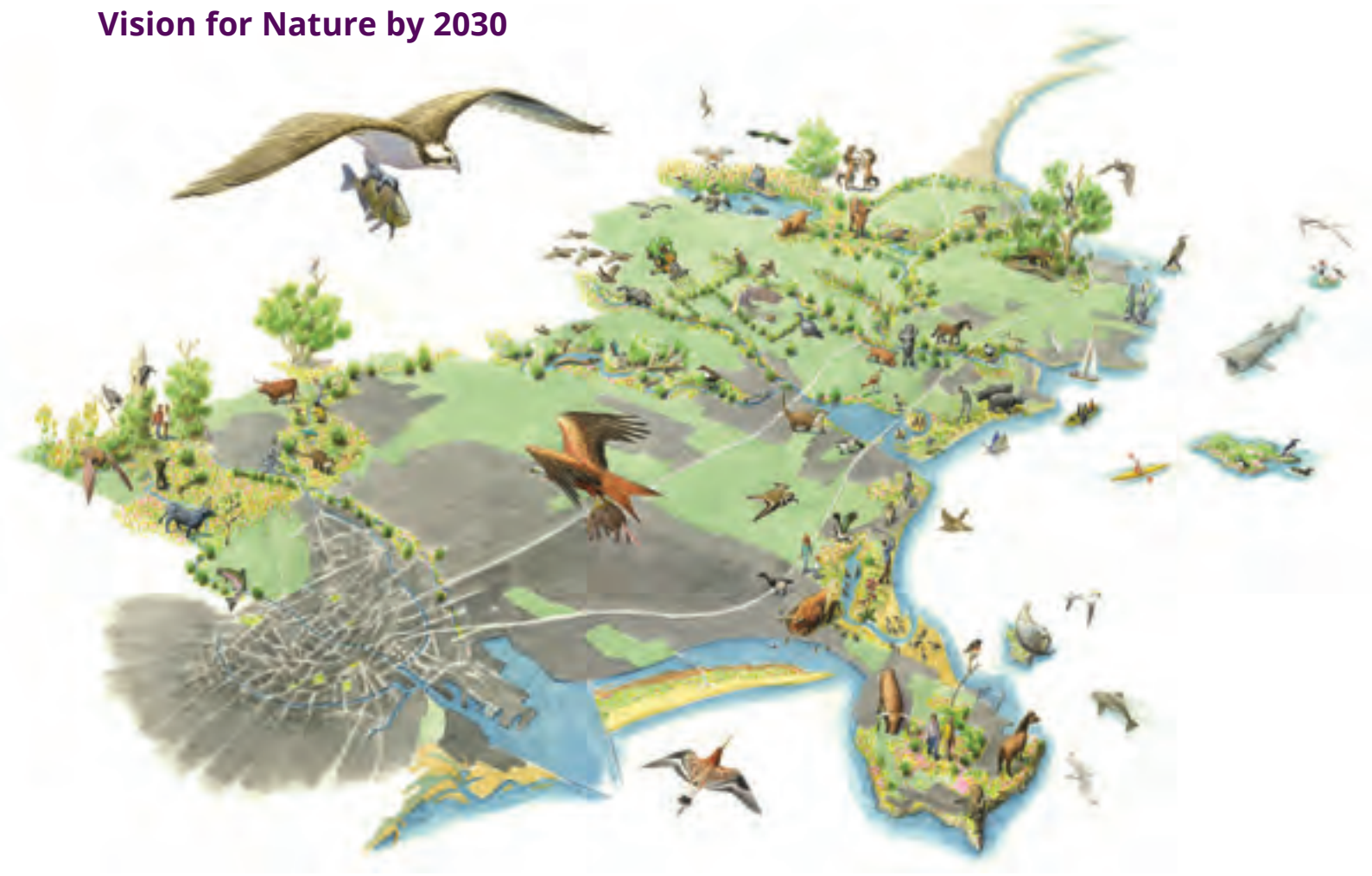
The challenge for Fingal is to develop and grow in such a way which protects and enhances biodiversity for future generations. The Fingal Biodiversity Action Plan will provide a framework for biodiversity action for the next 8 years with the aim of halting the loss of biodiversity in Fingal. The primary purpose of the FBAP is to focus the efforts and resources of Fingal County Council and other nature conservation groups to respond to the escalating ecological crisis and climate emergency.

## International and National Policy to Halt the Loss of Biodiversity

The UN and the EU have developed strategies to halt the loss of biodiversity by 2030. The UN Decade on Ecosystem Restoration aims to prevent, halt and reverse the degradation of ecosystems on every continent and in every ocean by 2030. The EU Biodiversity Strategy 2030 provides targets for all member states and has "We need nature in our lives" as its central message. It links the recovery of biodiversity to the recovery from economic recession, health threats and climate disasters. The Irish National Biodiversity Plan includes many nature conservation actions relevant for local authorities. Ireland's Biodiversity Sectoral Climate Change Adaptation Plan and the Fingal Climate Action Plan call for nature-based solutions to tackle the drivers and impacts of climate change.

The Fingal Biodiversity Action Plan translates national and international nature conservation and climate change policy into action on the ground. Ecosystem Restoration and Bringing Nature back into our Lives are important themes in the Fingal Biodiversity plan. The restoration of our terrestrial, freshwater and marine ecosystems in Fingal as well as working with local communities to enhance our urban environment for biodiversity, will be key priorities for the next 8 years.

## Vision for Nature by 2030



It is 2030, and Fingal is teeming with life. Nature in the city, the countryside and the coast has clearly recovered. You can see it, hear it and smell it. We have a rich biodiversity of plants, insects, mammals, birds, amphibians, fish and soil life. The natural surroundings provide an attractive environment where people like to live, work and be outdoors. We need nature in our lives. We consider biodiversity conservation essential for our wellbeing and most importantly, we act accordingly. Central government, politicians and Council management are committed to halt the loss of biodiversity and have made the necessary staff and funding available to implement the Biodiversity Plan as we realized that nature-based solutions to some of society's key issues can provide multiple benefits and are therefore more cost effective. That we all managed to make a step-change is the result of new ideas, collective action and more innovative nature conservation models. The County Council, local residents, farmers, fishermen, NGO's, businesses, scientists and universities have all been working collectively to restore the species diversity in Fingal.

It was realised early on that Fingal can develop and grow while still protecting and enhancing biodiversity for future generations by developing an ecological network throughout the county to create an interconnected landscape through which wildlife can move freely and habitats and species are protected. The Council prepared management plans for all the designated sites in the county together with landowners, NGO's and the local community to protect and restore these sites. Hundreds of acres have been acquired by the Council near the estuaries and in the Liffey Valley to create new saltmarsh, wetlands and woodland that will act as carbon sinks to mitigate climate change, while also attenuating floodwaters and provide for recreational space. New carbon offsetting schemes have also been developed to facilitate the restoration of freshwater wetlands and woodland on private property.

Developers, Architects, Engineers and Planners got up to speed quickly with the new Building for Biodiversity guidelines for new developments. As a result, many new housing estates, business parks, industrial estates and infrastructure projects include green roofs, green walls, nesting facilities for birds and bats, green carparking, wetlands and wildflower meadows. This helped us achieve an overall net biodiversity gain in most developments instead of a "No net loss of biodiversity". Open space management has become less intensive and pesticides are no longer used. People got used to the less manicured appearance of our open spaces and road verges and many residents made their gardens more wildlife friendly too. Schools, businesses and golf courses pride themselves on having hay meadows, ponds and woodland and a lot more wildlife on their grounds.

Our countryside remains an important food production area for the greater Dublin area with profitable farms where wildlife can thrive. Many farmers have broad field margins and use less intensive farming methods. Technical innovations and financial supports have allowed farmers to restore soil health and nutrient cycles and make their farms much more biodiversity friendly. Better quality and sustainability instead of higher productivity are the guiding principle for many farms. This has created more space on the farm for wildlife and has led to a major improvement of the quality of the water, soil and air, without affecting the income and viability of the farm.

## Biodiversity Actions

The Fingal Biodiversity Action Plan puts forward an ambitious programme of a hundred actions to reverse the decline in biodiversity by 2030. The actions are based upon recommendations made in ecological studies and on proposals put forward by nature conservation NGO's, members of the public, the Public Participation Network, Strategic Policy Committee members and various Council Departments.

**The actions in this plan are centred around six topics;**

### *Delivery of the Ecological Network Across Fingal*

About half of the actions relate to the development and management of an Ecological Network across Fingal. It is a network of habitats that are in good ecological condition, linking protected sites and other biodiversity hotspots across a wider nature-friendly farmed and urban landscape. This will create an interconnected landscape through which wildlife can move freely, and healthy populations of both rare and common species can be maintained.

**The Ecological Network comprises of four elements:**

1. Core nature conservation sites
2. Bufferzones around the core sites
3. Nature development areas
4. Ecological Corridors and stepping stones

A resilient ecological network is vital for the recovery of biodiversity. The network shall make provisions for recreational use, flood protection, climate change measures, farming and contributes to the quality of the living and working environment. The ecological network will thereby assist with the sustainable development of the countryside and towns in Fingal. By incorporating the Fingal Ecological Network in the County Development Plan, the network is fully integrated with spatial and land use planning.

### *Building for Biodiversity and Managing Open Space for Biodiversity*

Although urban developments can lead to further habitat loss and fragmentation, there are also opportunities to undertake development in a way that will help to enhance biodiversity. Several technical and design guidance notes are to be prepared to inform developers, architects and engineers how nature can be incorporated in buildings, stormwater management and open spaces within a development. The Council will also undertake pilot projects in its own developments to gain more experience with building for biodiversity and share this experience with developers and other local authorities. Existing open space is also to be designed and managed in a more biodiversity friendly way.

### *Climate Change Adaptation and Mitigation*

Nature is a vital ally in the fight against climate change. Without healthy and resilient ecosystems, it will not be possible to stabilise the climate or to adapt to the unavoidable impacts of climate change. Protecting and restoring ecosystems can help to reduce the impacts of climate change. This can be done by developing projects which address biodiversity loss and climate change adaptation and/or mitigation in an integrated manner. The restoration of carbon rich habitats such as saltmarsh, wetland and woodland will benefit many wildlife species, while these habitats can also sequester carbon, absorb floodwater and improve water quality.

### *Agri Environment Schemes and Rewilding*

There are many options for farmers to support biodiversity on their farms to halt the loss of typical farmland species. The Council is keen to work with farmers to develop supportive measures along headlands of field to enhance their farms for wildlife, improve water quality and soil health through demonstration projects and agri-environment schemes. The Council is also keen to research the benefits of rewilding farmland for typical farmland species by means of undertaking a rewilding project and monitoring the results.

### *Research and Monitoring*

The challenge of halting biodiversity loss must be underpinned by sound science. The Council has a legal responsibility to protect habitats and species listed in European and national legislation. It is therefore important to have a good understanding of the whereabouts and status of these habitats and species and to have this information incorporated into a GIS database to inform the planning process. A State of the Natural Environment Report for Fingal is to be prepared based on historical survey data and new studies. This will provide an overview of how our habitats and species are faring and what changes have occurred over the last 20 years. Monitoring the impacts of projects undertaken is also important to determine the success of the measures implemented to inform future projects.

### *Raising Awareness*

Educating people of all ages about biodiversity and the essential role it plays in our society and economy is fundamental to the success of the Biodiversity Plan. The best way to learn about the natural environment is to be out in nature and through direct involvement in nature conservation projects. It is envisaged that a program of outdoor and online events, the development of a nature education centre, a wildlife gardening campaign and the revamping of Fingal biodiversity website as an online resource, will encourage people to take action and get involved.

## Implementation of the Plan

The Fingal Biodiversity Action Plan sets out a hundred actions to achieve halting the loss of biodiversity by 2030 in Fingal. The delivery of the Biodiversity Plan and the associated Ecological Network are ambitious targets that require significant resources to be fully implemented. The Council has committed to resourcing the plan and setting up a Biodiversity team within the Planning and Strategic Infrastructure Department to ensure the implementation of all actions. Other departments within the Council will also be contribute to the implementation of the plan. A biodiversity forum will be set up that will be made up of various Council Departments, state agencies, nature conservation NGO's, councillors and community groups. This forum will determine the priority actions and oversee the overall implementation of the Fingal Biodiversity Action Plan.

## Monitoring Progress

Annual reports will be prepared by the Biodiversity Officer reporting on progress in relation to implementing the Biodiversity Action Plan and achieving the targets set out in the plan. In 2027 a review will be carried out to assess the overall progress to date, and to make any amendments to the plan deemed necessary, taking into account any changes in terms of legislation, policies and conservation priorities.

*Photography by Shay Connelly*

# 1. Introduction

## 1.1 What is Biodiversity?

Biodiversity or 'Biological Diversity' is the variety of all life. Biodiversity includes all living things from the smallest of creatures such as ants to the mighty basking shark and from the tiniest algae to the giant oak trees. Biodiversity is not restricted to rare or threatened species but includes the whole of the natural world from the commonplace to the critically endangered. It includes the plants and animals familiar to all of us in the places where we live or work, wherever that may be. Biodiversity also includes the range of places where plants and animals live, from the local park just around the corner to the ancient woodlands in the Liffey Valley and from the smallest pond in your back garden to the world's deepest seas and oceans.

## 1.2 Why is Biodiversity Important?

Fingal has a rich biodiversity resource with its coast, countryside and urban centres. This variety is the basis of our daily lives and livelihoods and makes up the resources which our families, communities and future generations depend upon. Biodiversity provides many of the essentials of life such as oxygen, clean water, fertile soils, food, and places to relax. The value of biodiversity extends from the spiritual benefits to be gained from contact with nature which many of us experienced during the COVID19 lockdown, to the economic gains for local businesses associated with outdoor pursuits in Fingal such as angling, hiking, boating and diving.

Despite the important role Biodiversity plays in every day life, there is a serious concern for biodiversity in Ireland and throughout the world. Since the publication of the previous Biodiversity Action Plan (2010-2015), several reports have highlighted the further decline in biodiversity. Ireland's Sixth National Report to the UN Convention on Biological Diversity[1] reported that 91% of protected habitats in Ireland are in poor or inadequate condition and more than 50% are declining, while 14% of species assessed were considered as endangered. On May 9th 2019, Dáil Éireann declared a biodiversity crisis, while the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) described the loss of biodiversity as a threat of equal size to the climate emergency[2].

Fingal contains a wide diversity of habitats and species, but the pattern of loss of this natural heritage mirrors the global pattern as our local habitats are lost and subject to degradation and species numbers have declined. The challenge for Fingal is to develop and grow in a way which protects and enhances biodiversity for future generations. The Fingal Biodiversity Action Plan will play a key role in our efforts to protect the natural environment in Fingal over the next decade.

## 1.3 Role of the Fingal Biodiversity Action Plan

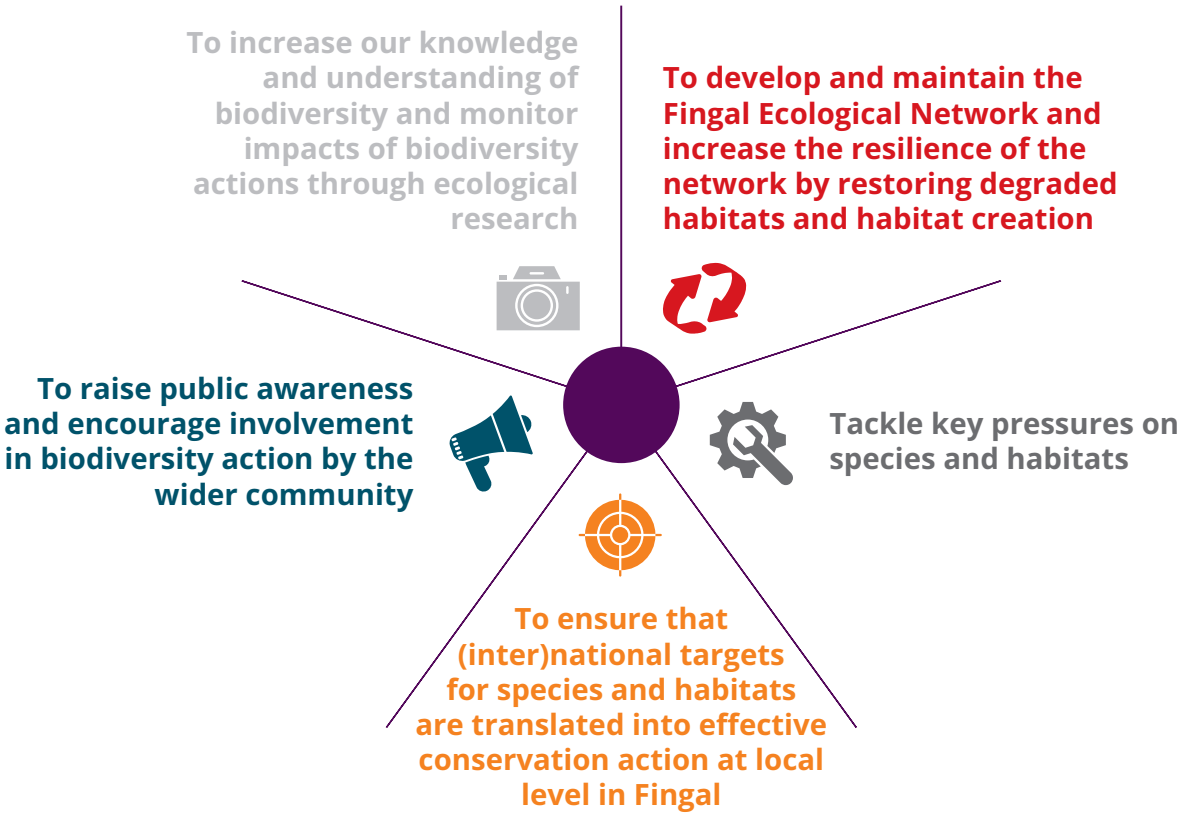
The Fingal Biodiversity Action Plan will be a key document in guiding the work of everyone involved in the conservation of the natural environment in County Fingal by providing a framework for biodiversity action for the next 8 years with the aim of halting the loss of biodiversity in Fingal. The primary purpose of the FBAP is to focus the efforts and resources of Fingal County Council and other nature conservation groups to respond to the escalating ecological crisis and climate emergency.

The Biodiversity Action Plan puts forward an ambitious programme of actions to reverse the decline in biodiversity, for its intrinsic value and to ensure lasting benefits to society by 2030. This plan is based around the development of a spatial ecological network across the County, which is integrated into the County Development Plan. The Biodiversity Plan also translates the actions in Fingal Climate Change Action Plan and the National Biodiversity Plan into nature conservation action on the ground.

Furthermore, this action plan is aimed at extending traditional nature conservation to involve a wider constituency. All of us are responsible for the health and wellbeing of our natural environment. The Action Plan challenges everybody; planners, architects, landscape architects, engineers, politicians, developers, business owners and local communities, to get involved in protecting and restoring nature in whatever way they can.

The Biodiversity Plan, supported by the people in Fingal, will help us to protect our natural heritage and develop County Fingal in a progressive and sustainable manner, enabling us to hand over a rich natural environment to the next generation.

## 1.4 Objectives of Fingal Biodiversity Action Plan



*Photography by Danny Green*

# 2. Policy Context Fingal Biodiversity Action Plan

## 2.1 Earth Summit Rio de Janeiro

The Fingal Biodiversity Action Plan is a direct result of a process initiated at the Earth Summit in Rio de Janeiro in 1992. At this summit, world leaders recognized that human activities are changing and destroying the natural environment at an ever-increasing rate and action was needed to halt the loss of Biodiversity. The outcome of this summit was the UN Convention on Biological Diversity, which has now been signed by over 170 countries, including Ireland.

## 2.2 United Nations Decade on Ecosystem Restoration (2021-2030)

The UN Decade on Ecosystem Restoration was launched in June 2021 and aims to prevent, halt and reverse the degradation of ecosystems on every continent and in every ocean by 2030[3]. Ecosystems are dynamic communities of plants, animals, and microorganisms interacting with their physical environment as a functional unit. Ecological restoration is the process of assisting the recovery of an ecosystem that has been damaged or destroyed by human exploitation or activities. The objective of ecosystem restoration is "to contribute to the conservation and sustainable use of biodiversity as well as create social, economic and environmental benefits, whereby healthy and connected ecosystems contribute to improved food and water security, peoples' livelihoods and to mitigate and adapt to climate change".[4]

Restoration of some of our terrestrial, freshwater and marine ecosystems in Fingal will be a key priority for the next 8 years. Many of our rivers, wetlands, woodlands, estuaries and inshore marine ecosystems are much degraded. They possess only a fraction of their original glory compared to the time when the first humans arrived in Ireland. Thousands of years of woodland clearing, draining wetlands and rivers, urban development, farming and fishing has resulted in many changes and disappearances of habitats and their associated plant and animal species. The ecosystems may not necessarily recover to their historical state as current environmental conditions may differ from the past. However, ecosystem restoration is not about building a fully recovered ecosystem. Rather, it is about creating the conditions needed for recovery, so the plants and animals can carry out the work of recovery themselves. Assisting recovery can be as simple as removing an invasive species, restoring the hydrological processes, reintroducing wildlife, rewilding or switching to regenerative agriculture.

While restoration activities can often place a degraded ecosystem on an initial trajectory of recovery relatively quickly, full recovery of the ecosystem can take years, decades, or even hundreds of years. For example, while we can initiate a woodland restoration process by planting trees, for full recovery to be achieved, the site should be a fully functioning woodland with trees in all age-classes, downed and standing dead trees and a diverse structure of ground flora, shrub and tree layers, representative of a mature native woodland. It is therefore important that ecosystem restoration projects in Fingal start as soon as possible in order to achieve the 2030 target of ecosystem restoration as the results may take a while to become fully visible.

## 2.3 EU Biodiversity Strategy 2030 - Bringing Nature Back into Our Lives

The EU Biodiversity Strategy for 2030 was launched in May 2020 to provide targets for all member states within the European Union to address the biodiversity crisis. It links the recovery of biodiversity to recovery from economic recession, health threats and climate disasters. "We need nature in our lives" is a central message[5]. The commitments proposed in this strategy pave the way for ambitious and necessary changes - changes that will ensure the wellbeing and economic prosperity of present and future generations in a healthy environment.

The strategy provides for the establishment of protected areas on at least 30% of the land and 30% of the seas of Europe and aspires to the restoration of degraded ecosystems both on land and at sea. In addition, in order to have a truly coherent and resilient Nature Network, it will be important to set up ecological corridors to prevent genetic isolation, allow for species migration, and maintain and enhance healthy ecosystems. In this context, investments in green and blue infrastructure and cooperation across borders among Member States should be promoted and supported.

The strategy requires greater efforts to restore freshwater ecosystems and the natural functions of rivers in order to achieve the objectives of the Water Framework Directive. To help make this a reality, at least 25,000 km of rivers are to be restored into free-flowing rivers by 2030 through the removal of barriers and the restoration of floodplains and wetlands. Nutrient losses to rivers and wetlands from farmland are to be reduced by at least 50%, by reducing fertilizer use by at least 20% while also ensuring that there is no deterioration in soil fertility. This is to be achieved by implementing and enforcing the existing water pollution legislation and developing nutrient management plans. The EU's Farm to Fork strategy will also address the reduction in the use of pesticides and support wider implementation of Integrated Pest Management. At least 25% of agricultural land shall be under organic farming management by 2030, while at least 10% of the agricultural area shall comprise of high-diversity landscape features such as hedgerows, ponds, wetlands and wildflower meadows.

Achieving good environmental status of marine ecosystems, including through strictly protected areas, must involve the restoration of carbon-rich ecosystems as well as important fish spawning and nursery areas. In addition, fisheries-management measures must be established in all marine protected areas according to clearly defined conservation objectives and on the basis of the best available scientific advice.

To bring nature back to cities and reward community action, the Commission calls on European cities of at least 20,000 inhabitants to develop ambitious Urban Greening Plans. These should include measures to create biodiverse and accessible urban forests, parks and gardens; urban farms; green roofs and walls; tree-lined streets; urban meadows; and urban hedges. They should also help improve connections between green spaces, eliminate the use of pesticides, limit excessive mowing of urban green spaces and other biodiversity harmful practices. The promotion of healthy ecosystems, green infrastructure and nature-based solutions

should be systematically integrated into urban planning, including in public spaces, infrastructure, and the design of buildings and their surroundings.

Protecting and restoring nature will need more than compliance with regulations alone. It will require action by citizens, businesses, social partners and the research and knowledge community, as well as strong partnerships in Fingal between local, regional, national and European levels.

## Key Commitments EU Nature Restoration Plan to be Implemented by 2030 Across the EU

1. Legally binding EU nature restoration targets to be proposed in 2021, subject to an impact assessment. By 2030, significant areas of degraded and carbon-rich ecosystems are restored; habitats and species show no deterioration in conservation trends and status; and at least 30% reach favourable conservation status or at least show a positive trend.
2. The decline in pollinators is reversed.
3. The risk and use of chemical pesticides are reduced by 50% and the use of more hazardous pesticides is reduced by 50%.
4. At least 10% of agricultural area is under high-diversity landscape features.
5. At least 25% of agricultural land is under organic farming management, and the uptake of agro-ecological practices is significantly increased.
6. Three billion new trees are planted in the EU, in full respect of ecological principles.
7. Significant progress has been made in the remediation of contaminated soil sites.
8. At least 25,000 km of free-flowing rivers are restored.
9. There is a 50% reduction in the number of Red List species threatened by invasive alien species.
10. The losses of nutrients from fertilisers are reduced by 50%, resulting in the reduction of the use of fertilisers by at least 20%.
11. Cities with at least 20,000 inhabitants have an ambitious Urban Greening Plan.
12. No chemical pesticides are used in sensitive areas such as EU urban green areas.
13. The negative impacts on sensitive species and habitats, including on the seabed through fishing and extraction activities, are substantially reduced to achieve good environmental status.

## 2.4 National Biodiversity Plan

The Convention on Biological Diversity requires Ireland to create national strategies and action plans to protect biological diversity. The Irish Government has prepared three National Biodiversity Plans and is currently preparing a new plan for the next five years. The objective of the NBP is to halt, and if possible, reverse the decline of habitats and species in Ireland. The NBP sets out the objectives, targets and actions for biodiversity to be undertaken by government, civil and private sectors to achieve Ireland's Vision for Biodiversity[6], namely:

> ***"That biodiversity and ecosystems in Ireland are conserved and restored, delivering benefits essential for all sectors of society and that Ireland contributes to efforts to halt the loss of biodiversity and the degradation of ecosystems in the EU and globally."***

**The NBAP (2017-2021) details seven strategic objectives to achieve this vision:**

1. Mainstream biodiversity into decision-making across all sectors
2. Strengthen the knowledge base for conservation, management, and sustainable use of biodiversity
3. Increase awareness and appreciation of biodiversity and ecosystem services
4. Conserve and restore biodiversity and ecosystem services in the wider countryside
5. Conserve and restore biodiversity and ecosystem services in the marine environment
6. Expand and improve management of protected areas and species
7. Strengthen international governance for biodiversity and ecosystem services

The current National Biodiversity Plan 2017-2021 includes 119 actions of which 18 are relevant for Local authorities including action 1.1.5 that requires each Local Authority to update and review their Local Biodiversity Plans. The National Biodiversity Plan also requires that local authorities move towards no net loss of biodiversity, to include policies and objectives for the protection and restoration of biodiversity in the County Development Plan and develop a county-wide green infrastructure network[6].

The Fingal Biodiversity Action Plan is the mechanism for translating some of the national objectives and actions into local actions on the ground.

## 2.5 Ireland's Biodiversity Sectoral Climate Change Adaptation Plan

By the end of the century, climate change is likely to become one of the most significant drivers of biodiversity loss. Increases in temperature will change the timing of life cycle events and the distribution of species. Projected increases in the occurrence of extreme weather events, such as heat waves, droughts, floods and storms, may have devastating consequences for Ireland's habitats. All habitats will need to adapt to climate change, but fragmented and isolated habitats are likely to be the most vulnerable[7].

Ireland's Biodiversity Sectoral Climate Change Adaptation Plan aims to protect biodiversity from the impacts of climate change and to conserve and manage ecosystems so that they deliver services that increase the adaptive capacity of people and biodiversity while also contributing to climate change mitigation[8].

**The Plan identifies 6 Objectives (underpinned by Actions to meet those Objectives):**

1. Protect, restore and enhance biodiversity to increase the resilience of natural and human systems to climate change;
2. Improve understanding of the impacts of climate change on biodiversity;
3. Improve landscape connectivity to facilitate mobility in a changing climate;
4. Engage society and all sectors, to protect biodiversity to enhance resilience;
5. Ensure sufficient financing is available to implement the Biodiversity Climate Change Adaptation Plan; and
6. Put adequate monitoring and evaluation measures in place to review the implementation of the Biodiversity Climate Change Adaptation Plan

## Actions

**Priority actions have been identified in the Plan, including:**

- Restore and enhance natural systems through management to increase resilience
- Establish and implement an all-island invasive species programme
- Develop an integrated coastal management strategy which includes ecosystem-based adaptation actions
- Promote ecosystem restoration and conservation though Payment for Ecosystem Services and investment in actions that increase carbon sinks while promoting biodiversity
- Carry out a comprehensive climate change vulnerability assessment of biodiversity in Ireland
- Design corridors and buffer zones to enhance the resilience of protected areas and designated sites by increasing opportunities for dispersal across the landscape

- Implement measures to reduce the barrier effects of roads, railways and technical objects in rivers and streams to facilitate species spatial responses to climate change
- Undertake natural capital accounting in all sectors to ensure natural capital is being valued and Ecosystem Based Adaptation and green infrastructure options are being employed

The Biodiversity Climate Change Sectoral Adaptation Plan includes 38 actions. Local Authorities have been identified as the project lead on Action 4.4 *Co-design green spaces and wildlife refuges in cities and peri-urban areas with local communities to provide habitats for species under threat from climate change and to connect people to biodiversity*[8].

## 2.6 Climate Action and Low Carbon Development (Amendment) Bill 2021 & Fingal Climate Change Action Plan

In 2021, the Government approved the final text of legislation to set Ireland on the path to net-Zero emissions no later than 2050, and to a 51% reduction in emissions by the end of this decade. The Bill states a "national climate objective" which is to support biodiversity. It includes a legal definition of biodiversity based on that of the CBD. In fulfilling their functions to achieve this objective, each Minister and the Government shall "have regard to the need to promote sustainable development and restore and protect biodiversity".

This Bill requires Local Authorities to prepare Climate Action Plans which will include both mitigation and adaptation measures and they should be updated every five years. The Fingal Climate Change Action Plan 2019-2024 identifies impacts to biodiversity in Fingal from climate change risks including: extreme weather events, sea level rise and flooding. It includes 113 actions across several themes: Energy & Buildings, Transport Flood Resilience, nature-based solutions and Resource Management. There are 22 biodiversity related actions in this plan, particularly under the headings of Flood Resilience and Nature Based Solutions, including Action N13: *Prepare a climate proof biodiversity plan*[9]. The Fingal BAP has been prepared to align with the FCC Climate Action Plan (See chapter 14).

***Figure 1:*** *Flood embankment removal at the Rogerstown Estuary has restored the natural dynamics and flood storage capacity of the floodplain and increased the area of saltmarsh habitat.*

## 2.7 Regional Spatial and Economic Strategy (RSES)

The Eastern & Midland Regional Assembly (EMRA) has prepared the Regional Spatial & Economic Strategy (RSES) (2019-2031), which guides regional development and the Fingal County Development Plan. The RSES identifies the region's challenges as the need to sustain economic growth whilst transitioning to a low carbon society. It also includes the requirement to align population growth with the location of homes and jobs, whilst creating healthy attractive places and an enhanced quality of life. The RSES contains the Regional Policy Objectives (RPOs) which relate to the actions of local authorities for biodiversity, particularly in the chapters on biodiversity, green infrastructure, landscape and climate change. The seven most relevant Regional Policy Objectives for this biodiversity plan are listed in table 1 below.

***Table 1:*** *Biodiversity Policy Objectives in the Regional Spatial and Economic Strategy (RSES)*

| RSES Heading | Regional Policy Objective Number | Regional Policy Objective |
|---|---|---|
| **Biodiversity and Natural Heritage** | 7.16 | Support the implementation of the Habitats Directives in achieving an improvement in the conservation status of protected species and habitats in the Region and to ensure alignment between the core objectives of the EU Birds and Habitats Directives and local authority development plans. |
| **Biodiversity and Natural Heritage** | 7.17 | Facilitate cross boundary co-ordination between local authorities and the relevant agencies in the Region to provide clear governance arrangements and coordination mechanisms to support the development of ecological networks and enhanced connectivity between protected sites whilst also addressing the need for management of alien invasive species and the conservation of native species. |
| **Biodiversity and Natural Heritage** | 7.20 | Promote the development of improved visitor experiences, nature conservation and sustainable development activities within the Dublin Bay Biosphere in cooperation with the Dublin Bay UNESCO Biosphere Partnership. |
| **Ecosystem Services Approach** | 7.21 | Local authorities shall promote an Ecosystem Services Approach in the preparation of statutory land use plans. |
| **Green Infrastructure** | 7.22 | Local authority development plan and local area plans, shall identify, protect, enhance, provide and manage Green Infrastructure in an integrated and coherent manner and should also have regard to the required targets in relation to the conservation of European sites, other nature conservation sites, ecological networks, and protected species. |
| **Green Infrastructure** | 7.23 | Support the further development of Green Infrastructure policies and coordinate the mapping of strategic Green Infrastructure in the Region. |

| | | |
|---|---|---|
| **Green Infrastructure** | 7.26 | Support the development of guidance for assessment of proposed land zonings in order to achieve appropriate riparian setback distances that support the attainment of high ecological status for waterbodies, the conservation of biodiversity and good ecosystem health, and buffer zones from flood plains. |

## Strategic Natural, Cultural and Green Infrastructure Assets in Fingal as Identified in the Regional Spatial and Economic Strategy (RSES):

- Rockabill, Skerries islands, Rogerstown Estuary, Malahide Estuary, Baldoyle Estuary, Irelands Eye, Lambay Island, Howth Head, Dublin Bay UNESCO biosphere
- Beaches at Balbriggan, Loughshinny, Rush, Skerries, Portrane, Rush, Donabate, Malahide, Portmarnock, Claremont,
- Rivers Liffey, Tolka and Santry
- Argillan House and Gardens, Newbridge demesne, Ward Valley Park

# 3. Nature in Fingal

*Photography by Shay Connelly*

Over the last 20 years, many ecological studies have been carried out to find out more about the habitats, plants and animals that occur in Fingal. Many more surveys need to be undertaken to give us the complete picture of our wildlife resource. Nonetheless, the studies carried out so far show that our coastline, countryside and urban centres harbour a surprising variety of plants and animals, including many rare and protected habitats and wildlife species.

## 3.1 The Fingal Coastline

The scenic coastline of Fingal is a wonderful natural amenity resource for the people in the county. The coastline is also home to thousands of plants and animals that live in the great diversity of habitats that make up our coastline such as the estuaries, dunes and beaches. Each habitat is an ecosystem on its own right that harbours a collection of plants and animals, that are dependent on this living environment for nesting, feeding or resting. The coastline is our most important wildlife resource, with most of the protected sites and protected wildlife species in the county found here.

### *3.1.1 Estuaries*

The coastline of Fingal is characterised by the three large estuaries of Rogerstown, Malahide and Baldoyle. These estuaries with their extensive mudflats and saltmarshes are amongst the most important nature conservation areas in Fingal. Every year, up to 40.000 migratory birds spend the winter feeding and resting in the Fingal estuaries. Wading birds such as Black-tailed Godwit, Curlew and Snipe probe in the mud to look for the millions of tiny creatures that live there. Other birds such as the Brent Goose and Greylag Goose feed on the algae growing on the mudflats, while birds such as Cormorants feed on fish. The migratory birds also use the agricultural and amenity lands surrounding the estuaries as feeding sites during high tide. The sheltered waters of the estuaries provide nursery areas for many fish species that live out in the sea such as Herring, Seabass, Cod and Pollack. 25 different species of fish have been recorded in the estuaries so far.

Rogerstown Estuary was one of six estuaries in Ireland that was classed by the EPA as having a bad ecological status. Persistent eutrophication has driven excessive algal growth, causing the smothering and subsequent loss of intertidal seagrass beds. The ecological status of the Broadmeadow Estuary was classed as poor and the Baldoyle Estuary is still subject to review[10].

*Photography by Shay Connelly*

### *3.1.2 Sandy Beaches*

Long sandy beaches are important roosting sites for the large flocks of estuarine birds in autumn and wintertime. Breeding birds on our beaches have largely disappeared as a result of disturbance caused by dogs and people. However, the Little Tern has returned as a breeding bird at the tip of the Burrow peninsula in Portrane, as a result of the concerted efforts by local Birdwatch volunteers. Ringed Plover has also benefitted from the protective measures for the Little Tern and is breeding in the same area. Throughout the year, birds such as Wagtails, Dunlin and Plovers can be observed running along the shore looking for insects in the rotting plant material that has washed up on the shore. Typical strandline vegetation includes colonizer species such as Sea Rocket *(Cakile Maritima)*, Frosted Orache *(Atriplex Laciniata)* and Saltwort *(Salsola Kali)*. These plants are often joined by dune-forming grasses such as Sea Couch *(Elytrigia Juncea)* and Lyme-grass *(Leymus Arenarius).*

The very mobile shingle and gravel beaches are subject to continuous disturbance and are therefore generally sparsely vegetated. However, this habitat type does include some national or Dublin rarities such as Yellow Horned-poppy *(Glaucium Flavum)*, Sea Holly *(Eryngium Maritimum)* and Sea Kale *(Crambe Maritima).*

### 3.1.3 Sand Dunes

The extensive sand dune systems at Rush, Portrane, Donabate, Malahide and Portmarnock are some of our richest biodiversity hotspots in the County. They are also amongst the most fragile habitats around the Fingal coast. Unfortunately much of the dune habitat is covered by golf courses, holiday homes or caravan parks and is subject to coastal erosion. The dune grassland vegetation is very similar to the species composition of Dry Calcareous and Neutral grasslands and includes Common Bird's-foot-trefoil *(Lotus Corniculatus)*, Kidney Vetch *(Anthyllis Vulneraria)*, Common Restharrow *(Ononis Repens)*, and Wild Thyme *(Thymus Praecox)*. Substantial colonies of the legally protected Hairy Violet *(Viola Hirta)* grow abundantly in the stable dune grassland of Portmarnock and Donabate and the Red Data Book species Spring Vetch *(Vicia Lathyroides)* occurs in a few sites here too. The abundance of flowers attracts many insects such as butterflies, moths, burrowing bees and wasps, including some nationally uncommon species such as the Small Blue butterfly *(Cupido Minimus)* and the Solitary bee *(Osmia Aurulenta).*

### 3.1.4 Cliffs and Rocky Shores

Rocky and soft sedimentary cliffs line much of the Fingal coast. The steep rocky cliffs of Howth Head are home to thousands of breeding seabirds such as Kittiwakes, Fulmars, and Guillemot. The exposed intertidal rocky shores at Howth show a typical zonation of kelp, mussels or barnacles and lichens in progression up the cliffs. The more moderately exposed and sheltered intertidal rocky shores further north along the coast support a much wider variety of marine plants and animals with Bladder wrack, Serrated wrack, Barnacles, Limpets, Mussels, Starfish and Periwinkles. Rock pools are often the best place to see marine wildlife such as Hermit Crabs, Beadlet Anemone, Shore Crabs, and Shrimp. Many of these rocky shores are under pressure from the harvesting of Periwinkles and other molluscs.

The steep and soft sedimentary cliffs between Rush and Balbriggan hold several colonies of Fulmar and Sand martins that build their nest in these soft soils. At the edge of agricultural land, grassland with Red Fescue *(Festuca Rubra)* with often dominates the cliff tops. Tall herbs such as Common Knapweed *(Centaurea Nigra)*, and Great Willowherb *(Epilobium Hirsutum)* are found growing abundantly along the sedimentary sea cliffs.

### *3.1.5 Inshore Waters*

The inshore areas of the Irish Sea along the Fingal coast are classified as an important spawning and nursery zone for several commercially important fish species such as Cod, Whiting, Place, Herring and Mackerel. These fish species spend their juvenile period in the calm waters of the estuaries and along the shore, before moving out to the choppier waters of the Irish Sea. So far 47 different species of fish have been recorded along the Fingal coast. The diversity and numbers of fish species used to be a lot higher in the past. Overfishing over the last 200 years has caused serious declines in fish stocks in the Irish Sea and along the Fingal coast. Shellfish harvesting by means of bottom trawling is common along the Fingal coastline. Bottom trawling has a significant negative impact on the marine environment[11,12,13] while the shellfish stocks along our coast are declining due to overfishing[14].

All Irish coastal waters within the 200-mile limit were declared a sanctuary for whales and dolphins in 1991. The Rockabill to Dalkey Island Special Area of Conservation off the Fingal coast was designated for Harbour Porpoise and Reefs (on the islands).

## Oysters in Fingal

Oysters used to be found along the Fingal coast, with one of the most productive natural Oyster beds in Dublin being located at the Malahide Estuary15. John Rutty, in his book *The Natural History of the County of Dublin* written in 1777 also tells us that a natural bed of large oysters was located NE of Irelands Eye in 18 to 20 fathoms depth. Rock Oysters or Pacific Oysters beds were present at Lambay island and off St. Patrick's Island near Skerries and in Howth. Whether these introduced Oysters replaced native Oyster beds is not known. The railway line construction across the Malahide Estuary, water pollution and overfishing all contributed to the decline of the oyster fishery and the Oyster would eventually disappear from the Fingal coast all together.

### *3.1.6 The Islands*

There are six islands located just off the Fingal coast. These are Ireland's Eye near Howth, Lambay near Rush, and Colt, St. Patrick, Shenick and Rockabill near Skerries. These islands are home to about 80.000 breeding seabirds during the summer months and these colonies are among the most important of Ireland's seabird colonies[16]. Rockabill has the biggest breeding colony of Roseate Terns in North-western Europe. Lambay Island holds Irelands largest "mixed" seabird colony and is of international importance. The three large Cormorant colonies on Lambay, Irelands Eye and St. Patrick's Island collectively form a "supercolony" that comprises the largest aggregation of the species anywhere in Britain or Ireland. The most abundant sea birds are Guillemots and Kittiwakes. Satellite tagging studies show that seabirds undertake significant movements inland, as well as within the inshore and offshore areas to feed[16].

## 3.2 The Fingal Countryside

Despite its proximity to a major growth centre like Dublin, much of County Fingal is still in agricultural use. Fingal is known for its good quality farmland and provides much of the fresh farm produce to the Dublin markets. Arable land and improved grassland make up most of the Fingal countryside. The bulk of the arable land is found in the fertile and well drained eastern part of the county, where the soils are particularly suited to market gardening, potato and cereal production. Livestock production is more common in the western part of the county. Farmers in the past planted the hedgerows to provide stockproof boundaries to their fields and as a result, the Fingal landscape now comprises of a rich patchwork of arable fields and grasslands divided by a network of hedgerows.

Up to the 1950's, farming in Ireland was small scale and extensive, with very low inputs of chemical fertiliser or pesticides. Pressure for intensification driven by the demand for cheap food, fostered by technical progress and financed by the Common Agricultural Policy encouraged bigger fields, less diverse farming enterprises, and high inputs of chemical fertiliser to maximise yields. The intensification of agricultural practices over the last couple of decades has resulted in the loss of many semi-natural habitats such as unimproved grassland and wetlands and the decline of many typical farmland wildlife species.

### *3.2.1 Rivers*

Fingal is fortunate to have an extensive network of rivers and streams. The most important rivers are the Delvin, Matt, Corduff, Ballyboughal, Broadmeadow, Ward, Tolka, Liffey, Santry, Sluice and the Mayne rivers. Most of these rivers have been subject to drainage works since the 1800's to improve the drainage of adjoining lands and the wider catchment for agriculture. The riverbed would have been lowered and widened and at various locations the floodplains have been cut off from the river. The rivers in Fingal have generally a 'moderate' to poor' water quality status with many of the rivers at risk of not achieving "good" status. Despite their polluted status, typical riverine species such as Otter can still be found along all rivers in Fingal, while Salmon spawning grounds are located within the Ward River Valley Park. Typical riverine birds such Kingfishers, Dippers and Wagtails have become a less common sight over the last 10 years. Rare plants can be found along the rivers too such as Green Figwort *(Scrophularia Umbrosa)* and Flowering-Rush *(Butomus Umbellatus),* both of which can be found in the Liffey Valley.

*Photography by Eddie Dunne*

### *3.2.2 Wetlands*

Freshwater wetlands are relatively uncommon in Fingal. The reservoirs, lakes and marshlands provide a home to many water birds, amphibians, dragonflies and damselflies. Knock lake near Balbriggan is the largest freshwater lake in Fingal and is home to many water birds such as Little Grebe, Coot and Water Rail. The Bog of the Ring used to be an extensive marshland, but this site is seriously degraded due to drainage works and infilling. The Bog of the Ring still contains pockets of wet and damp ground where marsh vegetation occurs, but most of the rare plant and breeding bird species that used to occur here in the past are gone[17].

The Sluice River Marsh and the Mayne Marsh are associated with the Baldoyle Estuary. The Mayne Marsh used to be a tidal marsh until the brackish water supply was reduced due to the installation of flap valves on the outfall of the Mayne river to prevent flooding of adjoining properties. Although saltmarsh habitat is still present in the marsh, legally protected species such as Borrers Saltmarsh Grass *(Puccinellia Fasciculata)* have not been seen since the flap valves were installed in 2000[18]. The Sluice River Marsh contains both brackish and freshwater habitats and supports a wide range of wildlife species throughout the year. In the summer, birds such as Snipe and Meadow Pipit use the area for breeding and feeding, while several species of bat use the area as a foraging area. During the winter, migratory birds such as the Brent Goose and Bar-tailed Godwits use the marshland to shelter and feed[19].

The wetland at St Ita's in Donabate has been reduced in size due to the construction of the Donabate distributor road. The wetland at St. Ita's used to support brackish species too because of a link with the Rogerstown Estuary via the Portrane Canal. However, this supply has been cut off due to flood defence works[20]. Wetland enhancement works have been carried by the Council in 2020 & 2021 to improve the ecological quality of the remaining parts of the wetland.

Garristown Bog is one of the few large wetlands that has completely disappeared over the last 400 years in Fingal. This wetland is shown on the Rocque map of County Dublin in 1760, located north of Garristown village and covering an area of approx. 300ha. The area is now known as the Commons lower and Commons upper. By the 1830's this wetland was drained to make it suitable for agricultural use.

***Figure 2:*** *Garristown Bog, north of Garristown on the 1760 Rocque map of Dublin. Most of this wetland was drained to make it suitable for agricultural use.*

### *3.2.3 Woodland*

Woodland habitat is scarce in Fingal and mainly restricted to old demesnes and river valleys. Most of these woodlands were planted during the heyday of the 18th century fashion for wooded demesnes. Other woodland sites such as the woodlands at Luttrelstown and St. Catherine's in the Liffey Valley are much older and may be part of the ancient woodland cover in Dublin. The species composition of the tree and understorey layers is heavily influenced by the planting and management regimes of the past. The woodlands are dominated by Ash, Oak, Beech, Sycamore, Horse Chestnut and Lime and sometimes include rather exotic trees such as Sequoia, and Monterey Cypress. The understorey often includes Holly, Hazel, Cherry Laurel and Wych Elm. The herb flora is rather poor due to the dense shade in most Fingal woodlands, but woods with a history of coppicing have a much higher species diversity. Typical woodland plants such as Wood anemone and Bluebells are rather uncommon. However, the ground flora does include many other woodland flora such as Lords and Ladies, Dog Violet, Herb Robert and Primrose and the legally protected Hairy St. John's-wort. The Liffey Valley is considered the national stronghold of the Hairy St. John's-wort.

*Photography by Faith Wilson*

The old trees and buildings in the woodlands and demesnes offer plenty of roosting sites for bats such as the Leisler's bat, Brown long-eared bat, Whiskered bat and the Common and Soprano Pipistrelles. The woods are also home to about 25-30 common and widespread woodland bird species such as Thrushes, Blackbird, Wood Pigeon, Stock Dove, Black Cap and Sparrowhawk.

### *3.2.4 Hedgerows*

Hedgerows provide food, shelter and nesting sites in the agricultural landscape. They also act as links or corridors, which allow wildlife to move between different habitats in search of food. Yellowhammer, Tree Sparrow, Badgers and many other typical farmland creatures live in these hedgerows. There is about 2660km of hedgerow in Fingal, most of which is in the north and west of the County. Old townland boundary hedgerows are the most diverse in tree species and associated ground flora. Adjacent land use has a major effect on the species composition of the hedge bottom and field margin flora. Hedges in intensively farmed areas have the poorest diversity, while areas next to wetland, old grassland and woodland contain many more plant species. The most dominant trees and shrubs are Hawthorn, Dog Rose, Ash, Sycamore and Elm. Some unusual plants such as Short-styled Field Rose *(Rosa Stylosa)* which is a rare species in Ireland and Irish Whitebeam (Ireland's only endemic tree species) were also found during the Fingal hedgerow survey. Unfortunately, much of the hedgerow resource in Fingal is in decline due to development and the lack of management. It is estimated that since 1937, we have lost at least 1900km of hedgerows in the County[21].

### *3.2.5 Arable Land*

Fingal has been used for arable farming for many centuries. Arable land was once associated with a variety of 'weed' species, with many of them introduced to Ireland by Iron Age farmers. Although many arable weed species have disappeared in the County, the sandy soils around Rush still constitute the national headquarters of a number of rare species such as Prickly Poppy *(Papaver Argemone)*, Flixweed *(Descaurania Sophia)* and Small-flowered Crane's Bill *(Geranium Pusillum),* Bugloss *(Anchusa Aarvensis)* and Purple Ramping-Fumitory *(Fumeria Purpurea)*. The main areas of biodiversity value on arable farmlands are often the hedgerows and field margins, where many of the arable weeds and rank unmanaged grassland are found. The seed heads of the weeds and grasses provide winter feeding for farmland birds. Animals such as hares use the long grass to rest in during the day.

### *3.2.6 Grassland*

The grassland habitat in Fingal primarily comprises of improved agricultural grassland. The bright green uniform swards are generally of low conservation interest as it only supports a small number of plant species. The exception to this is where wildfowl such as geese or swans use the intensive pasture for feeding while on migration.

Grasslands which were once characterised by an abundance of wildflowers and managed traditionally by cutting or light grazing are now largely a thing of past. However, small pockets of semi-natural calcareous, neutral and acid grassland can be found in small corners of fields across the countryside. They support a colourful display of Cowslip, Yarrow, Field Scabious, Pyramidal Orchid, Knapweed and Restharrow.

## 3.3 Urban Centres

Nowhere is human influence on the natural environment more profound than in towns and villages. Many plants and animals have adapted to urban life and co-exist with humans. Urban areas contain potentially valuable wildlife habitats such as gardens, parks, playing fields, churchyards, cemeteries and brown field sites. They can be home to Robins, Blackbirds, Sparrows, Wrens, Thrushes, Blue Tits, Great Tits, Chaffinches, Frogs, Newts, Butterflies, Damselflies, Bees and even Foxes and Badgers. Over the last decade increasing efforts have been made worldwide to make urban areas more suitable for declining species such as Swifts, House Sparrow, various Bat species and amphibians for example. Over the next decade, hundreds of acres of farmland will be converted into housing estates in Fingal. The design challenge will be to ensure that nature is accommodated in these housing estates. Not only will that benefit wildlife, the natural habitats will also provide many ecosystem services and health and economic benefits.

***Figure 3:*** *Urban areas also provide opportunities for wildlife habitat such as meadows.*

# 4. What are Our Legal Responsibilities Regarding the Protection of Biodiversity?

*Photography by Eddie Dunne*

From the various ecological studies undertaken so far it has become clear that County Fingal hosts a wealth of wildlife. Although most of the wildlife species found in Fingal are common and abundant in Ireland, some species and habitats are afforded legal protection under European and National wildlife legislation. This legislation has far reaching implications for the way the County Council and other statutory bodies operate. An overview of all protected sites and species is given in Appendices I-VII.

**The principal legislation relating to biodiversity in Ireland is as follows:**


## 4.1 EU Habitat & Bird Directives

The EU Habitats Directive is the most important nature conservation legislation in Europe. The aim of this Directive is to maintain and restore the favourable conservation status for habitats and species which are rare and threatened throughout Europe. The Habitats Directive requires member states to designate Special Areas of Conservation (SAC) for habitat types and species that require conservation as part of a Europe-wide 'coherent ecological network' called Natura 2000. Birds are not included in the EU Habitats Directive, because they are covered by the EU Birds Directive. The Birds Directive requires member states to designate Special Protection Areas (SPA) to protect the most important bird areas in the country. Ten sites along the Fingal coast such as the estuaries and the islands have been designated as either SAC or SPA or both and Fingal has an international responsibility to look after these sites.

The overall conservation status of the Rogerstown Estuary and Malahide Estuary SACs is unfavourable-inadequate, while the conservation status of the Baldoyle Bay SAC is favourable[22,23,24]. Significant effort will be required by the Council, NPWS and landowners to restore the Rogerstown and Broadmeadow estuaries to favourable conservation status. There are no conservation status reports available for the Howth Head SAC, Ireland's Eye SAC, Rockabill to Dalkey Island SAC and Lambay Island SAC. Detailed management plans are to be prepared for all designated sites to clearly outline the issues, actions required and responsibilities for the implementations of these actions. A management plan is already available for Irelands Eye[25], which was prepared as part of the Howth SAAO and Biosphere conservation action programs.

The European Directives contain lists of plants and animals that are rare or declining on a European scale, listed separately in 'Annexes'. Table 2 below gives an overview of what is included the annexes of the Habitats Directive and how relevant these are to Fingal. The most important annexed species in Fingal are the Otter, Atlantic Salmon, several bat species and various cetaceans (see appendix IV for more details).

The Bird Directive also has various annexes, but Annex I is the most relevant, which indicates which birds require the designation of the Special Protection Areas. Eleven species listed in the Annex I can be found in Fingal, particularly in the estuaries and the islands.

***Table 2:*** *Explanation of annexes of the EU habitats Directive*

| Annex | Status | Total Number of Habitats and Species in Fingal |
|---|---|---|
| I | Habitat types whose conservation requires the designation of Special Areas of Conservation. | 26 |
| II | Animals and plant species whose conservation requires the designation of Special Areas of Conservation. | 9 |
| IV | Animals and plant species in need of strict protection. | 15 |
| V | Animals and plant species whose taking in the wild and exploitation may be subject to management measures. | 6 |

It is important to note that the occurrence of protected habitats, flora and fauna species is not just confined to the protected nature conservation sites. Several habitats listed in Annex I of the Habitats Directive occur on sites outside the Special Areas of Conservation (SACs). Most of these habitats are found along the coast and include sand-dunes, shingle and gravel banks and shores, orchid rich grasslands, petrifying springs, and vegetated sea cliffs.

The lands surrounding the designated sites are also of key importance as feeding and roosting grounds, particularly for migratory birds. The farmlands and amenity grasslands surrounding the estuaries are of prime importance to Brent Geese for example. However, these lands are subject to pressures from development, recreational disturbance and land use changes, which in turn may affect the Brent Geese population in the estuaries. The rivers in Fingal are home to several EU priority species such as Otter, Kingfisher and Atlantic Salmon. Although these rivers have not been designated as nature conservation areas, the County Council has an obligation to make sure that the habitat for these species is protected.

*Photography by Clive Timmons*

The countryside also supports large numbers of the more general flora and fauna species and although these species may not be rare or protected itself, they are all part of the interrelated, natural fabric of the countryside. Article 10 of the Habitats Directive seeks to provide for the maintenance and enhancement of these natural habitats in the wider landscape. It calls for land-use planning and development policies to "encourage the management of features of the landscape which are of major importance for wild fauna and flora". Such features are defined as "those which by their linear and continuous structure (such as rivers and their banks or the traditional systems of marking field boundaries) or their function as stepping stones (such as ponds or small woods), are essential for the migration, dispersal and genetic exchange of wild species".

## 4.2 EU Water Framework Directive

This Directive provides a framework for the protection and improvement of all our waterbodies - ground-water, rivers, estuaries and coastal waters with the aim of achieving 'good' status (both ecologically and chemically) by 2027. Compliance with the WFD is to be achieved through River Basin Management Plans and a program of measures. The Directive requires that River Basin Management Plans be prepared and renewed in six-year cycles. The prioritised areas for action within Fingal as outlined in the River Basin Management Plan 2018-2021 are the catchments of the Rogerstown Estuary, Santry River, Mayne River and Upper Tolka. Unfortunately, none of the water quality improvements sought in the plan have been achieved. The River Basin Management Plan 2022-2027 is currently being prepared.

## 4.3 Wildlife Acts

The Wildlife Acts (1976 to 2018) and the Wildlife (Amendment) Act, 2020 are Ireland's primary national legislation for the protection of wild flora and fauna in Ireland. Under the Wildlife Act, Natural Heritage Areas (NHAs) and Refuge for Fauna (RFF) are being designated to conserve species and habitats of national importance. In Fingal, this includes the Liffey Valley, Royal Canal, and wetland sites such as the Sluice River Marsh and the Bog of the Ring. NHA's are not only designated for wildlife, they also provide for statutory protection of important geological and geomorphological sites. Three of these geological NHA's can be found in Fingal; Feltrim quarry and the shorelines at Portrane and Loughshinny. There are also several Statutory Nature Reserves and Refuges for Fauna in Fingal. These areas established under the Wildlife Act, are areas where nature conservation is the primary objective and takes precedence over all other activities.

## 4.4 Flora Protection Order, 2015

In accordance with Section 21 of the Wildlife Act 1976, the current list of plant species protected in Ireland is set out in the Flora Protection Order, 2015. Under the Flora Protection Order 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. The Flora Protection Order includes 67 vascular plants, of which six are particularly relevant to Fingal (see Appendix III).

## 4.5 Planning and Development Acts, 2000-2006

Local authorities have a central role and responsibility in protecting the natural environment. This is achieved by determining policies for its administrative area through the preparation of a Development Plan and for applying that policy, through planning control, in deciding on planning applications and enforcing planning decisions. Fingal County Council has a mandatory obligation to take biodiversity into account when drawing up or considering plans or proposals for development. This includes both statutorily protected nature conservation sites and the habitats and species in the wider countryside. The County Development Plan includes various green infrastructure and biodiversity related objectives that seek to protect and enhance the Fingal Ecological Network and the plant and animal species associated with it.

***Table 3:*** *Protected Areas of International and National Importance*

| Location | SAC | SPA | pNHA | Ramsar | SNR | RFF |
|---|---|---|---|---|---|---|
| Baldoyle Bay | √ | √ | √ | √ | √ | |
| Bull Island | | √ | | √ | √ | |
| Bog of the Ring | | | √ | | | |
| Feltrim Hill | | | √ | | | |
| Howth Head | √ | √ | √ | | | |
| Ireland's Eye | √ | √ | √ | | | |
| Lambay Island | √ | √ | √ | | | |
| Knock Lake | | | √ | | | |
| Liffey Valley | | | √ | | | |
| Loughshinny Coast | | | √ | | | |
| Malahide Estuary | √ | √ | √ | √ | | |
| North Dublin Bay | √ | | √ | | | |
| Portrane Shore | | | √ | | | |
| Rockabill Island | | √ | √ | | √ | √ |
| Rockabill to Dalkey Island | √ | | | | | |
| Rogerstown Estuary | √ | √ | √ | √ | √ | |
| Royal Canal | | | √ | | | |
| Santry Demesne | | | √ | | | |
| Skerries Islands | | √ | √ | | | |
| Sluice River Marsh | | | √ | | | |

***SAC*** = *Special Area of Conservation*
***SPA*** = *Special Protection Area*
***pNHA*** = *proposed Natural Heritage Area*
***Ramsar*** = *site designated pursuant to Ramsar Convention on Wetlands*
***SNR*** = *Statutory Nature Reserve*
***RFF*** = *Refuge for Fauna*

# 5. Threats to Our Natural Heritage

We are lucky to have a great diversity of habitats and species in County Fingal. However, the biodiversity resource we see today is only a small fraction of the resource we had here in the past. Table 4 gives an overview of the main threats facing the various habitats and their associated species in Fingal at present. The six most important threats to wildlife are described in more detail below:

1. Habitat Loss & Fragmentation
2. Disturbance
3. Climate Change
4. Water Pollution
5. Lack of habitat management
6. Alien Invasive species

## 5.1 Habitat Loss and Fragmentation

The National Biodiversity Plan identifies habitat loss and degradation as the main factor eroding biodiversity in Ireland today. Although Ireland's landscape and habitats have been modified by human activity since the island was settled, the pace and scale of change rapidly accelerated from the latter half of the 20th century. The rapid development of houses, roads and other infrastructure in our towns and countryside, together with major changes in agricultural and fishing practices have led to a major loss of habitats and habitat fragmentation. Fragmentation happens when, for example, a motorway cuts through a patch of landscape creating two smaller landscape patches. Smaller habitat patches generally support fewer species and support lower population numbers of the species present. Increasing fragmentation leads to a loss of connection and/or increasing distance between patches, which has negative consequences for the ability of plants and animals to move through the landscape and to sustain viable populations.

**What are we going to do about it in this plan?**

- Protect and develop the Fingal Ecological Network
- Acquire lands in and around core sites in the ecological network
- Enhance the biodiversity value of housing estates, industrial and business parks
- Develop an EIP Agri-environment scheme
- Explore possibilities of a large-scale rewilding project
- Explore feasibility of marine ecosystem restoration projects

## 5.2 Disturbance

Some of the most important nature conservation sites in Fingal are the estuaries and the islands, because of the thousands of birds that winter and breed there. Many of these birds roost and feed in areas all along the coastline. At the same time, our scenic coastline is a popular amenity resource with thousands of visitors frequenting our coast and beaches every year. The wintering birds are in Ireland to recover from their long flight and spend the soft winter here, while fattening up for their return journey to the Artic. If these birds are continuously disturbed by visitors and dogs, they use up a lot of energy, hampering their recovery and this can affect breeding success and mortality rates in the Artic. Similarly, disturbance to the bird colonies on the islands can affect the success of the breeding season of the seabirds. Controlling and guiding the flow of people along our coast to avoid disturbance to the main nesting, feeding and roosting sites, will be one of the major challenges for Fingal as the County continues to grow.

***Figure 4:*** *Dogs off a leash can be a major disturbance to migratory birds on our beaches.*

**What are we going to do about it in this plan?**

- Map and protect key roosting and feeding sites for migratory birds
- Acquire lands near the estuaries and manage these for migratory birds to provide undisturbed roosting and feeding sites
- Map and protect key feeding sites for seabirds breeding on the islands
- Continue to support the Little Tern conservation scheme on beach and identify other nesting sites for Terns

## 5.3 Climate Change

The biodiversity crisis and the climate crisis are intrinsically linked. Climate change accelerates the destruction of the natural world through droughts, flooding and wildfires, while the loss and unsustainable use of nature are, in turn, key drivers of climate change. Climate change can affect our habitats and species in a myriad of ways. Changes in the environmental conditions at the wintering grounds of many Irish breeding birds in sub-Saharan Africa, such as droughts or floods, could have an impact on the breeding bird population of Fingal. Similarly, the warmer weather conditions in the Artic may lead to changes in the numbers of birds wintering in Ireland. The increasingly early flowering period of trees, shrubs and plants is causing all sorts of difficulties for insects and their avian predators. Their lifecycles are fine-tuned to coincide with the flowering period of certain plants, which ensures an abundance of food supply during the breeding season. Changes to flowering periods as a result of climate change may prove problematic for many species. Sea level rise and extreme storm weather events will put extra pressure our rivers and coastal habitats in particular, while drier and hotter weather conditions will increase the risk of wildfires.

But just as the crises are linked, so are the solutions. Nature is a vital ally in the fight against climate change. Nature-based solutions, such as protecting and restoring forests, wetlands and coastal ecosystems, or sustainably managing marine areas will be essential for emission reduction and climate adaptation[25].

**What are we going to do about it in this plan?**

- Acquire lands around the estuaries to allow coastal habitats to move with sea-level rise, absorb floodwater, improve water quality and restore coastal ecosystems.
- Restore saltmarsh and freshwater wetland ecosystems to maximise carbon capture.
- Create new multi-functional woodlands at strategic locations near existing regional parks.
- Manage heathland on Howth to prevent large scale wildfires.

## 5.4 Pollution

All forms of pollution pose a serious threat to biodiversity, but nutrient pollution of waterbodies, pesticide pollution of soils and waterbodies and light pollution are the most relevant forms of pollution in Fingal. Nitrogen and phosphorus are common pollutants in our rivers and estuaries, originating primarily from chemical fertilizers and manure that are applied to fields to increase crop growth. Any unabsorbed nitrogen and phosphorus leaches into nearby rivers and groundwater, leading to eutrophication of ecosystems. Sewage overflows also contribute to the nutrient loading on our rivers.

The common use of pesticides in farming has raised concerns about their potential adverse effects on pollinators and farmland birds. Pesticides can be present in pollen and nectar of native flowers which affects pollinators, while farmland birds such as Grey Partridge are eating cereal seeds coated with pesticides during the sowing season[26,27].

Light might not be the first type of pollution that comes to mind, but artificial light can have negative impacts on biodiversity. Many animals have evolved to be nocturnal such as Bats, Moths and Barn Owls. They hunt or move around under the cover of complete darkness, with only the light from the moon or stars to guide their flight. Lighting can impact on bats' roosting sites, commuting routes and foraging areas and disturb bats' feeding behavior for example[28].

**What are we going to do about it in this plan?**

- Acquire floodplain lands to develop wet woodland and other wetland habitat to trap nutrients from adjoining farmland and improve water quality
- Carry out river restoration projects that include Agri-environmental measures such as minimum-tillage, buffer strips, winter cover, silt traps in drains and integrated pest management.
- Support eco-toxicology research on farmland habitats and species.

## 5.5 Lack of Habitat Management

Some of the man-made habitat types such as hedgerows and meadows require human intervention to maintain the diversity of plants and animals they support. Hedgerows were created as living stockproof field boundaries in the past and they require cutting or laying every few years. If they are not managed, the hedgerows turn into lines of mature trees and they lose their dense cover which is so important for wildlife. Wildflower meadows need to be cut or grazed in autumn to prevent these meadows from becoming rank and overgrown with scrub.

**What are we going to do about it in this plan?**

- Develop a hedgerow appraisal and management guidance document
- Assess the hedgerow resource on Council owned lands and carry out necessary maintenance operations (e.g. coppicing and laying)
- Work with Tidy Towns groups and local resident associations to manage hedgerows in open spaces
- Continue conservation grazing schemes in regional parks
- Continue to work with local farmers to collect the hay from regional parks
- Work with Tidy Towns groups and local resident associations to maintain wildflower meadows in housing estates and road verges
- Experiment with sheep grazing on wildflower meadows in housing estates

## 5.6 Alien (Invasive) Species

Alien species are plants or animals that have been introduced in Ireland outside their natural range. Alien species can sometimes become 'invasive' when they spread rapidly and outcompete the native flora and fauna.

In Fingal, the problem with invasive species is mainly limited to alien plant species that grow in and along some of our woodlands, heathlands, cliffs and watercourses. Japanese Knotweed, Himalayan Balsam and Giant Hogweed are occasionally found along watercourses. Rhododendron Ponticum and Cherry Laurel cast a dense shade in some of the heathlands and woodlands, preventing ground flora from establishing and new tree saplings emerging. Some garden plants have become a problem on the sea cliffs at Howth and Balbriggan as a result of dumping garden waste.

**What are we going to do about it in this plan?**

- Continue existing control programs for Japanese Knotweed, Giant Hogweed, Himalayan Balsam and Rhododendron until these species are eradicated.
- Initiate control programs for garden escapees on cliffs and liaise with adjoining landowners to stop dumping garden waste.
- Remove Cherry Laurel and Snowberry as part of woodland management works in Demesnes and regional parks.

***Table 4:*** *Primary Threats to Biodiversity in Fingal*

| Habitat | Primary Threats |
|---|---|
| **Grasslands** | *Intensification of farming practices or abandonment* |
| **Hedgerows** | *Removal of hedgerows and lack of proper hedgerow management* |
| **Woodland** | *Lack of woodland management, invasive species, extreme weather events such as storms & droughts* |
| **Rivers** | *Nutrient enrichment, water pollution, channel straightening, river maintenance, extreme rainfall events* |
| **Wetlands** | *Infilling and drainage* |
| **Beaches** | *Sea level rise, extreme storm events, disturbance by dogs and people, coastal protection works* |
| **Dunes** | *Coastal erosion, coastal protection works, holiday homes and housing development, golf course expansion, trampling, pesticides & herbicides* |
| **Estuaries** | *Disturbance, water pollution & sea level rise* |
| **Sea** | *Water pollution, overfishing, extreme storm events* |
| **Islands** | *Disturbance* |
| **Cliffs** | *Coastal erosion, coastal protection works, land drainage, invasive species* |

# 6. What Have We Been Doing So Far?

Plenty of actions for biodiversity have been undertaken over the last 10 years while implementing the previous Fingal Biodiversity Action Plan. The Council has reduced grass cutting by creating more wildflower meadows and introducing High Cattle to graze some of our regional parks. The use of pesticides by the Council has been significantly reduced and alternative weed control measures such as hot foam treatment and mechanical brushing are being trialled throughout the county. Wetland enhancement and development works have been carried out at St. Ita's, Beaverstown and Turvey Nature Park in Donabate, St. Catherine's Park near Lucan, and Racecourse Park in Baldoyle. The works have resulted in the return or establishment of several new species such as breeding Lapwing and Lesser Marshwort in the Racecourse Park. The Council reintroduced Grey Partridge as part of an agri-environment scheme together with local farmers and the Grey Partridge Trust. It also supported the Golden Eagle Trust with the reintroduction of Red Kite in Fingal.Although having lost many Kites at the beginning of the project due to rodenticide poisoning, the breeding population is now relatively stable. In 2015 the Council signed up to the Dublin Bay Biosphere Partnership and has been implementing the Conservation Strategy for the Biosphere, particularly on Howth. The Council has been working with the Howth SAAO committee and landowners to undertake a wide variety of ecological studies, preparing management plans for Irelands Eye and Redrock, preparing a Wildfire Management Strategy and implementing wildfire reduction measures such as the removal of large areas of tall Gorse and introducing goat grazing. The Council has also been contributing to the conservation of Irish rare farm breeds, by expanding the range of native Irish farm animals at the farm in Newbridge Demesne.

The control of invasive plant species started in 2010 and there are now county-wide control programs in place for Japanese Knotweed, Giant Hogweed and Himalayan Balsam. Efforts to remove Seabuckthorn from the dunes at Rush and Cherry Laurel from the woodlands in the Liffey Valley are ongoing. But Fingal County Council has not been the only organisation working on nature conservation projects in Fingal. Many other state bodies, NGO's and individuals have been involved in carrying out survey work, leading guided walks, hosting events and practical work days. Volunteers from Birdwatch Ireland monitor the winter bird populations of our estuaries on an annual basis and run the Little Tern Conservation project on Portrane Beach. The Dublin Naturalist Field Club carry out site surveys in Fingal and organise guided walks. The Bat Conservation Group undertakes bat surveys throughout the County to find out more about these nocturnal creatures. The Fingal Hedgerow Society organises guided walks and training days on hedgerow wildlife and management. The various Tidy Towns committees in Fingal are getting involved in nature conservation to halt the loss of biodiversity at local level. The Fingal Biodiversity Action Plan aims to bring together all these organisations and individuals and encourages them to work together on one countywide nature conservation programme to protect the natural heritage in Fingal.

# 7. Fingal in 2030 - A Wealth of Wildlife

It is 2030, and Fingal is teeming with life. Nature in the city, the countryside and the coast has clearly recovered. You can see it, hear it and smell it. We have a rich diversity of plants, insects, mammals, birds, amphibians, fish and soil life. The natural surroundings provide an attractive environment where people like to live, work and be outdoors. We need nature in our lives. We consider biodiversity conservation essential for our wellbeing and most importantly, we act accordingly. Central government, politicians and Council management are committed to halt the loss of biodiversity and have made the necessary staff and funding available to implement the Biodiversity Plan as we realized that nature-based solutions to some of society's key issues can provide multiple benefits and are therefore more cost effective. That we all managed to make a step-change is the result of new ideas, collective action and more innovative nature conservation models. The County Council, local residents, farmers, fishermen, NGO's, businesses, scientists and universities have all been working collectively to restore the species diversity in Fingal.

We realised early on that Fingal can develop and grow while still protecting and enhancing biodiversity for future generations. By developing an ecological network throughout the county to create an interconnected landscape, wildlife can move freely and habitats and species are protected. The Council prepared management plans for all the designated sites in the county to protect and restore these sites, together with landowners, NGO's and the local community. Hundreds of acres have been acquired by the Council near the estuaries and in the Liffey Valley to create new saltmarsh, wetlands and woodland. These habitats will act as carbon sinks to mitigate climate change, while also attenuating floodwaters and provide for recreational space. New carbon offsetting schemes have also been developed to facilitate the restoration of freshwater wetlands and woodland on private property.

Developers, Architects, Engineers and Planners got up to speed quickly with the new Building for Biodiversity guidelines for new developments. As a result, many new housing estates, business parks, industrial estates and infrastructure projects include green roofs, green walls, nesting facilities for birds and bats, green carparking, wetlands and wildflower meadows. This helped us achieve an overall net biodiversity gain in most developments instead of a "No net loss of biodiversity". Open space management has become less intensive and pesticides are no longer used. People got used to the less manicured appearance of our open spaces and road verges and many residents made their gardens more wildlife friendly too. Schools, businesses and golf courses pride themselves on having hay meadows, ponds and woodland and a lot more wildlife on their grounds.

Our countryside remains an important food production area for the greater Dublin area with profitable farms where wildlife can thrive. Many farmers have broad field margins and use less intensive farming methods. Technical innovations and financial supports have allowed farmers to restore soil health and nutrient cycles and make their farms much more biodiversity friendly. Better quality and sustainability instead of more produce are the guiding principle for many farms. This has created more space on the farm for wildlife and has led to a major improvement of the quality of the water, soil and air, without affecting the income and viability of the farm.

This Biodiversity Action Plan sets out the strategy and actions required to fulfil the above vision and halt the loss of biodiversity in Fingal by 2030. The way Ireland currently manages the natural environment is clearly not working as species numbers and environmental quality continue to decline. In order to achieve the 2030 target, a major step-change and new ideas will be required on how we deal with nature in urban areas, the countryside and our seas.

***Figure 5:*** *The Fingal Ecological Network. Artwork by Jeroen Helmer / ARK Nature - Rewilding Netherlands*

# 8. The Fingal Ecological Network

Habitat loss and fragmentation are the most important factors causing the decline of habitats and flora and fauna species in Ireland and Fingal. It is vital that as County Fingal develops, we not only protect the designated sites and their surrounding lands, but that we protect and restore the habitats in the wider landscape and the connections between them.

This will ensure that populations of common, rare and protected wildlife species can thrive and move freely through the landscape.

Throughout Europe and further afield, the issues of habitat fragmentation and habitat & species conservation are being addressed by establishing national and regional Ecological Networks. This Biodiversity Plan is centered around the development and delivery of an Ecological Network across Fingal (See maps 1 & 2 for details). The Ecological Network comprises of four elements:

1. **Core nature conservation sites**
2. **Bufferzones around the core sites**
3. **Nature Development areas**
4. **Ecological Corridors and stepping stones**

A resilient ecological network is vital for the recovery of biodiversity[29, 30, 31]. The purpose of the Ecological Network is to provide a framework and focus for nature conservation efforts in Fingal for the next decade. It is a network of habitats that are in good ecological condition, linking protected sites and other biodiversity hotspots across a wider nature-friendly farmed and urban landscape, providing maximum benefit for biodiversity. This network includes existing or potential healthy, resilient ecosystems which provide a range of important ecosystem services as well as allowing the movement of species across landscapes in response to climate change. It is important that the Ecological Network in Fingal is diverse and of sufficient scale and extent, to enable species and habitats to adapt to disturbance and change. Core sites are surrounded by bufferzones to create more space for sustaining habitats and healthy populations of protected species. Nature Development Areas will provide opportunities for habitat improvement in the wider countryside and urban landscapes. The core sites and the nature development areas will be connected by means of ecological corridors and steppingstones. This will create an interconnected landscape through which wildlife can move freely and healthy populations of both rare and common species can be maintained.

The Ecological Network covers 13,120 hectares, including the islands and estuaries. A breakdown of the acreage of the individual elements of the network is given in table 4. The sites included in the network are the critical natural capital of Fingal. Much of the network is located on lands in private ownership and therefore the delivery of the network will depend to a large extent on the goodwill and interest of local landowners. The County Council will seek to work together with landowners and community groups to achieve this network over the next 10-20 years. For those lands in public ownership, the local authority will seek to protect and enhance these sites for wildlife.

The selection of the sites for inclusion in the Fingal Ecological Network is based upon legislative requirements, ecological studies carried out over the past 20 years and expert opinion by various ecologists and nature conservation groups. It is likely that the network will expand and/or change over the next decades, as more ecological survey information becomes available, particularly in the countryside.

The network shall also make provisions for recreational use, flood protection, climate change measures, farming and contribute to the quality of the living and working environment. The ecological network will thereby contribute to the sustainable development of the countryside and towns in Fingal.

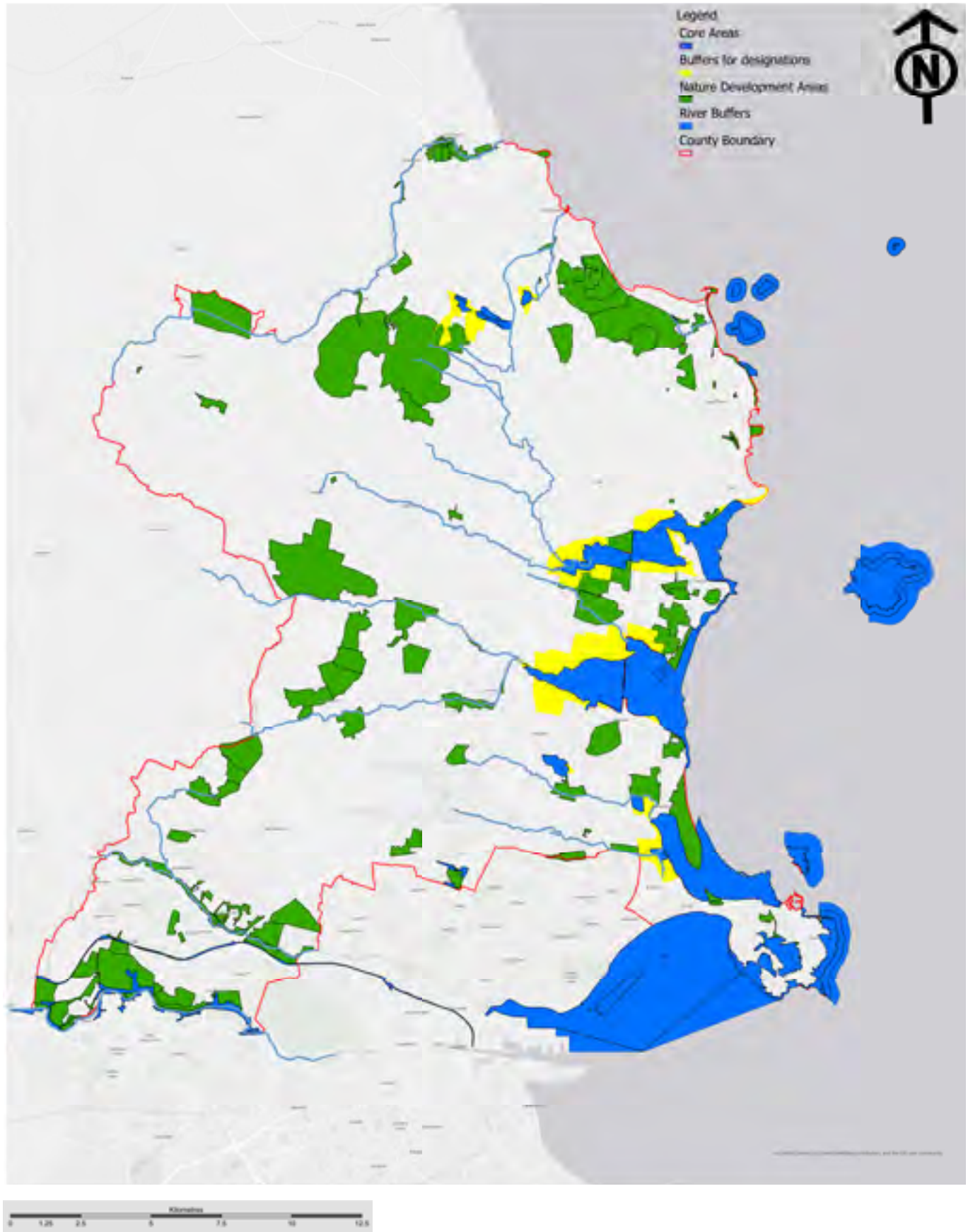
This makes the ecological network approach far more pro-active and encompassing than the traditional species or site-based approaches to biodiversity management. It does not focus solely on rare and threatened habitats and species, but it considers the whole biological resource and its integration with other land-uses.

By incorporating the Fingal Ecological Network into the County Development Plan, the network is fully integrated with spatial and land-use planning. Not only will this protect important sites from adverse developments, it will also help to maximise the opportunities for habitat creation or restoration that new developments have to offer. To ensure that the ecological network is achieved in the long term, it is important to define clear planning guidelines and targets associated with the ecological network. The vision, strategies and target species for the individual element of the ecological network are outlined in the following chapters. The planning guidelines and principles associated with the ecological network are given in Appendix IX to XIV.

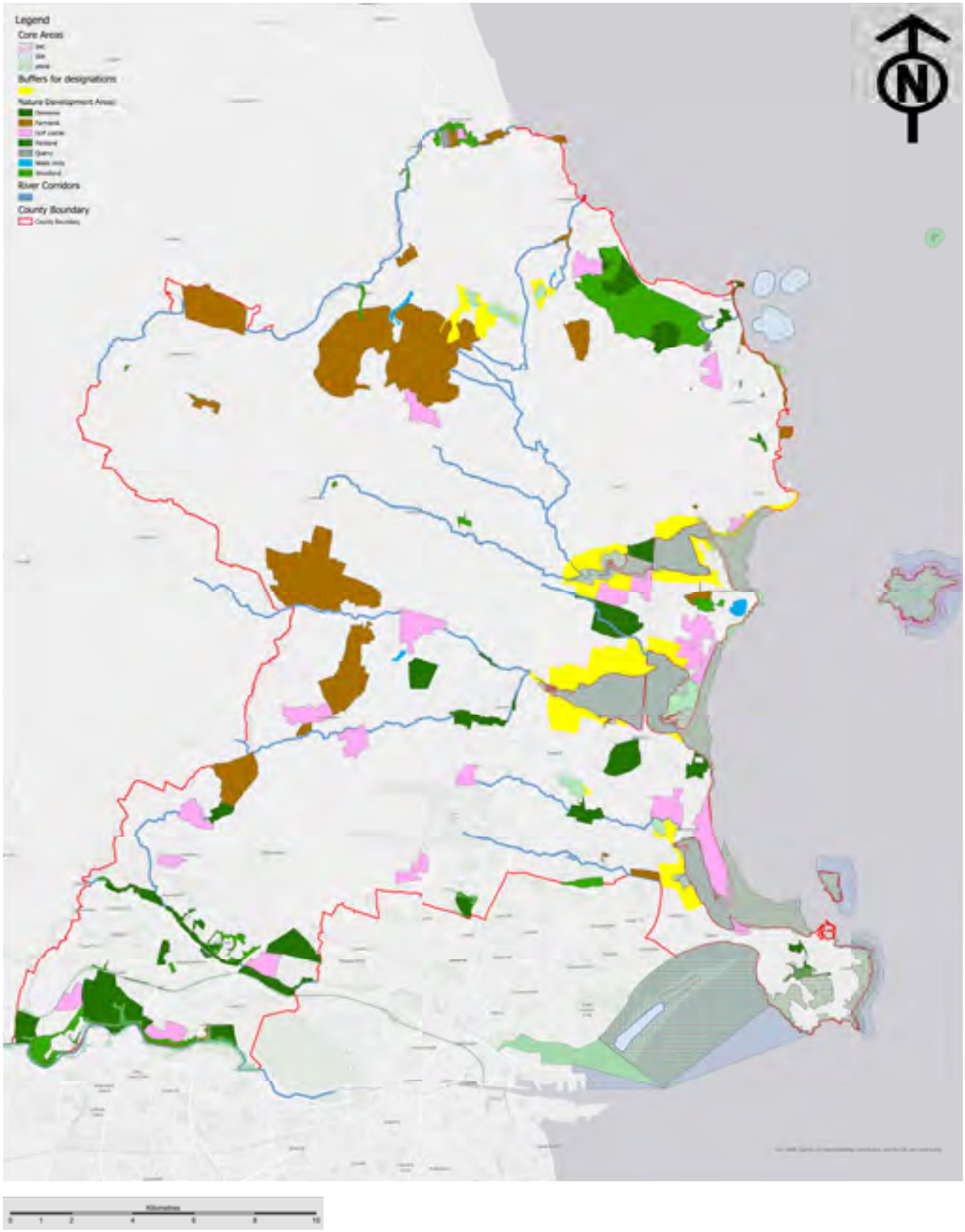
| Fingal Ecological Network Elements | Hectares |
|---|---|
| **Core nature conservation sites** | *2,920* |
| **Buffer zones around the core sites** | *1,350* |
| **Nature Development Areas** | *7,050* |
| **Ecological Corridors** | *1,800 (300 km)* |
| **Total** | *13,120* |

***Table 4:*** *Acreage of Fingal Ecological Network*

## *The Fingal Ecological Network - Map 1*



## *The Fingal Ecological Network - Map 2*



## 8.1 Core Sites

The core areas of the network are the most important nature conservation sites in County Fingal and comprise of the following:

1. Proposed designated sites under the EU Habitats (SAC) and Birds Directives (SPA)
2. Proposed designated sites under the Irish Wildlife Act (NHA's)
3. Sites with EU priority habitats listed in Annex I of the EU Habitats Directive;
4. Marine habitat for EU marine priority species listed in Annex II of the EU Habitats Directive
5. Sites with nationally legally protected plant species under the Flora Protection Order and sites with Red Data book and other nationally rare plant species

### *8.1.1 Core Sites - Designated Sites*

The most important wildlife sites in Ireland have been designated under various national and European directives. In Fingal, most of our coastline is designated under either national or international nature legislation or both. Improving the condition of the designated sites is at the heart of a resilient ecological network. Restoring these sites to favourable conservation status is key to reversing the decline in biodiversity. An overview of all the designated sites is given in table 3 in chapter 4 and in Appendix I.

Under the European Habitats and Birds Directives, the estuaries in Fingal have been designated Special Areas of Conservation (SAC) and Special Protection Areas (SPA). The estuaries are designated because of the thousands of birds that gather there in wintertime. Also, a range of coastal habitats present in these sites that are important in a European context such as mudflats, dunes etc. Similarly, the islands off the Fingal coast have been designated SAC's and SPA's because of the thousands of seabirds that breed on the islands. The Howth Head SAC supports Dry Heath habitat, which is becoming increasing uncommon in Europe and is the only site in Fingal where this habitat occurs. The National Heritage Area designation under the Wildlife Act 1976, also covers most of the European sites and more locally important sites have been added that are of wildlife or geological interest. These are mainly wetland sites such as the Bog of the Ring and the Sluice River Marsh, as well as geological sites near the coast.

The European designated sites are part of a European wide Natura 2000 network. Fingal has an international responsibility to make sure that a favourable conservation status is maintained for the habitats and species of these sites, which are rare and threatened throughout Europe. These sites represent our critical natural capital and their protection forms the basis of the nature conservation strategy and sustainable planning framework in Fingal.

### Vision for the Future

It is 2030 and our designated sites have been restored to favourable condition. The water quality has significantly improved, and seagrass beds are thriving again in the estuaries. Flood embankments have been removed where possible to restore the natural hydrology and saltmarsh marsh plants are colonizing the former farmland. For the first time in 200 years, reintroduced Ospreys are gracing the skies again above the estuaries looking for fish. The public can see the Ospreys diving in the water, while enjoying the spectacular scenery of our coastline from the coastal greenway that is located on the periphery of the estuaries, but away from the ecologically sensitive sites. Existing roosting and feeding sites for wintering birds are protected and new undisturbed sites have been added around the estuaries, so that migratory birds don't waste energy flying from site to site.

Hundreds of thousands of visitors enjoy Howth and the beautiful views of Dublin Bay. They travel the looped pathway network running through a mosaic landscape of woodland, heathland, meadows and restored wetlands, that are grazed by cattle, horses and goats. Large wildfires don't occur anymore on Howth. This is due to proactive management of the heathland and Gorse by the Council, Dublin Fire brigade and local residents.

The Bog of the Ring and the Sluice River Marsh have been restored to their full ecological potential and are now supporting a much great diversity of wetland plants and animals.

*Photography by Danny Green*

## Strategy

The emphasis for the next 8 years will be to restore internationally and nationally designated sites to favourable condition by improving the habitats and water quality and enlarging the designated sites where possible. Management plans for Howth Head and the estuaries (including their surrounding buffer zones) shall be prepared by Fingal County Council in conjunction with landowners and other stakeholders. The most appropriate land use, nature conservation goals and development of recreational infrastructure within each of the sites shall be worked out in greater detail in these plans. Particular focus shall be on the Rogerstown Estuary, Malahide Estuary, Howth Head and the Bog of the Ring, as they are most in need of restoration measures.

Fingal County Council will also seek to acquire privately owned lands in and around the designated sites, particularly where the lands have potential for wetland restoration. The Council may also lease lands to facilitate sympathetic land management for designated species.

Where development is proposed in or near designated sites, strict procedures are to be followed, as set out in article 6(3) of the Habitats Directive to ensure that the conservation objectives established for each Special Area of Conservation and Special Protection Area are not compromised. More details on these procedures are given in Appendix IX.

### *8.1.2 Core Sites - Sites with Annex I Habitats Outside Designated Areas*

A large selection of habitats listed in Annex I of the EU Habitats Directive are located within the Special Areas of Conservation in Fingal. However, several Annex I habitats are found outside the designated sites such as sand-dunes, shingle and gravel banks and shores, sea caves, orchid-rich grasslands, petrifying springs, and vegetated sea cliffs (see Appendices III and X). The petrifying springs, fixed dunes and orchid-rich/calcareous grassland are particularly important, because these are listed as priority habitats in the directive. This means that the EU requires these habitats to be protected because their global distribution largely falls within the EU and they are in danger of disappearance. Although the sites that support these habitats may not have been formally designated, they are very important in a European conservation context and they are to be protected accordingly.

Most of these Annex I habitats are found along the coast and can often be found in proximity of each other. Orchid-rich grassland is often found in the fixed dunes in Fingal. Petrifying springs are mainly found at the base of sedimentary sea cliffs in the northern part of the county. The beaches along the base of the sea cliffs are often shingle and gravel banks and sea caves are present in cliffs too. The threats these habitats face are often the same too. Orchid-rich grassland and fixed dunes are affected by the management regime of golf courses. The sedimentary cliffs and petrifying springs are both dependent on a relatively stable ground water table to maintain their integrity, while the cliffs and the gravel shores are both affected by coastal erosion.

#### Vision

It is 2030 and Annex I habitats outside designated sites are managed with great care and have been restored where possible. Dune habitats inside and outside golf courses are sympathetically managed and orchid rich grassland with its diversity of wildflowers has become a common sight in most of the Links courses. Dumping of garden and farm waste along the cliffs has stopped, as landowners are aware of the huge cost of the removal of invasive garden plants and the potential of erosion of their lands. Our understanding of petrifying springs has greatly increased following hydrological studies of the springs and their surrounding landscape. This has allowed us to reduce nutrient levels in the groundwater supply by means of targeted agri-environment schemes, to ensure a steady supply of nutrient poor and lime rich waters to these springs.

#### Strategy

The protection of the dune habitats, cliffs and associated petrifying springs will be the focus of the works related to Annex I species outside the designated areas. The County Council will encourage golf course managers to protect and expand the Annex I habitats within their courses, by developing Biodiversity Plans for golf courses together with the golf clubs. A hydrological study is to be undertaken of all petrifying springs in the county and the surrounding landscape to gain a better understanding of the current flow of water to the spring and to identify potential threats in the future. The County Council will develop targeted awareness campaigns and invasive species removal projects, to protect the vegetation at the top of the cliffs from herbicide spraying and dumping.

Where development is proposed in or near Annex I Habitats, the development will have to demonstrate that it will have no significant adverse impact on the habitats of interest in these areas and their ecological integrity. The planning procedures to be followed in relation to these habitats are described in more detail in Appendix IX.

### *8.1.3 Core Sites - Marine Inshore Waters*

The marine environment along the Fingal coast is a valuable resource in terms of tourism, recreation, employment and nature conservation. The inshore waters are an important nursery area for many commercial marine fish species, that favor these sheltered waters before heading out to sea. The inshore waters also support harbour porpoise and seals, which are Annex II & IV species under the EU Habitats Directive. The diversity and numbers of fish and shellfish species used to be a lot higher in the past. Overfishing and water pollution have caused serious declines in fish and shellfish stocks along the Fingal coast and overfishing of shellfish stocks is still happening to this day. The EU biodiversity strategy aims to achieve good environmental status of marine ecosystems by 2030, through the restoration of carbon-rich ecosystems and fish spawning and nursery areas, as well as fisheries-management measures.

Managing marine habitats is far more complex in comparison to terrestrial or freshwater habitats. The under-water world of the sea is the least visible, least documented and least understood. It is not possible to conserve marine biodiversity by managing marine habitats directly. Instead, the main causes of marine biodiversity loss must be managed, such as bottom trawling and waste water discharges. These issues require actions such as regulations, fishery controls, marine protected areas and pollution reduction from land-based sources.

#### Vision

It is 2030, and the inshore waters are so clear that when you are kayaking or sailing you can see huge shoals of herring and mackerel closely followed by a pod of harbour porpoises. The clear water is a result of millions of shellfish filtering the seawater. Shellfish beds began to recover after a voluntary no-take zone was established between Lambay and Howth. Not only is the water much clearer, is cleaner too, as pollutants and nutrients are being filtered out. The shellfish beds are also settling the seabed, which in turn has helped to stabilise the marine ecosystem, including the beaches and dunes during heavy storms. The restoration of the shellfish beds has turned out to be a very efficient nature-based solution, to restore the marine ecosystem, improve water quality and make our coast more resilient to climate change.

Inshore fishermen are participating in a results-based aqua-environment scheme that was devised by the fishing industry with the support from state agencies, NGO's, the Council and local community groups. The fishermen are offering marine safaris and assist scientists with the restoration of Oyster beds and Seagrass beds and monitoring of the recovery of stocks. Outside the no-take zone catch sizes have increased significantly as fish stocks within the no-take zone have grown significantly and are spilling over into the adjoining marine environment.

***Figure 6:*** *The restoration of shellfish beds is an important action to restore the marine ecosystem and improve the resilience of our coast. Artwork by Jeroen Helmer / ARK Nature - Rewilding Netherlands*

### Strategy

A feasibility study is to be undertaken to identify how a voluntary Marine Protection Area or no-take zone between Lambay and Howth could be established, which stakeholders are to be involved and what key issues should be addressed in a management plan for this inshore area. The study would also determine to what extent Oyster beds, shellfish beds, seagrass beds and kelp forests can be restored and what practical steps are required to deliver these projects. A cost benefit analysis will also be part of the study, to compare the value of the fisheries with the potential value of nature-based solution to improve the water quality and to a create a healthier and more climate change resilient marine ecosystem. Funding models for such a project are also to be explored in more detail, such as an aqua-environment scheme and funding streams associated with Blue Carbon capture.

## *8.1.4 Core Sites - Sites with Nationally Protected and Rare Plant Species*

There are over 850 species of native and naturalised plants in Ireland. Most of these plants are common and regularly seen throughout Ireland. However, the distribution of some plant species is limited to particular sites or parts of the country and these are considered rare plants. Most of the rare plants, have become rare because the environmental conditions or habitats that they require have largely deteriorated or disappeared. The presence of certain 'rare' or 'uncommon' species is generally indicative of a habitat worthy of protection. It is therefore important not just to protect the plant itself, but also the surrounding habitat.

The rarest plants in Ireland are protected under the Wildlife Act and listed in the Flora Protection Order (FPO) 1999. Of the 67 plants on the list, 7 species occur in Fingal (see Appendix V). Thankfully most of the protected species in Fingal occur in stable populations such as Lesser Centaury *(Centaurium Pulchellum)* and Hairy Violet *(Viola Hirta)*, which occurs in the fixed sand dunes along our coast. The Wildlife Act legislation requires these species and their surroundings to be protected.

Other rare plants in Ireland are included in the Red Data List of Irish Plants. The Red Data List uses an internationally established set of categories to determine the potential risk of a species becoming extinct. Sixteen plant species on the 'Endangered', and 'Vulnerable' and 'Rare' lists have been recorded in the dune grasslands, woodlands and several other habitats in Fingal (see Appendix V). Most of these Red Data Book species are locally in decline due to the deterioration of their habitat.

There are another 10 plant species recorded from Fingal that are nationally rare. These species should be included in the FPO and Red Data Book lists but are not listed at present. The curved grass *(Parapholis Incurva)* for example is one of the rarest Irish species. At present it is known from two sites in Howth and as a 19th century herbarium specimen from Cork. Appendix V lists the other 9 species that are important for Fingal.

The ongoing plant survey effort shows that Fingal is home to several nationally protected and rare plant species. Many records have already been processed in the Council's GIS database, giving the Council a much better handle on the protection of important plant species for now and in the future.

## Vision

It is 2030, and the populations of legally protected and rare plants are thriving and expanding as a result of targeted conservation measures undertaken by the Council and by landowners, with financial support from the Council. The locations of all rare and protected species in Fingal have been incorporated in the council's GIS database, which has allowed planners to integrate the protection of these plants in the planning process.

## Strategy

The County Council will continue its search for rare and protected flora and monitor the populations at known sites. The survey effort shall focus on the FPO listed species and the Red Data Book species. Further studies shall be carried out on sites that are suspected to be of historic or current ecological interest, to establish the occurrence and distribution of other plants that are locally and nationally rare and threatened.

Comprehensive management plans will be drawn up together with landowners for sites with rare and protected species. These plans will take account of the current conservation status of the plant species and its habitat and if practicable, a list of conservation actions will be drawn-up. The preparation of biodiversity plans for the links courses is particularly relevant given the prevalence of rare and protected species in the dunes at Portmarnock, Donabate, Portrane and Rush.

Where development is proposed on sites with legally protected or nationally rare plant species, the development will have to demonstrate that it will have no significant adverse impact on the plant species or its habitat. The planning procedures to be followed in relation to these plants are described in more detail in Appendix X.

## 8.2 Buffer Zones Around Core Sites

Buffer zones cover the lands surrounding the designated nature conservation areas, particularly the three estuaries and the NHA wetlands. The buffer zones mainly comprise of farmland and amenity grassland that are used by the migratory birds around the estuaries during the winter. The purpose of these buffer zones is to protect the integrity of the nationally and internationally designated sites and enhance the surrounding lands for the flora & fauna species associated with the designated sites. The buffer zones function as extensions to the core areas, thereby enlarging the most important nature conservation sites in the County. An enlarged nature conservation site provides more opportunities for the plants and animals to thrive and maintain healthy populations. The buffer zones around the estuaries aim to protect existing land uses and provide opportunities for flood protection, erosion control and amenity use. The buffer zones around the NHA wetlands primarily act as hydrological buffers, ensuring a steady supply of clean ground and surface water to these wet and boggy sites.

### Vision for the Future

It is 2030 and the estuaries and their surrounding buffer zones continue to provide an excellent habitat for the thousands of migratory birds that spend the winter here. Detailed management plans have been prepared for the estuaries and the surrounding buffer zones to identify opportunities for agri-environment schemes, nature conservation projects and recreational facilities. The local community and visitors can enjoy the estuarine sites and the thousands of wintering birds from the coastal greenway that is located on the periphery of the estuaries but away from the ecologically sensitive sites. Existing roosting and feeding sites for migratory birds in the buffer zones are protected and new undisturbed sites have been added around the estuaries, so that migratory birds don't have a waste a lot of energy flying from site to site. New wetlands have been created within the buffer zones to improve the water quality of streams flowing into the estuaries and to provide more saltmarsh. The Bog of the Ring and the Sluice River Marsh have been restored to their full ecological potential and are now supporting a much great diversity of wetland plants and animals.

### Strategy

The emphasis for the next 8 years will be to restore internationally and nationally designated sites to favourable condition. This will be achieved by improving their habitat and water quality and enlarging the designated sites by managing the buffer zones for designated species and habitats. Management plans for the estuaries and their surrounding shall be prepared by Fingal County Council in conjunction with landowners and other stakeholders. The plans set out opportunities for agri-environment schemes, nature conservation projects and recreational infrastructure within each of the sites. The Rogerstown Estuary, Malahide Estuary and the Bog of the Ring will be the particular focus, as they are most need of restoration measures. Fingal County Council will also seek to acquire privately owned lands within the bufferzones, particularly where the lands have potential for wetland restoration. The Council may also lease bufferzone lands to facilitate sympathetic land management for designated species.

Where development is proposed in or near designated sites, strict procedures are to be followed as set out in article 6(3) of the Habitats Directive, to ensure that the conservation objectives established for each Special Area of Conservation and Special Protection Area are not compromised. More details on these procedures are given in Appendix XI.

## 8.3 Nature Development Areas

Nature Development Areas are areas where nature conservation can be combined with existing land use such as farming, quarries, golf courses and parkland. These areas have been selected based upon existing wildlife values or potential wildlife values related to habitats and species present on the site. The nature development sites will act as secondary core areas in the countryside and/or will act as stepping stones along ecological corridors.

Eight land use functions covering a range of habitat types have been identified at various location in the county for inclusion in the ecological network. Each category has its own set of biodiversity targets that are described in Appendix VIII):

1. **Farmland**
2. **Demesnes**
3. **Golf courses**
4. **Parkland**
5. **Quarries**
6. **Waterbodies**
7. **Woodland Opportunity Areas**

### *8.3.1 Nature Development Area - Farmland*

Approximately 60% of Fingal is covered by farmland. It is clear therefore that farmers have an important role to play in the conservation of habitats and species in the countryside. Many semi-natural habitats and associated wildlife have been lost from the countryside due to the intensification of farming. Although much of the farmland is of low biodiversity value, the remaining network of hedgerows, pockets of woodland, unimproved grassland and wetlands, in the county provide important habitats for many species. The farming profession is facing challenging times and it is important that farming continues to thrive in Fingal.

Research in the UK shown that giving 10% of the farm over to wildlife features is the level required to allow nature to recover[32]. The best opportunities for wildlife enhancement on the farm are along the edges of the fields, where it doesn't impact upon food production and farm incomes. Experience with the Grey Partridge reintroduction project has shown that a combination of grass and flower rich strips along the field margin can provide many typical farmland species with a suitable habitat without having a significant impact on farming practices and incomes. Introducing measures on the farm to reduce water pollution from farmland and reducing pesticide and rodenticide use are other major challenges for farmers.

## Vision

Its 2030, and our countryside remains an important food production area for the greater Dublin area with profitable farms where Red Kites and Grey Partridges can be seen on a regular basis. Nature friendly farming practices are providing a permeable farmed landscape through which species can move. Hundreds of kilometers of field margins have been created and farmers use less intensive farming methods, which has halted the decline of typical farmland wildlife. Technical innovations and financial supports have allowed farmers to test and adopt agri-environment measures to restore soil health, reduce water pollution, reduce pesticide use and provide wildlife habitat. These measures have resulted in major improvements of the quality of the water, soil and air, without affecting the income and viability of the farm. Farmers in Fingal are recognised for their efforts to protect the environment and wildlife and this is part of their overall marketing strategy to promote and sell their produce.

## Strategy

The Council wants to work with local farmers to develop demonstration farms to promote wildlife and environmental enhancement works. The purpose behind the demonstration farms is to explore the range of habitat improvement measures and agri-environment possibilities on a farm, explore the costs associated with these measures, study the wildlife effects and provide a cost-benefit analysis. These measures could provide the basis for an EIP agri-environment scheme bid or Council run agri-environment scheme if this is of interest to local farmers. The key topics for agri-environment measures would focus on soil health, natural pest control, minimum tillage, winter cover crops, water (quality) management, habitat strips along field margins, hedgerow management, reducing rodenticide & pesticide use and species-specific conservation measures for Grey Partridge, Yellow Hammer, Tree Sparrow, Stock Dove, Red Kite, Kestrel and Barn owl.

It should be noted that the results of any agri-environment schemes cannot have any negative consequences for the farmers involved. In other words, participation in these schemes and managing habitats for rare or protected species shall not lead to tighter regulations or restrictions on farming activity. Such guarantees will be provided in writing to participating farmers.

The Nature Development Areas are the focus and search areas for demonstration farms and possible agri-environment schemes. Where development is proposed within the farmland nature development area, the local authority will request the applicants to retain existing natural features as much as possible, but no specific additional measures are requested from the applicant.

### *8.3.2 Nature Development Area - Demesnes*

There are 14 demesnes or estates in Fingal of which Ardgillan, Newbridge, Malahide, Santry and Lucan Demesne are in public ownership. These demesnes often comprise of various habitat types such as mature woodland, hedgerows, amenity grassland and wildflower meadows. These habitats are home to many flora & fauna species including some nationally and internationally protected species.

The demesnes are particularly important in relation to the woodland habitat in the County. Most of the woodland resource in Fingal is located within the demesnes and date from the 1800's. The woodland habitat in the demesnes is often linear and narrow, making these woodlands susceptible to external influences from adjacent land use and to disturbance as a result of recreational use. Management of many woodlands has been limited for the last decades, resulting in the spread of invasive species. Ash die-back disease will continue to affect tree cover in the demesnes, while extreme weather events such as storms and droughts may damage the older trees in the woodland. Economic use of woodlands such as the production of wood, firewood, forest fruits is almost non-existent in Fingal.

#### Vision

It is 2030 and many demesnes are managed with wildlife in mind. Woodland management works have been undertaken in most woodlands to deal with Ash die-back disease and clearing invasive species. Plenty of old and dead trees have been retained to provide a home for Bats and Great Spotted Woodpeckers. Amenity grassland and species poor grassland have been turned into wildflower meadows. These meadows are managed with the help of local farmers, while the sight of cows and horses grazing the meadows in the public demesnes has also become more common. Ponds have been created in the wettest parts of the demesnes, providing rich feeding grounds for Swallows, House Martins and Bats. The walled gardens in the demesnes have been restored where possible and these areas are now used for local food production using Irish vegetable and fruit varieties. The local community is actively involved in the day-to-day management of their local demesnes. Volunteers assist the Council and private owners with the maintenance of the walled garden, woodland management and guided tour. These efforts have embedded the old demesnes within the local community.

#### Strategy

Fingal County Council will develop ecological management plans and woodland management plans for the demesnes that it manages. Woodland management plans will be prepared to address the ecological, historical, and recreational issues and provide detailed management recommendations to guide the woodland management efforts over the next 20 years. The woodland management works shall be carried out in small-scale operations, to allow for natural processes and succession to take place. This will result in

diverse woodlands that are attractive to wildlife and to the visitor. The County Council will also explore the possibilities of grazing in the public demesnes and facilitate farmers to take hay from these parks.

On private estates Fingal County Council will make grant funding available for estate owners to develop woodland management plans and ecological management plans. The landowner will decide what is possible and what is not. Where development is proposed within the private demesnes, the County Council shall require the applicant to prepare an ecological management plan as outlined in Appendix XIII.

### *8.3.3 Nature Development Area - Golf Courses*

Golf courses are important elements of the ecological network in Fingal. With some 24 courses in Fingal, golf can make an important contribution to the development of the Fingal Ecological Network[33]. Golf courses are often associated with intensive management practices, but large areas within the course are not used for playing golf. These out-of-play areas often contain pockets of woodland, hedgerows, rough grassland, ponds and wetlands. These areas can provide valuable habitats for many wildlife species, particularly within an intensively farmed or urban landscape.

#### Vision

It is 2030, and golfers are scoring birdies and eagles amidst a riot of flowers and insects. Following the preparation of ecological management plans for the golf courses, small management changes were made and nature took full advance of the new opportunities provided. The rough areas support a greater diversity of flowers and some rare plant species have even expanded their range. Meadow Pipit and Skylark are also benefitting from the taller grass and increased numbers of insects and their song follows the golfers around the course. Turf and water management have been adapted to reduce need for watering and fertilizers. The input of herbicide and pesticides has also been reduced and biological control measures are mainly used to tackle pest & diseases. All these measures have been supported by the golf club members, despite some concerns at the start of the project. Now the members and the management team get annual updates on the results of the measures taken and are proud of the achievements of the outdoor staff.

#### Strategy

The County Council will work with golf course managers and their members to develop and implement ecological management plans for most golf courses by 2030. The initial focus will be on the links courses along the coast and the golf courses in the Liffey Valley, as they hold most of the legally protected plant species in the County.

Where development is proposed in existing golf courses, the County Council will request the applicants to prepare an ecological management plan, if not already in existence, and retain existing natural features, particularly Annex I habitats or legally protected as outlined in Appendix XIII.

### *8.3.4 Nature Development Area - Parkland and Open Space*

Fingal County Council manages and maintains approximately 2000 hectares of parks and open space. Parkland in the ecological network mainly relates to regional parks that are not demesnes. It includes the Ward River Valley in Swords, Tolka River Valley Park in Dublin 15, the Millennium Park in Blanchardstown, Town Park in Skerries, Robswalls Park in Malahide, Racecourse Park in Baldoyle and St. Catherine's Park in Lucan. All these parks are important havens for wildlife in the urban areas. They include large areas of natural habitats such as woodland, grassland and wetlands and the focus of the development of these parks is to protect and improve

these habitats. Access to nature provides a wide range of health and wellbeing benefits for people and local communities, as we have seen during the COVID lockdowns. Unfortunately, our parks and their wildlife are subject to increasing pressures which threaten the park landscape and biodiversity, including habitat loss, climate change, pollution and the demands of ever rising visitor numbers.

## Vision

It is 2030 and the parkland in Fingal is healthier, more resilient and better connected for wildlife and people. The overall approach to managing the open spaces has been modified to save money and provide more opportunities for wildlife, but not at the expense of the functionality of the park or open space. Some of the intensively maintained amenity grassland and species poor grassland has been turned into wildflower meadows or are grazed with livestock. Grazing has helped to make grassland management more sustainable and the livestock has proven to be very popular with residents and visitors to the parks. The abundance of insects and birdlife clearly shows the benefits from the less intensive management approach to our meadows.

Skylarks and Meadow Pipits are breeding in most meadows, while Swifts, House Martins and Swallows can be seen flying overhead. Existing amenity grasslands near the coast are maintained as feeding sites for migratory birds such as Brent Geese, Oystercatcher and Godwits. Hedgerows in our parks have been restored by laying, coppicing and some additional planting to develop more dense hedges. In some of the larger parks, surface water drains have been diverted into new wetland areas, to improve the quality of the water discharging into nearby streams and rivers. These pond and wetland features turned out to be a great nature-based solution to water quality problems, while also providing a suitable habitat for amphibians.

## Strategy

Fingal County Council will undertake ecological studies of each regional park and large open space and will determine the opportunities for habitat enhancement and habitat creation. The focus in the management strategies will be on the preservation and management of hedgerows and creating wildflower meadows, copses of trees and shrubs, and low maintenance herbaceous planting schemes. Ponds and other wetland features can be added to the wettest parts of the open spaces and/or where Sustainable Urban Drainage Systems (SUDS) are required.

Public consultation will play an important role in the change of management of the parks and open spaces. This will ensure that local people can express their ideas and concerns for the parks in their locality and will keep them informed of upcoming developments.

Where park development or other infrastructural works are planned to take place in the parkland by the County Council or third parties, the habitats of good ecological quality and habitats of legally protected or locally rare species shall be avoided. All projects will ensure no nett loss of biodiversity and where possible, will achieve a nett gain of biodiversity.

The other smaller open spaces in the county are not included in the Ecological Network, but they are a part of the overall Green Infrastructure of Fingal and the vision and strategy for parkland can therefore also apply to other open spaces.

### *8.3.5 Nature Development Area - Reservoirs and Open Water Bodies*

Knock Lake and reservoirs such as at Toberburr, Knocksedan and Hynestown can be of considerable wildlife importance, particularly for breeding and wintering wildfowl and waders. In most water bodies, the margins are the most important areas for wildlife. Fluctuations in water level along the margins create special inundation communities containing species such as Amphibious Bistort *(Persicaria Amphibia)*, Redshank *(P. Maculosa)* and Water Pepper *(P. Hydropiper)*. Open water bodies are also important for invertebrates such as dragonflies and diving beetles, amphibians and a wide range of aquatic plant species which prefer more sheltered waters than the lowland rivers such as Pondweeds and Duckweeds.

#### Vision

It is 2030 and the existing reservoirs are managed to their full ecological potential. Water quality has been restored to good status and the margins of most water bodies will be structurally varied. Reedbed and other tall fringing swamp, marshy grassland, bare ground, inundation areas and draw down zones, and scrub and woodland will surround the open water, which will attract a great diversity of terrestrial and aquatic plants and animal species.

#### Strategy

The Council shall undertake ecological studies of Knock Lake and the reservoirs to assess their ecological significance and identify the measures required to improve these sites for wildlife. The Council shall undertake the required habitat improvement works where the reservoir and the surrounding lands are in public ownership. Where the waterbody is located on private lands the County Council shall liaise with the landowner to see what habitat improvement works can be carried out.

### *8.3.6 Nature Development Area - Quarries (incl. Sand & Gravel Pits)*

Quarries have tremendous scope for making positive contributions to biodiversity conservation[34]. Quarries can be of importance for a wide variety of wildlife during the active extraction phase and after extraction has finished. Various habitats can be found in active and restored quarries such as wetlands, calcareous and neutral grasslands, rocky, sandy or gravelly cliff faces and small pockets of scrub and woodland. Many species can adapt to the quarry environment and associated human activity and take advantage of the temporary habitats that can result from the extraction processes. A variety of bird species breeds in quarries including Sand martin, Ring Plover, Peregrine falcon, Kestrel and Raven. South-facing banks provide nesting habitat for solitary bees and wasps. Sand and gravel pits often have a rich diversity of plants including many rarities such as Orchids and Helleborines. Ponds and other wetland features provide a suitable habitat for wetland birds, amphibians and Dragonflies.

#### Vision

It is 2030 and quarry operators are fully aware of the wildlife on their site and are keen to manage the quarry for biodiversity as part of the industry's sustainability policy. Most quarries have a biodiversity management plan that outlines how biodiversity conservation can be incorporated in the day-to-day extraction management of the quarry and the restoration of the site once extraction is finished. These undisturbed habitats act as a refuge for wildlife and will be the source of flora and fauna species for re-colonisation of the site.

#### Strategy

To protect and enhance the biodiversity value of the quarries in Fingal, the County Council will request quarry operators to compile and implement a site-specific Biodiversity Management Plan (BMP) for their

quarry, as part of the licensing process. The principal objective of a BMP is to provide the site manager with a clear understanding of how contributions to national and local biodiversity can be achieved, through the management of the site and environmental awareness within the company.

The BMP audits the habitat and species present in and around the quarry, identifies local and national priority habitats and species, and provides a framework to maximise site biodiversity. The plan covers the entire lifespan of the quarry and manages habitats and species during the extraction phase and plan for restoration afterwards. The plan will be subject to 3-5 year reviews to give it the flexibility to reflect changes in work practices and/or the appearance of new wildlife species on the site.

Where development is proposed in quarries, the County Council will request the applicants to prepare a Biodiversity Management Plan if not already in existence and retain existing natural features, particularly Annex I habitats or legally protected as outlined in Appendix XIII.

### *8.3.7 Nature Development Area - Woodland Opportunity Areas*

Most of the original woodland in Fingal has long been cleared. Today, the woodlands in the Liffey Valley are some of the oldest woods in Dublin, while most other mature woodland in the county are part of existing or former demesne landscapes planted about 150 years ago. The overall appearance and structure of the woods in Fingal is going to change over the next two decades. Many mature trees are coming to the end of their lives and Ash die-back disease is killing off most Ash trees. Extreme weather events such as prolonged droughts or rainfall events and heavy storms driven by climate change are also likely to shorten the lives of many trees. Many woods in Fingal are relatively narrow which make them particularly susceptible to extreme weather events.

The most effective way of protecting these woods is by expanding and connecting existing woodlands. The expanded woodland area should be at least 40-100 ha in extent. At that size, the woodland is big enough to allow for natural processes to take place and they are less prone to edge effects. This makes the woods more climate change resilient and they require less management to keep them in good condition[30].

The two most important woodland opportunity areas are in the Liffey Valley and the area surrounding the Ardgillan, Hampton and Milverton Demesnes. The reason for selecting these areas for woodland expansion is because these woodlands are near each other and they can be connected forming one large woodland. They are also situated close to a large population and can therefore provide valuable amenity space.

The river corridors will provide further opportunities for woodland development. Alluvial woodland is an EU Annex I habitat that is associated with rivers and floodplains. Currently, it occurs only in very small pockets in the river valley parks and is rare elsewhere in Ireland. Alluvial woodland can be developed on the wet marginal lands along the rivers to provide stepping stones for woodland flora and fauna.

#### Vision

It is 2030 and the development of two new major woodlands is well underway. One is located between Skerries and Balbriggan and the other in the Liffey Valley next to St. Catherine's park. Masterplans for the woodland opportunity areas were prepared together with the local community to guide the development of woods. They are multi-functional woodlands, catering for nature conservation, recreational use and carbon sequestration. Native Oak, Hazel, Birch, Cherry and Scots Pine are the dominant species in these mixed woodlands and thousands of these trees have been planted by community volunteers. The pathway infrastructure in the new woodland was created early on and is linked to the existing pathway infrastructure in the nearby regional

park. This allows the public to enjoy these natural amenity areas and to see the woods slowly mature. Plenty of smaller woodland copses of 2-4ha have also been created in the wider countryside to provide stepping stones for woodland fauna to connect the various demesne woodlands in the county.

## Strategy

Detailed masterplans are to be developed for the two woodland opportunity sites near Ardgillan and in the Liffey Valley. These plans will explore in more detail how these woodlands can be developed and will address issues such as recreational use, funding sources, species composition, community involvement, landowner consultation etc.

During the life of the plan, the County Council shall seek out more potential woodland sites to increase the woodland coverage in Fingal. This search shall particularly focus on finding sites along our rivers that are suitable for alluvial woodland development as part of river restoration projects, particularly along the Mayne, Sluice, Ballyboughal, Corduff, Matt/Bracken rivers.

Where development is proposed in the new woodland opportunity areas, the County Council will request the applicants to retain existing hedgerows and woodland planting as much as possible, but no specific additional measures will be requested from the applicant.

***Figure 8:*** *The Council is keen to expand the woodland at St. Catherines Park and connect the woodlands in the Liffey Valley.*

## 8.4 Ecological Corridors

An ecological corridor is a functional passage between several nature conservation areas. Ecological corridors are usually linear landscape features such as rivers, hedgerows, open spaces and road verges. These corridors connect different populations and facilitate the spread and migration of species. Ecological corridors are an essential element in conserving biodiversity and the proper functioning of ecosystems. Without these corridors, many species would not have access to all the habitats needed for their life cycles (reproduction, feeding, refuge, etc.) and are likely to go locally extinct. A well designed and managed ecological corridor will function as:

1. **A wildlife corridor:** migration is possible between two or more nature conservation areas or populations
2. **A refuge or a temporary habitat:** feeding or resting place for wildlife
3. **Permanent habitat;** the ecological corridor provides a suitable living, breeding, feeding, resting and overwintering habitat for certain plants and animals
4. **Population expansion and genetic exchange:** the ecological corridor functions as a suitable habitat for certain species that will allows the population to expand and spread in the surrounding landscape

There are three important design considerations for an ecological corridor to ensure that it provides maximum migratory and ecological opportunities[29-32, 35-42]:

- The wider the corridor, the better.
  - Wider corridors increase the amount and diversity of habitats available and as a result a broader range of species is more likely to use the corridor.
  - Wider corridors increase the quantity of nesting sites, winter cover, escape cover, and food available to wildlife.
  - Wider corridors reduce edge effects for individuals and populations moving through the corridor (reducing the impacts of disturbance associated with recreational activities or pollution from agriculture for example).
  - Wider corridors allow for natural processes to take place such as meandering of the river, rewilding or conservation grazing, which increases the resilience of the habitats within the corridor and it reduces the need for ongoing human management & intervention of the habitat
- Preventing fragmentation of existing corridors that connect nature conservation areas is less expensive than having to restore connections in the future. It is therefore important that the existing corridors are protected from inappropriate development in the county development plan.
- Two or more corridor connections between areas are better than one. Redundancy should be built into the ecological network, particularly at small scales. If multiple paths exist for an animal to get from one point to another, the animal is more likely to complete the journey. Multiple corridor connections between patches safeguard the system from disturbances and disasters. If management mistakes or natural occurrences such as floods temporarily destroy one of the corridors, other corridors will maintain the link between the patches while the disturbed corridor regenerates.

Many species of wildlife will use corridors including birds, small mammals, amphibians and insects. The habitat and width of these corridors is based on the habitat requirements of the target species for which the corridor is designed. Some of the landscape components to consider include the many things that wildlife requires for their life-cycle and daily needs such as territory size, home range size, shelter, food, nest, den or

breeding sites as well as aspects that may negatively impact the wildlife such as human disturbance. These corridors also include stepping stones that comprise of a series of smaller 1-5ha landscape features such as small woodlands, scrub, meadow, pools and marsh. These stepping stones are located at regular intervals along the corridor.

### *8.4.1 River Corridors*

The most important corridors through Fingal are the rivers, their floodplains and the adjoining farmland or parkland. The minimum width of these river corridors is 48m on either side of the river[41]. The corridors are wider where extensive floodplains occur along the river corridor as shown on the FEMFRAMS maps. This wider corridor allows many target species associated with rivers such as the Atlantic Salmon, Brown & Sea Trout, Brook, Sea & River Lamprey, Kingfisher, Dipper, Sand Martin, Common Pipistrelle, Soprano Pipistrelle, Leislers Bat and Daubentons bats to thrive. Many of these species are internationally or nationally protected or endangered species and the robust river corridors provide an important breeding and feeding habitat for these species. By including the adjacent farmland and parkland along the rivers within the ecological corridors, they can also function as linear distribution routes for terrestrial plants and animals such as Badger, Yellowhammer, Invertebrates and Amphibians. This means that the corridors not only function as an aquatic/ wetland corridor, but they also link important countryside areas rich in wildlife species. The river corridors play an important role in flood attenuation and protection, erosion control and water quality improvement. Riparian habitat along the river can absorb a lot of nutrients from the adjacent farmland and will protect the riverbanks from erosion. This will help to achieve the targets of the EU Water Framework Directive, while at the same time providing a suitable habitat for river related wildlife species. The floodplains with the wet grassland, scrub and marshland retain water during heavy rainfall, thereby avoiding flooding in more sensitive urban areas.

### *8.4.2 Terrestrial Corridors - Urban Areas*

Ecological corridors can also be developed in urban areas too. These linear open spaces have a minimum width of 25m and comprise of a mixture of trees, hedgerow, scrub, rank grassland, wildflower meadow, ponds, marshland and dead timber. These terrestrial corridors will provide a suitable habitat or feeding ground for a range of species such as Swift, House Martin, House Sparrow and Starling, Hedgehogs, Bats, Amphibians and many invertebrates.

There is also a human advantage to planning corridors in urban and suburban settings. They add green space to the city and can create a highly sought-after residential edge. They also connect neighborhoods with nature by offering space where wildlife can be seen and provide opportunities for environmental stewardship. Walking and cycling routes can run parallel to these ecological corridors thereby providing for connectivity for wildlife and people. When combining ecological and recreational corridors it is important to avoid causing disturbance to wildlife (by dogs in particular)[44, 45]. Natural play features can sometimes be incorporated in these corridors, as long as the design of the playground is nature friendly.

### Vision

It is 2030 and the river corridors comprise of naturally meandering rivers or streams with a mosaic of typical riverside and floodplain habitats on either side of the river such as marshland, alluvial woodland, scrub and wet grassland with pools. The river itself will have riffles, glide & pool sequences and plenty of dead wood with marginal vegetation, such as reeds, sedges, Willow and Alder along its banks to suit the habitat requirements of Salmon, Brown Trout, Sea Trout and Lamprey. Straightened river channels have been restored to meandering courses as part of river restoration schemes. The water quality has been improved to Good Ecological Status

as result of Agri-environment measures implemented by farmers on lands adjoining the river throughout the catchment. Stepping stones of approx. 0.2-5ha comprising of alluvial woodland, scrub marshland and wet grassland with ponds have been created at 0.4-1km intervals to provide resting and feeding sites for Otter, Bats and Amphibians. Obstacles such as impassible culverts, weirs or bridges have been removed or adjusted to allow for free movement of wildlife through the countryside and urban areas.

## Strategy

Ecological studies are to be undertaken of the Corduff, Ballyboughal, Bracken/Matt, Sluice and Mayne rivers. These studies shall identify the current habitat quality, potential stepping stone sites and the range of measures required to improve the river habitat, the corridor function and water quality of these rivers. Lands within or adjacent to the corridors in ownership of the County Council shall be maintained and developed to provide a mosaic of typical river valley habitats for all target species associated with the ecological corridors. Fingal County Council will seek to lease or acquire the most strategic nature conservation lands within the corridors. It will also work with farmers to develop and manage the lands within the ecological corridors through farming demonstration projects and potentially and EIP project.

Planning and design guidance is to be prepared for both river and terrestrial ecological corridors to inform developers, planners, engineers and landscape architects how these ecological corridors are to be designed and managed.

The Tolka River Valley, Royal Canal and the Liffey Valley shall be developed as multi-functional amenity corridors, forming a “GREEN Z” in the Dublin 15 area. Similarly, the Ward River Valley and the lower reaches of the Broadmeadow river will be developed for nature conservation and amenity purposes for the community in Swords. Detailed masterplans are to be prepared within the plan period for each of these linear parks. The development of the ecological corridors in the countryside shall focus on flood protection, water quality improvement, habitat enhancement and sustainable farming practices.

Some of the ecological corridors are shown as indicative on the green infrastructure network. These indicative corridors are located where a connection is to be created between two nature conservation areas, but where the exact location of the corridor is not determined yet. Further ecological survey work and consultation with landowners will ultimately determine where these corridors are to be created.

## (Re)wilding

Rewilding is a progressive and sustainable approach to nature conservation. It's about letting nature take care of itself, reinstating natural processes such as flooding, erosion and natural grazing to shape the landscape and the habitats within. The interaction of these natural processes leads to continuously evolving landscapes rather than fixed habitats.

The Council is not seeking the return of the Wolf, Bear, Lynx and Boar or large self-sustaining herds of primitive cattle, horses and Deer to Fingal. The county does not have areas that are big enough to support populations of these top predators and grazing animals to form a fully functioning natural ecosystem.

There are many opportunities in Fingal to restore natural processes however, particularly hydrological processes. Drained rivers can be allowed to meander again, and flood embankments can be removed to reconnect the river with the floodplain. Similarly, flood embankments can be removed, and flapvalves opened at the estuaries to restore the natural tidal environment. Severely degraded wetlands such as the Bog of the Ring and Garristown bog can be restored by removing the drainage ditches and allowing these areas to flood again. These wet parts of the County are the least productive lands in the county from a farming perspective, while they offer the best opportunities for biodiversity enhancement and restoration.

There are also opportunities for the reinstatement of natural grazing processes. Instead of large natural herds of cattle, horses, deer or boar, the Council proposes to use smaller herds of native Irish cattle and pony breeds to mimic the natural grazing patterns of these herbivores. Instead of Boar, the Council intends to use Tamworth pigs which plow up the ground in a similar manner.

Wilding opportunities do not only exist on land. The council is also keen to explore rewilding of our marine environment to create a more resilient marine ecosystem and avail of the opportunities for Blue carbon storage by means of restoring saltmarsh, stands of Seagrass and kelp and extensive Oyster and Shellfish beds.

It should be noted that restoring natural processes is not always possible or easy to achieve. Many of the features that interfere with the natural processes were built in the past to keep the water off the land or get rid of the water as quick as possible. Careful hydrological modelling and impact assessments are required when proposing river and wetland restoration projects to ensure that these initiatives do not lead to unintended flooding of adjoining properties. Consultation with the local community and landowners is also essential to build support for these projects and to address any concerns they may have. It is envisaged that more permanent changes on the land such as wetland restoration will require the voluntary acquisition of lands in many instances, but the Council is also keen to explore alternative farming practices in these wetland areas such as paludiculture and using Water buffalo to produce Buffalo mozzarella for example.


# 9. Biodiversity Actions

The 100 actions in this plan aim to halt biodiversity loss by 2030 in the countryside, the coast and urban areas. The actions are based upon recommendations made during ecological studies and on proposals put forward by nature conservation NGO's, members of the public, the Public Participation Network, Strategic Policy Committee members and various Council Departments. The actions in this plan are centred around six topics:

## *Delivery of the Ecological Network Across Fingal*

About half of the actions relate to the development and management of individual sites that collectively make up the Fingal Ecological Network.

## *Building for Biodiversity and Managing Open Space for Biodiversity*

Although urban developments can lead to further habitat loss and fragmentation, there are also opportunities to undertake development in a way that will help to enhance biodiversity. Several technical and design guidance notes are to be prepared to inform developers, architects and engineers how nature can be incorporated in buildings, stormwater management and open spaces within a development. The Council will also undertake pilot projects in its own developments to gain more experience with building for biodiversity and share this experience with developers and other local authorities. Existing open space is also to be designed and managed more biodiversity friendly.

## *Climate Change Adaptation and Mitigation*

Protecting and restoring ecosystems can help to reduce the impacts of climate change. This can be done by developing projects that address biodiversity loss and climate change adaptation and/or mitigation in an integrated manner. The restoration of carbon rich habitats such as saltmarsh, wetland and woodland will benefit many wildlife species, while these habitats can also sequester carbon, absorb floodwater and improve water quality.

## *Agri Environment Schemes and Rewilding*

There are many options for farmers to support biodiversity on their farms to halt the loss of typical farmland species. The Council is keen to work with farmers to develop supportive measures along headlands of fields to enhance their farms for wildlife, improve water quality and soil health through demonstration projects and agri-environment schemes.

A major challenge associated with agri-environment schemes is that the newly created wildlife habitat may be removed once the grant funding comes to an end. The Council is therefore also keen to research the benefits of rewilding farmland for typical farmland species by means of undertaking a rewilding project and monitoring the results.

## *Research & Monitoring*

The challenge of halting biodiversity loss must be underpinned by sound science. The Council has a legal responsibility to protect habitats and species listed in European and national legislation. It is therefore important to have a good understanding of the location and status of these habitats and species and to have this information incorporated into a GIS database to inform the planning process. A State of the Natural Environment Report for Fingal is to be prepared based on historical survey data and new studies.

This will provide an overview on how our habitats and species are faring and what changes have occurred over the last 20 years. Monitoring the impacts of projects undertaken is also important to determine the success of the measures implemented to inform future projects.

## *Raising Awareness*

Educating people of all ages about biodiversity and the essential role it plays in our society and economy is fundamental to the success of the Biodiversity Plan. The best way to learn about the natural environment is to be in it and through direct involvement in nature conservation projects. It is envisaged that a program of outdoor and online events, the development of a nature education centre, a wildlife gardening campaign and the revamping of Fingal biodiversity website as an online resource, will encourage people to take action and get involved. Upskilling of staff and new ecologists is also important and this will be addressed by means of training sessions and providing student placements.

Appendix VII shows most of the actions in the context of the ecological network. Please note that these are the site-specific actions only. The generic actions have not been included for clarity reasons.

## *Developing the Ecological Network*

| No. | Action | Objective | KPIs | Partners |
|---|---|---|---|---|
| 1 | Implement masterplan for Rogerstown Inner Estuary and prepare and implement masterplan for Rogerstown Outer Estuary. | To develop and implement a masterplan for the Rogerstown Estuary and surrounding lands with the aim of protecting and enhancing the qualifying habitats and species. | • Length of flood embankment removed, and acreage of new saltmarsh and brackish meadows created.<br>• Populations of qualifying interest species are stable or increasing.<br>• No loss of feeding and roosting sites on lands surrounding the estuary as a result of human disturbance.<br>• Populations of Green winged Orchid, Hairy Violet, Rough Poppy are stable or increasing.<br>• Population of breeding Lapwing and Skylark increasing. | **FCC**, landowners, local community groups, Birdwatch, NPWS & DNFC |
| 2 | Continue to support Little Tern and Ringed Plover conservation project at tip of Portrane. | To protect Little Tern Colony at the Burrow, Portrane. | • Population of Little tern and Ringed Plover increasing. | FCC, **Birdwatch** |
| 3 | Continue managing lands at the Burrow Portrane for Green winged orchid and Hairy Violet. | To protect the existing populations of Green-winged orchid and Hairy violet. | • Lease on lands renewed.<br>• Population of Green winged Orchid and Hairy Violet stable or increasing. | **FCC** & **Landowner** |
| 4 | Restore and enhance the Meadow Barley sites at the Rogerstown Estuary. | Restore population of Meadow Barley at Rogerstown Inner Estuary. | • Number of Meadow Barley sites subject to active restoration measures and enhanced measures.<br>• Meadow Barley numbers stable or increasing. | **FCC** |
| 5 | Prepare and implement masterplan for Malahide Estuary SAC & SPA, including Cave's Marsh. | To develop and implement a masterplan for the Malahide Estuary and surrounding lands with the aim of protecting and enhancing the nature conservation and recreational values of this area. | • Populations of migratory birds such as Brent Goose, Black-tailed Godwit, Curlew, Lapwing, Redshank are stable or increasing.<br>• No loss of feeding and roosting sites on lands surrounding the estuary as a result of human disturbance. | **FCC** & **Landowner** |

| No. | Action | Objective | KPIs | Partners |
|---|---|---|---|---|
| 6 | Develop artificial nesting platforms Malahide estuary. | To develop small floating platforms in the estuaries that will serve as secure nesting sites for seabirds. | • Number of floating devices installed.<br>• Number of Little Tern, Common Tern or Arctic tern using the platforms. | FCC, Birdwatch, NPWS |
| 7 | Restore Wintering bird roosting site at Cave's Marsh in Malahide. | To restore the conservation status of the Malahide Estuary SPA. | • Number of measures installed to prevent access by people and dogs to key roosting site.<br>• Duration of stay and number of Brent Goose, Oystercatcher, Redshank, Bar Tailed godwit increasing. | FCC, NPWS, Birdwatch |
| 8 | Organise clean-up of mudflats in Malahide Estuary once a year. | To remove rubbish from the mudflats. | • Clean up of mudflat organised. | FCC, local volunteers |
| 9 | Maintain the verge along the coast Road between Portmarnock and Malahide as a wildflower meadow. | To continue the wildflower management project along the coast road. | • Number of Pyramidal and bee orchids in verge. | FCC, TT |
| 10 | Prepare and implement masterplan for Baldoyle bay SAC & SPA. | To develop and implement the masterplan for the Baldoyle Bay and surrounding lands with the aim of protecting and enhancing the nature conservation and recreational values of this area. | • Populations of migratory birds such as Brent Goose, Black-tailed Godwit, Curlew, Lapwing, Redshank are stable or increasing.<br>• No loss of feeding and roosting sites on lands surrounding the estuary as a result of human disturbance.<br>• Racecourse Park Plan implemented. | FCC, landowners, local community groups, Birdwatch, NPWS & DNFC |
| 11 | Lease or acquire the Sluice River Marsh for wildlife. | To protect and enhance the Sluice River Marsh NHA and its surrounding lands for protected plant species and migratory birds. | • Lands acquired or leased.<br>• Number of recommendations implemented from latest ecological study report.<br>• Breeding Stock Dove, Skylark, Grasshopper warbler, water rail numbers stable or increasing.<br>• Migratory birds number using the sites stable or increasing. | FCC and landowner |

| No. | Action | Objective | KPIs | Partners |
|---|---|---|---|---|
| 12 | Develop and implement detailed management plan for the Howth Head SAC & SPA. | To develop and implement a management plan for Howth Head to restore this SAC to good ecological status. | • Management Plan for Howth Head SAC prepared.<br>• Vegetated sea cliffs and European dry heaths habitats restored to good ecological status. | **FCC**, Howth SAAO committee, NPWS |
| 13 | Develop and implement Operational Plans for Howth Head SAAO and Liffey Valley SAAO. | To carry out studies and practical conservation work on heathland, wildfire management, wetland restoration and woodland management. | • Number and percentage of prioritized actions implemented in both Operational Plans. | **FCC**, SAAO committees, NPWS |
| 14 | Support implementation of Dublin Bay Biosphere Nature Conser-vation Strategy, Education & Awareness strategy. | To carry out studies and practical conservation work outlined in the Biosphere strategy documents. | • Number of FCC and joint actions implemented. | FCC, **DCC**, DLR, NPWS, DP, FI |
| 15 | Develop management plans for key winter bird sites identified in satellite tagging programs. | To ensure the protection of the most important feeding and roosting sites of qualifying interest species outside designated sites. | • Management plans prepared for key winter bird sites.<br>• Percentage of key sites actively managed for qualifying interest species. | FCC, NPWS, Birdwatch Ireland, Brent Research Group |
| 16 | Prepare and implement masterplan for Tolka Valley Park. | To develop a masterplan that will combine recreational and nature conservation requirements in such a way, that allows both functions to be developed to their full potential. | • Masterplan for Tolka Valley Park prepared.<br>• Water quality status restored to good quality.<br>• Acreage of Orchid rich dry calcareous grassland protected and restored.<br>• Acreage of alluvial woodland created.<br>• Length of river habitat restored.<br>• Populations of Otter, Kingfisher, Dipper, Bats, Brown Trout and Badger are stable or increasing. | **FCC** & Local Community groups |

| No. | Action | Objective | KPIs | Partners |
|---|---|---|---|---|
| 17 | Prepare and implement masterplan for Ward River Valley Park. | To prepare a masterplan that will combine recreational and nature conservation requirements in such a way, that allows both functions to be developed to their full potential. | • Masterplan for Tolka Valley Park prepared.<br>• Water quality status restored to good quality.<br>• Salmon spawning beds protected.<br>• Acreage of Orchid rich dry calcareous grassland protected and restored.<br>• Acreage of alluvial woodland created.<br>• Length of river habitat restored and number of artificial structures such as weirs removed.<br>• Populations of Otter, Kingfisher, Dipper, Bats, Salmon, Brown Trout and Badger are stable or increasing. | **FCC** & Local Community groups |
| 18 | Prepare and implement masterplan for the linear park along the Mayne River together with Dublin City Council. | To prepare a masterplan that will combine recreational and nature conservation requirements in such a way, that allows both functions to be developed to their full potential. | • Masterplan prepared for Mayne River Green Corridor.<br>• Length of river habitat restored.<br>• Water quality status restored to good quality.<br>• Acreage of Alluvial woodland created.<br>• Populations of typical river species such as Otter, Kingfisher, Dipper, Bats, Lamprey, Brown Trout are stable or increasing. | **FCC**, DCC, DAA & Local Community groups |
| 19 | Incorporate measures for biodiversity conservation in the management plans for a Regional Parks in Fingal. | To enhance the biodiversity potential of regional parks. | • Number of management plans developed for Fingal parks with specific recommendations for biodiversity conservation. | **FCC** |
| 20 | Seek to establish an ecological corridor to link the Royal Canal, the Tolka River and the Liffey Valley. | To develop a network of wetland habitats linking the Liffey Valley with the Royal Canal and the Tolka Valley for Otter, Common Frog, Kingfisher, Bats, Green Figwort. | • Ecological corridor established.<br>• Number of target species using the corridor. | **FCC**, Waterways Ireland, OPW |
| 21 | Seek to establish two wetland corridors between the river Liffey and the Royal Canal at Westmanstown | To develop a corridor of wetland habitats linking the Liffey Valley with the Royal Canal for Otter, Common Frog, Kingfisher, Dipper, all Bats. | • Wetland corridors established.<br>• Number of target species using the corridor. | FCC & Landowners |

| No. | Action | Objective | KPIs | Partners |
|---|---|---|---|---|
| 22 | Establish a woodland corridor between St. Catherine's Park and Luttrelstown Demesne. | To expand and link the old woodlands in the Liffey Valley by planting new woodland for Common Pipistrelle, Soprano Pipistrelle, Leislers Bat, Natterer's bat, Whiskered bat, Brown Long-eared bat, Red Squirrel, Badger, Pine marten, Spotted flycatcher. | • Wetland corridors established.<br>• Number of target species using the corridor. | FCC |
| 23 | Liaise with landowners to explore possibilities of introducing grazing management in Liffey floodplain at Strawberry beds. | To establish low-intensity grazing regime on Liffey Valley floodplain. | • Number of floodplain sites along the Liffey in Fingal subject to a lease or conservation grazing agreement with a local farmer.<br>• Acreage of new Alluvial woodland, Wet grassland, Freshwater marsh and Ponds.<br>• Numbers of Otter, Common Frog, Common Newt, Kingfisher, Green Figwort, various bat species found on newly managed sites. | **FCC** & Landowners |
| 24 | Seek to establish an ecological corridor between the Tolka and Ward rivers via the Pinkeen stream. | To develop an ecological corridor of wetland and terrestrial habitats linking the Tolka River Valley and the Ward River Valley for Otter, Common Frog, Kingfisher, Dipper, Bats and Badger. | • Acreage of ecological corridor acquired.<br>• Acreage of ecological corridor developed and managed.<br>• Number of target species using the corridor. | FCC |
| 25 | Manage linear calcareous grassland strip along the Canal at Clonsilla. | To restore calcareous grassland at this site. | • Acreage of Calcareous grassland with orchid species that is restored.<br>• Numbers of Pyramidal and Common spotted orchid on site. | FCC & Landowner |
| 26 | Control invasive species in Fingal. | To eradicate and control invasive flora and fauna species. | • Giant Hogweed, Japanese Knotweed & Himalayan Balsam eradicated throughout Fingal.<br>• Rhododendron Ponticum eradicated from Howth Head SAC on Howth.<br>• Cherry laurel, Snowberry and Bamboo eradicated from private pNHA woodlands and Council woodlands. | FCC & Landowners |

| No. | Action | Objective | KPIs | Partners |
|---|---|---|---|---|
| | | | • Acreage of Seabuckthorn in dunes reduced by 75%.<br>• Hottentot fig and garden invasives eradicated from sea cliffs at Howth and Balbriggan.<br>• Control program undertaken every two years for Mink on all rivers in Fingal. | |
| 27 | Prepare biodiversity plans for golf courses in conjunction with golf course owners to enhance their grounds for Biodiversity. | To protect and enhance the nature conservation value of the golf courses. | • Number of Biodiversity Plans prepared, and number of actions implemented for golf courses in Fingal.<br>• Populations stable or increasing of Hairy violet, Lesser Centaury, Green winged orchid, Bee orchid, Green flowered helleborine, Spring vetch, Sea bindweed, Skylark, Shelduck, Small Blue, Dark Green Fritillary and Grayling, Colletes floralis, Colletes similis, Osmia aurulenta, Andrena barbilabris, Bombus lapidarius, B. muscorum. | FCC and golf course owners |
| 28 | Work together with quarry owners to develop biodiversity plans for quarries to enhance these sites for Biodiversity. | To protect and enhance the nature conservation value of the quarries with a focus on orchid rich calcareous grassland, Peregrine Falcon, Sand martin and amphibians. | • Number of Biodiversity Plans prepared for Quarries.<br>• Number of actions implemented. | FCC and quarry owners |

## *Building for Biodiversity*

| No. | Action | Objective | KPIs | Partners |
|---|---|---|---|---|
| 29 | Prepare planning & design guidance for incorporating nesting facilities in building facades. | To maximise nesting opportunities arising from new developments for Swift, House Sparrow, House Martin, Swallow, Bats & insects. | • Guidance document produced.<br>• Number of sites where nesting facilities have been incorporated. | FCC, DCC, DLR, Birdwatch, BCI, NPWS |

| No. | Action | Objective | KPIs | Partners |
|---|---|---|---|---|
| 30 | Prepare guidance document and training on quality rating and management prescription of hedgerows in open space for FCC Operations and developers. | To provide guidance on the protection and management hedgerows during planning process and in open space management. | • Guidance document produced.<br>• Number of training events organized and numbers of attendees at training events.<br>• Length of hedgerow managed appropriately on FCC owned open space. | FCC, DCC, DLR, HA, TTs |
| 31 | Prepare promotional guidance on how to incorporate biodiversity in development and infrastructure projects. | To promote biodiversity conservation in residential, industrial, commercial and infrastructure developments. | • Guidance document produced. | FCC, DCC, DLR, Birdwatch, BCI |
| 32 | Prepare planning and design guidance for ecological corridors. | To provide technical specification for ecological corridors along rivers and terrestrial sites. | • Guidance document produced. | FCC, DCC, DLR, BCI, Birdwatch, IFI, NPWS |
| 33 | Prepare planning and design guidance on net biodiversity gain. | To inform the Council on how to incorporate net biodiversity gain in the planning process. | • Guidance document produced.<br>• Number of sites where net biodiversity gain has been applied and achieved. | FCC, DCC, DLR |
| 34 | Organise a conference on Building for Biodiversity/ Nature inclusive design. | To organize at least 1 conference promoting best practice examples of nature inclusive design. | • Conference organised. | FCC |
| 35 | Pilot a biodiversity inclusive design for a social housing estate with green roofs, green walls, wetland & pond SUDS, green carparking, nest boxes in facades, wildflower meadows and wildlife friendly shrubs and trees in open space. | To gain practical experience within the County Council with Building for Biodiversity and to allow for the monitoring of the impact of these measures on the flora and fauna in the new development. | • Demonstration site developed of a social housing site where biodiversity inclusive design has been applied. | FCC |

| No. | Action | Objective | KPIs | Partners |
|---|---|---|---|---|
| 36 | All Council housing, parks and infrastructure projects to include biodiversity enhancement proposals. | To ensure that Council projects achieve at least no net loss and ideally a net biodiversity gain. | • Number of Council projects where no biodiversity net loss has been achieved | FCC |

## *Managing Open Space for Biodiversity*

| No. | Action | Objective | KPIs | Partners |
|---|---|---|---|---|
| 37 | Develop pesticide use policy for Fingal County Council. | Eliminate pesticide use in the Council where possible. | • Policy document prepared and approved. | FCC |
| 38 | Support and promote All Ireland Pollinator Plan Actions for Councils and monitor resulting changes. | Increase by 20% the area of Council owned land that is managed with the objective of improving biodiversity. | • Acreage of FCC owned open space subject to wildflower management.<br>• Annual monitoring program for invertebrates established for key sites. | FCC & TTs |
| 39 | Develop a grass maintenance policy for open spaces including options for grass disposal from wildflower meadows. | To reduce grass cutting frequency of open space where possible. | • Policy document prepared and approved. | FCC |
| 40 | Implement Tidy Towns Biodiversity Action Plans. | To guide 23 TT group efforts for nature conservation. | • Annual number of actions implemented from Tidy towns Biodiversity plans. | FCC & TT's |
| 41 | Organise and monitor the effects of a biodiversity makeover of 3 housing estates in Fingal in conjunction with local residents and FCC Operations Department. | To gain practical experience with managing open space and gardens for Biodiversity and to monitor of the impact of particular measures on flora and fauna. | • 3 demonstration estates established.<br>• Annual monitoring program implemented. | FCC |

| No. | Action | Objective | KPIs | Partners |
|---|---|---|---|---|
| 42 | Develop Urban greening Plans for Dublin 15, Swords and Balbriggan. | To prepare 3 Urban greening plans that outline biodiversity & green infrastructure enhancement opportunities in these towns. | • 3 Urban Greening Plans prepared.<br>• Number of actions implemented from Urban Greening Plans. | FCC |

## *Woodland and Wetland Projects - Climate Change Adaptation and Mitigation*

| No. | Action | Objective | KPIs | Partners |
|---|---|---|---|---|
| 43 | Prepare wetland and river restoration project for the Bog of the Ring and the Matt river corridor. | To restore wetland river habitat and improve water quality to good status and capture carbon. | • Restoration plan prepared.<br>• % of actions from restoration plan implemented.<br>• Acreage of land acquired for wetland and river restoration.<br>• Water Quality status of Matt river improved.<br>• Length of river corridor restored.<br>• Populations of target species stable or increasing: Otter, Kingfisher, Dipper, Bats, Amphibians, Snipe, Grasshopper warbler & Water rail. | FCC and local community |
| 44 | Develop St. Ita's local nature reserve. | Maximise water attenuation capacity and nature conservation benefits. | • Two roads removed from wetland.<br>• Number of new habitat features added.<br>• Populations of target species stable or increasing. | FCC & HSE |
| 45 | Develop SUDS demonstration sites in the Tolka Valley, Ward River Valley, Balbriggan town Park and Rogerstown estuary. | To gain experience with using wetlands to treat surface water effluent to improve water quality. | • The number of demonstration sites developed.<br>• The water quality status of the adjoining river and the outflow of the SUDS features. | FCC |

| No. | Action | Objective | KPIs | Partners |
|---|---|---|---|---|
| 46 | Prepare and implement woodland management plans in Fingal Demesnes and parks. | To enhance the nature conservation value of the woodlands in Fingal. | • Number of woodland management plans prepared.<br>• Number of actions implemented at each site.<br>• Populations of target species are stable or increasing: Hairy St. John's-wort, Yellow archangel, Common Pipistrelle, Soprano Pipistrelle, Leislers Bat, Natterer's bat, Whiskered bat, Brown Long-eared bat, Spotted flycatcher. | FCC |
| 47 | Acquire sites for woodland planting at St. Catherine's park and Ardgillan Demesne and prepare master-plans for the design of these woodlands. | To expand existing woodland cover and regional parks. | • Acreage of land acquired for new woodland planting.<br>• Two masterplans prepared for new woodland sites.<br>• Acreage of new woodland planted. | FCC |
| 48 | Identify and acquire where possible, Climate buffer sites where flood defence features can be removed or relocated to increase flood capacity of rivers and estuaries. | To increase flood capacity of rivers and estuaries, restore natural dynamics, restore floodplain habitat & capture carbon. | • High potential climate buffer sites identified.<br>• Acreage of land acquired for increasing the floodplain capacity of rivers and estuaries.<br>• Number of projects implemented to develop the climate buffer sites. | FCC |
| 49 | Prepare river restoration project for the Ballyboughal, Corduff, Delvin & Turvey rivers. | To restore river habitat and improve water quality to good status and capture carbon. | • River Restoration plans prepared.<br>• % of actions from restoration plans implemented.<br>• Acreage of land acquired for river restoration.<br>• Water Quality status of river improved.<br>• Length of river corridor restored.<br>• Populations of target species are stable or increasing: Otter, Kingfisher, Dipper, Bats, Brown Trout & Salmon. | FCC and local community |

| No. | Action | Objective | KPIs | Partners |
|---|---|---|---|---|
| 50 | Carry out feasibility study to restore Garristown Bog and acquire lands where opportunities arise. | To establish if the former 300ha wetland can be restored. | • Feasibility study undertaken.<br>• Acreage of lands acquired for wetland restoration purposes. | FCC and local community |

## *Wilding*

| No. | Action | Objective | KPIs | Partners |
|---|---|---|---|---|
| 51 | Acquire and/ or lease lands at Rogerstown, Broadmeadow and Baldoyle estuaries. | To create more robust core sites, restore natural processes and allow for wilding opportunities. | • Acreage of land acquired or leased at estuaries.<br>• Number of wilding projects implemented on newly acquired lands. | FCC and landowners |
| 52 | Support reintroduction of Osprey in Fingal and install artificial nest platforms near estuaries. | To establish a sustainable breeding population of Osprey along the Fingal coast. | • Osprey reintroduced in Fingal.<br>• Number of artificial nesting platforms installed.<br>• Numbers of breeding pairs of Osprey in Fingal. | FCC, Golden Eagle Trust & Birdwatch |
| 53 | Wild FCC owned Corballis golf club lands to create natural Grey dunes (bad status in Ireland). | To restore at least 75% of the dune habitat at Corballis. | • Wilding project implemented.<br>• Acreage of good quality Grey dunes at Corballis. | FCC |
| 54 | Acquire large area of farmland or work with farmer(s) for wilding project to create alternative natural habitat for declining typical farmland species. | To organize a demonstration project to showcase and assess the effectiveness of wilding farmland in enhancing the populations of declining farmland species. | • Acreage of farmland acquired or under cooperative agreement with local farmer for wilding demonstration project.<br>• Annual monitoring program implemented to establish effects on Yellowhammer, Tree Sparrow, Stock dove, Birds of Prey, Invertebrates and Bats. | FCC and local farmer(s) |
| 55 | Organise and/or support a national conference on wilding. | To organize at least 1 conference promoting the use of wilding as a nature conservation tool. | • Conference organised. | FCC |

| No. | Action | Objective | KPIs | Partners |
|---|---|---|---|---|
| 56 | Carry out feasibility studies of developing a Marine Protection Area along the Fingal Coast and on the restoration of Oyster beds, Shellfish beds, Seagrass beds and Kelp stands. | The feasibility studies will determine to what extent these marine habitats can be restored and what practical actions and steps are required to make such projects a success. | • Feasibility study undertaken for Marine Protected Area between Howth and Rush.<br>• Feasibility studies undertaken of restoration potential for Oyster beds, Shellfish beds, Seagrass beds and Kelp stands. | FCC, Marine Institute, UCD and fishing industry |
| 57 | Restore marine ecosystem along Fingal coast by supporting restoration projects of Oyster beds, Shellfish beds, Seagrass beds and Kelp stands. | To support or organize at least 2 projects to restore the marine ecosystem. | • Number of sites and acreage of restored Oyster beds, Shellfish beds, Seagrass beds and Kelp stands. | FCC, Marine Institute, UCD and fishing industry |

## *Agri-Environment Schemes and Irish Rare Farm Breed Conservation*

| No. | Action | Objective | KPIs | Partners |
|---|---|---|---|---|
| 58 | Develop Newbridge Farm as a national hub for the promotion of Irish rare farm breeds. | To support and promote the conservation of Irish rare farm breed. | • % of actions from Newbridge Rare Breeds Promotional Study implemented.<br>• Number of breeding females of Irish cattle, horses and sheep at Newbridge. | FCC, DAFM, rare breed societies |
| 59 | Use native Irish farm breeds for conservation grazing schemes. | To support and promote the conservation of Irish rare farm breed. | • Number of sites where native livestock breeds are used for conservation grazing. | FCC |
| 60 | Support the development of a national conservation strategy for rare farmland breeds. | To support and promote the conservation of Irish rare farm breed. | • Level of funding support provided towards national conservation strategy. | FCC, DAFM, rare breed societies |

| No. | Action | Objective | KPIs | Partners |
|---|---|---|---|---|
| 61 | Develop a 400ha demonstration Agri-Environment EIP Scheme with local farmers in Fingal target-ing farmland birds and habitats and water quality improvement measures. | To implement conservation measures for farmland species & habitats and water quality improvement at landscape level. | • EIP project proposal submitted and approved.<br>• Number of farmers participating in scheme.<br>• Populations of target species stable or increasing: Grey Partridge, Yellowhammer, Tree Sparrow, Stock Dove, Bird of Prey, pollinators. | FCC & Local farmers |
| 62 | Develop Bird of Prey Conservation project with local farmers including raising awareness of the impacts of Rodenticide use and its proper application. | To increase the Bird of Prey population of 4 species. | • Number of farmers participating in Bird of Prey project.<br>• Populations of target species stable or increasing: Red Kite, Buzzard, Barn owl, Kestrel and Long eared owl. | FCC, Birdwatch & Local farmers |
| 63 | Develop demonstration farm(s) for biodiversity conservation e.g. hedgerow management, field margins, river management, soil improvement, Integrated pest management, nest boxes etc. | To set up a demonstration farm with a local farmer showcasing best practice for biodiversity conservation and monitoring effectiveness of measures. | • Demonstration farm set up.<br>• Number of visits by interested farmers.<br>• Populations of target species stable or increasing: Yellowhammer, Linnet, Tree Sparrow, Grey Partridge, Bats, Badger, Birds of Prey Andrena and Nomada ground nesting bee species. | FCC, Local Farmer, Birdwatch, DNFC, BCI & Hedgelaying Association |
| 64 | Carry out feasibility study on local marketing of the produce from lands included in the ecological network. | To develop a regional market between farmers and consumers for local wood, fruit, veg and meat etc. | • Feasibility study undertaken.<br>• Number of participating landowners. | FCC |

## *Research & Monitoring*

| No. | Action | Objective | KPIs | Partners |
|---|---|---|---|---|
| **65** | Fund satellite tracking studies of winter birds listed as qualifying features in SPA's. | To identify key roosting and feeding sites of qualifying species outside the estuaries. | • Key feeding and roosting sites identified outside designated sites for Brent Goose, Golden Plover, Oystercatcher, Redshank, Black-tailed Godwit and Curlew. | **FCC, Exeter University** |
| **66** | Carry out population assessments of wintering birds in estuaries. | To determine population trends of qualifying species. | • Assessment carried out for all qualifying bird species associated with estuarine SPAs. | **FCC**, Birdwatch |
| **67** | Repeat rare and protected flora study along the Fingal coast. | To provide new flora data for state of environment report. | • Coastal rare and protected flora study repeated and report(s) produced. | **FCC** |
| **68** | Carry out Otter survey all of rivers in Fingal. | To determine if Otters are still present along all Fingal rivers. | • Otter survey of all Fingal rivers undertaken and report produced. | **FCC**, LAWPRO |
| **69** | Carry out urban bird and bat survey. | To determine the presence of breeding birds in urban areas. | • Number of towns that are included in the urban bird and bat studies<br>• Number of records submitted by the public. | FCC, Birdwatch, BCI, TT's |
| **70** | Undertake study to identify the habitats and species at risk of climate change. | To determine which species and habitats are most at risk from climate change and where they are located. | • Study undertaken and report with map of habitats at risk produced. | **FCC**, Universities |
| **71** | Explore funding models for carbon offsetting to fund wetland and woodland development. | To find alternative funding sources to fund wetland and woodland creation. | • Funding models identified.<br>• Number of projects implemented using new funding models. | **FCC**, CARO |
| **72** | Map petrifying springs on the green infrastructure maps. | To help protect petrifying springs from adverse developments. | • Petrifying springs mapped and incorporated on green infrastructure maps. | **FCC** |
| **73** | Re assess Annex I habitats outside designated sites. | To determine the conservation status of the Annex I habitats. | • All sites revisited and assessed.<br>• Green Infrastructure maps updated in County Development Plan. | FCC |

| No. | Action | Objective | KPIs | Partners |
|---|---|---|---|---|
| 74 | Map townland boundary hedgerows on green infrastructure maps. | To help protect the most important hedgerows from adverse developments. | • All townland boundaries mapped and incorporated on Green Infrastructure maps. | **FCC** |
| 75 | Carry out or support Harbour Porpoise research program along Dublin Coast. | To identify the key feeding and breeding areas within the Rockabill to Dalkey Island SAC. | • Research program carried out and report published. | **FCC**, NPWS, UCC |
| 76 | Review beach management practices of FCC in context of management of SAC's and SPA's. | To assess the impact of beach cleaning operations on the ecology of the beach and dunes habitats and associated flora & fauna species. | • Beach cleaning operations reviewed and amended where necessary. | FCC |
| 77 | Prepare a State of the natural environment in Fingal report. | To provide an overview of the state of the natural environment in Fingal based on a comparison of historical and new survey work. | • State of the natural environment in Fingal report prepared. | **FCC** |
| 78 | Repeat coastal breeding bird study. | To provide new bird data for state of environment report. | • Breeding bird study repeated and report(s) produced. | FCC, Birdwatch |
| 79 | Repeat Intertidal study of the Fingal Coast. | To provide new intertidal data for state of environment report. | • Intertidal study repeated and report(s) produced. | **FCC** |
| 80 | Repeat woodland bird, mammal and rare plant survey. | To provide new woodland data for state of environment report. | • Woodland studies repeated and report(s) produced. | **FCC** |
| 81 | Carry out Countryside Breeding bird survey. | To provide new countryside bird data for state of environment report. | • Countryside Breeding Bird survey completed and report produced. | FCC, Birdwatch |
| 82 | Carry out Countryside Mammal Survey. | To provide new mammal data for state of environment report. | • Countryside Mammal survey completed and report produced. | FCC, BCI |

| No. | Action | Objective | KPIs | Partners |
|---|---|---|---|---|
| 83 | Carry out Fungi Surveys in Turvey, Luttrelstown, Knockmaroon, Santry and Malahide Demesne. | To locate the most important locations for fungi in these woodlands and provide new data for state of environment report. | • Fungi surveys completed and report(s) produced. | FCC, DNFC |
| 84 | Undertake surveys of obstacles to fish passage for freshwater migratory fish species and identify mitigation options on all rivers. | To improve migration for salmon, trout, eel, and lamprey. | • Number of rivers subject to survey.<br>• Number of obstacles removed.<br>• Presence of Sea trout above obstacle. | FCC, Inland Fisheries, OPW |
| 85 | Carry out an ecological study and habi-tat assessment of the Delvin, Ballyboughal, Corduff, Turvey, Mayne, Sluice and Matt rivers. | To find out what flora & fauna species can be found along our rivers, what the conservation status is of our rivers and what works are required to restore the rivers to their full health. | • Number of rivers surveyed and reports prepared. | **FCC**, LAWPRO |
| 86 | Carry out flora study and breeding bird study of the Skerries Islands. | To find out what flora species can be found on the islands and how the breeding seabirds are faring. | • Flora and breeding bird survey undertaken and report produced. | **FCC**, Birdwatch Ireland |
| 87 | Carry out breeding bird, flora and invertebrate studies in Turvey Nature Reserve, Donabate. | To determine the effects of land management changes in the park. | • Breeding bird, flora and invertebrate studies undertaken and reports produced. | **FCC** |
| 88 | Carry out feasibility study for bird conservation projects at the tips of the Donabate & Portmarnock peninsulas. | To assess the potential for the reinstatement of a Little Tern and Ringed Plover colony at Donabate and Portmarnock. | • Feasibility study undertaken.<br>• Number of proposed actions in study implemented. | FCC, Birdwatch |
| 89 | Assess lands adjacent to estuaries for breeding potential for Redshank, Snipe and Lapwing. | Identify and protect potential breeding sites for Redshank, Snipe and Lapwing. | • Field studies undertaken and report produced. | FCC, Birdwatch |

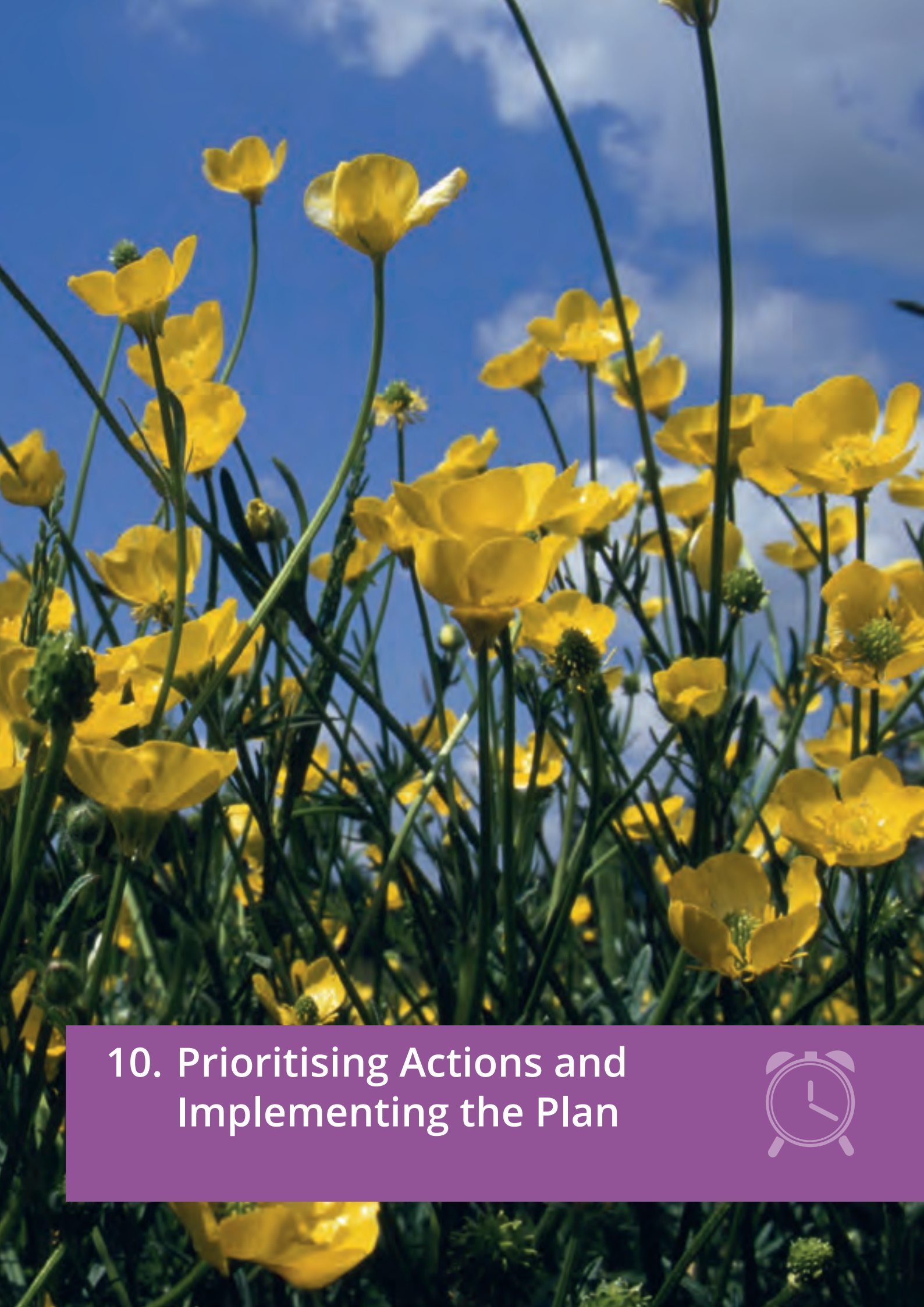
| No. | Action | Objective | KPIs | Partners |
|---|---|---|---|---|
| 90 | Support Eco-toxicology studies on farmland. | To research the impacts of the use of pesticides on farmland species. | • Number of research projects funded by the Council. | **FCC**, universities |
| 91 | Carry out ecological study of the large open water bodies and reservoirs in Fingal. | To find out what flora & fauna species can be found in the large standing water bodies. | • Field studies undertaken and report produced. | **FCC** |
| 92 | Establish a monitoring programme on coastal dynamics along the Fingal Coast. | To gain a better understanding of the natural sedimentation and erosion processes that occur along the Fingal coastline. | • Coastal monitoring program established.<br>• Results published every two years. | **FCC**, local community groups and specialists |

## *Raising Awareness*

| No. | Action | Objective | KPIs | Partners |
|---|---|---|---|---|
| 93 | Re-develop Fingal Biodiversity website and social media channels. | Re-develop website to promote latest research, projects volunteering work and events. | • Fingal Biodiversity Website re-developed. | FCC |
| 94 | Organise a monthly program of events e.g. walks, talks and practical conservation outings. | Organise at least 20 outings per year. | • Number of outings organized per year.<br>• Number of attendees to events. | FCC |
| 95 | Develop a Nature Education Centre for Dublin in Turvey Nature Park. | To provide a dedicated nature education centre for Dublin. | • Nature Education Centre developed at Turvey.<br>• Number of annual visitors. | **FCC** |
| 96 | Develop a promotional program on what people can do for wildlife in their garden. | To encourage the public to make their gardens more biodiversity friendly. | • Promotional program developed.<br>• Online tutorials included in Fingal Biodiversity website. | **FCC**, local garden centres |
| 97 | Run a nature education program for primary and secondary schools. | Provide multi-annual nature education program to at least 20 schools. | • Number of schools participating in program.<br>• Number of students participating in program. | **FCC** |

## *Raising Awareness*

| No. | Action | Objective | KPIs | Partners |
|---|---|---|---|---|
| 98 | Include biodiversity corner at Flavours of Fingal festival. | to promote conservation work by FCC and other groups. | • Number of events attended. | **FCC**, NGO's, Tidy towns |
| 99 | Organise training days for County Council staff and politicians regarding biodiversity. | To educate staff and politicians about biodiversity e.g. building for biodiversity, rewilding, & appropriate assessment. | • Number of training days organized.<br>• Number of attendees at training events. | FCC |
| 100 | Develop operational procedures with respect to Council work that may impact on SAC's and SPA's and protected species. | To avoid damaging SAC's and SPAs and protected species as a result of Council activities. | • Operational procedures developed for Operations and Water Services Departments. | FCC |



# 10. Prioritising Actions and Implementing the Plan

The Biodiversity Plan sets out a hundred actions to develop the ecological network and achieve halting the loss of biodiversity by 2030 in the County. The prioritising of the 100 actions and reporting on the progress of the implementation of the biodiversity plan is to be done through a new biodiversity forum.

This forum will include representatives of the various Council Departments involved in the delivery of biodiversity actions such as Operations, Planning & Strategic Infrastructure, Architects/Housing and Environment. Councillors and representatives of the PPN, nature conservation NGO's, Universities, and agencies such as the NPWS, LAWPRO and the OPW will also be invited to participate in this forum. Prioritisation of the actions will set out in a 4-year implementation plan for the period 2023-2026. A review of the Biodiversity Plan is planned for 2027 and a new implementation plan is to be developed in the same year covering the period 2027-2030.

An annual report will be prepared to report on progress on implementing the Biodiversity Action Plan and achieving the targets set out in the plan. This report will be presented to the Biodiversity Forum, various Strategic Policy Committees and the full Council.

Fingal County Council will be the main coordinating body overseeing the implementation of the biodiversity actions and the protection of the ecological network through the planning process. The local authority will also provide support for other organisations and private landowners, to see where and how they can contribute towards the implementation of the actions and the establishment of the ecological network.

The Biodiversity Officer shall be the main coordinator within the County Council and act as the contact person for issues related to the ecological network and the Biodiversity Action Plan.

# 11. Resourcing the Plan

The Fingal Biodiversity Action Plan sets out a hundred actions to achieve halting the loss of biodiversity by 2030 in Fingal. The delivery of the Biodiversity Plan and the associated Ecological Network are ambitious targets that require significant resources to be fully implemented. The Council has committed to resourcing the plan and setting up a Biodiversity team to ensure the implementation of all actions. Other departments within the Council will also be contribute to the implementation of the plan.

# 12. Monitoring Success

*Photography by Eddie Dunne*

Monitoring is an important aspect of the Fingal Biodiversity Action Plan. Monitoring the success of the Action Plan shall primarily focus on three issues:

1. Total number of priority actions implemented using a traffic light system
2. The number of KPI's achieved for each of the actions
3. The effects of the actions on target habitats & species, to evaluate the impacts and benefits of the actions implemented

The third type of monitoring is particularly important to see if the actions and the money spent are achieving the desired results. Site monitoring focused on the presence and populations of target species listed for each action needs to be done over several years to see if the results of the measures are successful in the long term. This is particularly important where the target species is not present on the site prior to carrying out site management works, because it may take several years for the species to arrive at the site depending on the proximity of the nearest population and its modes and distance of dispersal.

An annual report will be prepared to report on progress on implementing the Biodiversity Action Plan and achieving the KPIs & targets set out in the plan. This report will be presented to the Biodiversity Forum, various Strategic Policy Committees and the full Council.

# 13. Climate Change and the Biodiversity Plan

## *13.1 Climate Proofing the Biodiversity Plan*

Action N13 of the Fingal Climate Change Action Plan 2019-2024 requires the Council to prepare a climate proof biodiversity plan. Climate proofing is a term that refers to a process of mainstreaming climate change risk, mitigation and/or adaptation into plans and projects. Climate proofing the biodiversity plan is important as we cannot address biodiversity loss without tackling climate change, but it is equally impossible to tackle climate change without addressing biodiversity loss. Without healthy and resilient ecosystems, it will not be possible to stabilise the climate or to adapt to the unavoidable impacts of climate change. Therefore, urgent action is needed to halt the further loss and degradation of biodiversity and ecosystem services, if we are to retain the ability to reduce the extent of climate change and manage its impacts[46-49]

In order to deliver a climate proof Biodiversity Plan, we must assess the extent to which climate change risk has been considered and how the plan contributes towards climate change adaptation and mitigation. Furthermore, the consistency between the Biodiversity Action Plan and the Biodiversity Climate Change Sectoral Adaptation Plan and Fingal Climate Change Action Plan must be verified to demonstrate joined up thinking and actions.

## *13.2 Climate Change Risks and the Biodiversity Plan*

Ecosystems are naturally dynamic. Climate change increases the level of dynamics, because ecosystems will be subject to more disturbances, such as more frequent and intense precipitation, dry periods and storm events as well as sea level rise. As a result, some species will decline in number and possibly even disappear from Ireland, while new species may establish themselves here. Although a study is to be undertaken on the risk of climate change to habitats and species in Fingal, we know from elsewhere in Europe that rivers, wetlands, heathlands and our coastal habitats such as the mudflats, saltmarsh and dunes are considered most at risk.

As the climate changes, biodiversity can be maintained if ecological systems have sufficient capacity to adapt to these changes and can continue to function despite disturbances. Healthy ecosystems are more resilient to climate change and ecosystems-based approaches are therefore an integral part of dealing with climate change risk. Accordingly, the maintenance and restoration of diverse, functioning healthy ecosystems across the wider terrestrial, freshwater and marine environment is an important guiding principle in the Fingal Biodiversity Plan, as we aim to "climate proof" this plan and reduce the risk of climate change on our habitats and species.

Climate proofing ecosystems requires (a) increasing the size and connectivity of protected areas, (b) increasing habitat and landscape heterogeneity, (c) facilitating natural processes and (d) improving environmental conditions opportunities[50].

The development and management of the Ecological Network addresses the first requirement. Protected areas have been enlarged with a buffer zone and these areas are connected via ecological corridors. Increasing habitat and landscape heterogeneity is to be achieved through working with farmers in the countryside and with developers and Council staff and homeowners in urban areas. The Council also wishes to work with the fishing industry to restore marine habitats heterogeneity, to make our marine ecosystem more resilient.

There are several river, saltmarsh and wetland restoration projects that will allow natural processes such as flooding to take place again. The rewilding projects are also based around restoring natural processes. Water quality is the main environmental condition that requires a major improvement and the Biodiversity Plan contains several actions which aim to achieve that.

## *13.3 Climate Change Adaptation and the Biodiversity Plan*

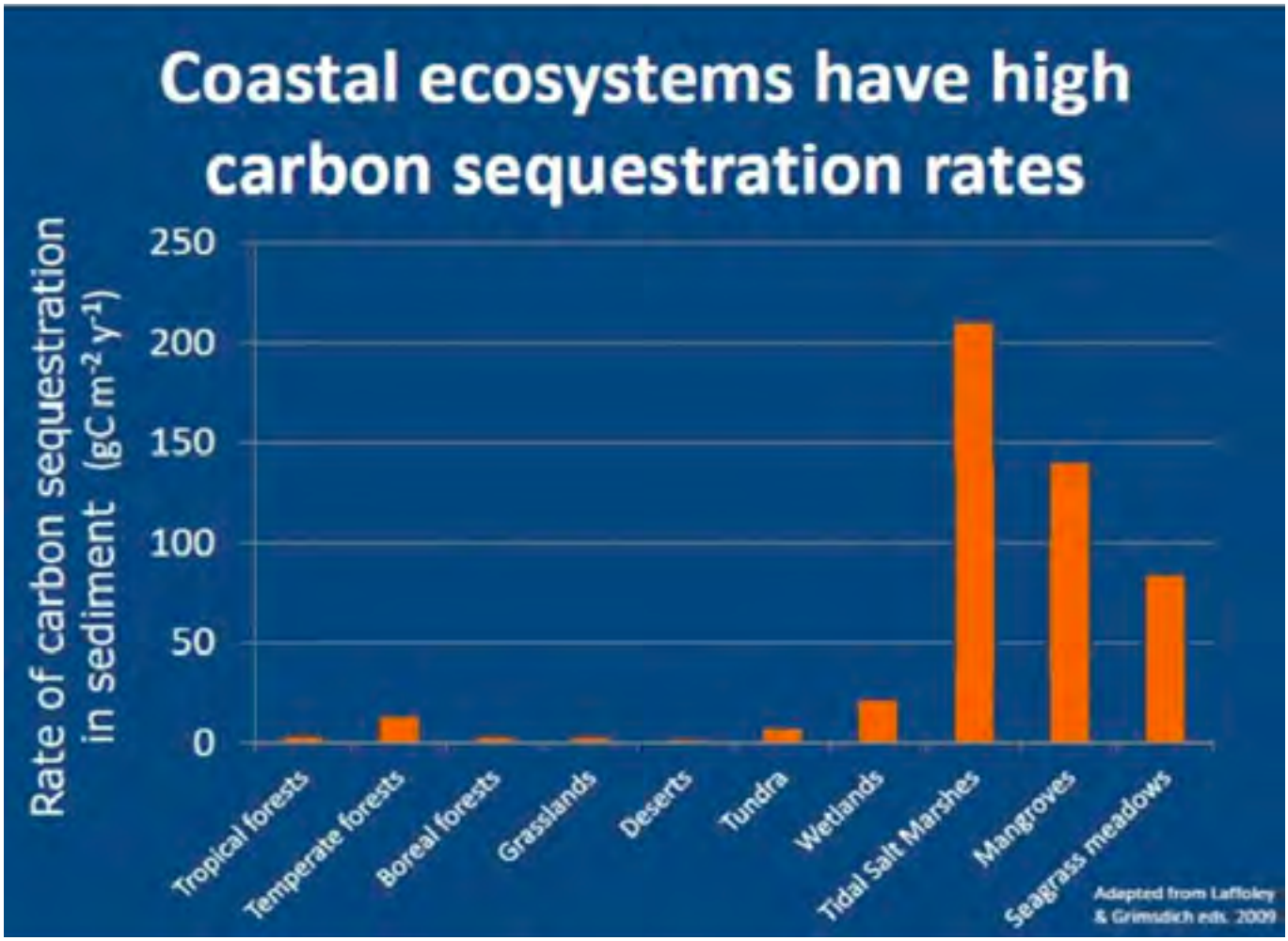
Protecting and restoring biodiversity and ecosystem services provides multiple benefits to human society. This ecosystem-based approach can provide cost-effective protection against some of the threats that result from climate change. For example, coastal ecosystems such as saltmarsh and dunes provide natural shoreline protection from storms and flooding. Urban green spaces cool cities (reducing the urban-heat island effect) absorb rainwater and improve air quality.

The Biodiversity Plan contains several actions that will provide more space for water by increasing the overall capacity of rivers, estuaries and open spaces to absorb floodwater. The acquisition of lands around the estuaries will provide space for natural erosion and sedimentation processes to take place, while also allowing coastal habitats to "move" to higher ground to reduce the impact of sea-level rise. The plan also contains actions to make urban areas more adaptable to climate change and biodiversity friendly by means of green roofs, green walls, green car parking and SUDS measures.

## *13.4 Climate Change Mitigation and the Biodiversity Plan*

Terrestrial and marine ecosystems currently absorb around half of anthropogenic $CO^2$ emissions. The carbon capture and storage capacity of oceans, forests, grasslands, wetlands are essential for mitigating climate change. On the other hand, the ongoing destruction of these ecosystems is releasing significant amounts of greenhouse gases back into the atmosphere. It is therefore important to protect and restore carbon rich terrestrial and marine ecosystems (see figure 8). The Biodiversity Plan includes various actions to restore carbon rich habitats such as wetlands, saltmarsh, rivers, woodlands, shellfish beds and seagrass beds. The Plan (in combination with the County Development Plan) also seeks to protect these carbon rich habitats from degradation. Promoting sustainable agriculture is also part of the plan because it helps to improve the capacity of farmers to adapt to climate change, while also enhance biodiversity, increasing carbon storage and reducing emissions.

***Figure 8:*** *Carbon Sequestration rates for various habitat types.*




## *13.5 Link Between the Biodiversity Action Plan the Climate Action Plans*

The above paragraphs show that healthy ecosystems are more resilient to climate change. Ecosystem restoration is an integral part of dealing with climate change risk, but also for providing adaptation and mitigation measures. It is therefore essential to ensure joined up thinking to achieve multiple benefits as a result of implementing the Fingal Biodiversity Plan and the Climate Change Plans. The consistency between the Biodiversity Action Plan and the Biodiversity Climate Change Sectoral Adaptation Plan and Fingal Climate Change Action Plan is explored in table 5 and table 6 below. Table 5 gives an overview of the priority actions in the Biodiversity Climate Change Sectoral Adaptation plan and the relevant actions from the Fingal Biodiversity Action Plan. An overview of the priority actions in the Fingal Climate Change Action Plan and the relevant actions from the Fingal Biodiversity Action Plan is presented in Table 6. These tables clearly show that the implementation of actions from the Biodiversity Plan also assists with implementing the actions from the Sectoral Adaptation Plan and the Climate Action Plan.

***Table 5:*** *Priority actions in the Biodiversity Climate Change Sectoral Adaptation plan and the relevant actions from the Fingal Biodiversity Action Plan.*

| Priority Actions Biodiversity Climate Change Sectoral Adaptation Plan | No. in FBAP | Action |
|---|---|---|
| **Restore and enhance natural systems through management to increase resilience.** | 48 | Identify and acquire where possible, Climate buffer sites where flood defense features can be removed or relocated to increase flood capacity of rivers and estuaries. |
| | 43 | Prepare wetland and river restoration project for the Bog of the Ring and the Matt river corridor. |
| | 49 | Prepare river restoration project for the Ballyboughal river and implement on FCC lands and acquire lands where necessary. |
| | 44 | Develop St Itas local nature reserve. Carry out feasibility study to restore Garristown Bog and. |
| **Establish and implement an all-island invasive species programme.** | 26 | Control invasive species in Fingal |
| **Develop an integrated coastal management strategy which includes ecosystem-based adaptation actions.** | 48 | Identify and acquire where possible, Climate buffer sites where flood defense features can be removed or relocated to increase flood capacity of rivers and estuaries. |
| | 56 | Carry out feasibility studies of developing a Marine Protection Area along the Fingal Coast and on the restoration of Oyster beds, Shellfish beds, Seagrass beds and Kelp stands. |
| | 57 | Restore marine ecosystem along Fingal coast by supporting restoration projects of Oyster beds, Shellfish beds, Seagrass beds and Kelp stands. |
| **Promote ecosystem restoration and conservation though Payment for Ecosystem Services and investment in actions that increase carbon sinks while promoting biodiversity.** | 71 | Explore funding models for carbon offsetting to fund wetland and woodland development. |
| | 61 | Develop a 400ha demonstration Agri-Environment EIP Scheme with local farmers in Fingal targeting farmland birds and habitats and water quality improvement measures. |
| | 63 | Develop demonstration farm(s) for biodiversity conservation e.g. hedgerow management, field margins, river management, soil improvement, Integrated pest management, nest boxes etc. |
| **Carry out a comprehensive climate change vulnerability assessment of biodiversity in Ireland.** | 70 | Undertake study to identify the habitats and species at risk of climate change. |
| **Design corridors and buffer zones to enhance the re-silience of protected areas and designated sites by increasing opportunities for dispersal across the landscape.** | | To be achieved through the actions related to the development of the Ecological Network. |

| Priority Actions Biodiversity Climate Change Sectoral Adaptation Plan | No. in FBAP | Action |
|---|---|---|
| **Implement measures to reduce the barrier effects of roads, railways and technical objects in rivers and streams to facilitate species spatial responses to climate change** | | To be achieved through the actions related to the development of the Ecological Network and County Development Plan objectives. |
| **Undertake natural capital accounting in all sectors to ensure natural capital is being valued and Ecosystem Based Adaptation and green infrastructure options are being employed.** | 71 | Explore funding models for carbon offsetting to fund wetland and woodland development. |
| **Co-design green spaces and wildlife refuges in cities and peri-urban areas with local communities to pro-vide habitats for species under threat from climate change and to connect people to biodiversity.** | 31<br>29<br>32<br>30<br>35<br>37<br>38<br>41<br>40<br>42 | Prepare promotional guidance on how to incorporate biodiversity in development and infrastructure projects.<br>Prepare planning & design guidance for incorporating nesting facilities in building facades.<br>Prepare planning and design guidance for ecological corridors.<br>Prepare guidance document and training on quality rating and management prescription of hedgerows in open space for FCC Operations and developers.<br>Pilot a biodiversity inclusive design for a social housing estate with green roofs, green walls, wetland & pond SUDS, green carparking, nest boxes in facades, wildflower meadows and wildlife friendly shrubs and trees in open space.<br>Develop pesticide use policy for Fingal County Council.<br>Support and promote All Ireland Pollinator Plan Actions for Councils and monitor resulting changes.<br>Organise and monitor the effects of a biodiversity make-over of 3 housing estates in Fingal in conjunction with residents and FCC Operations Dept.<br>Implement Tidy Towns Biodiversity Action Plans.<br>Develop Urban greening Plans for Dublin 15, Swords and Balbriggan. |

***Table 6:*** *Actions in the Fingal Climate Change Action Plan and the relevant actions from the Fingal Biodiversity Action Plan.*

| No. | Biodiversity related actions Fingal Climate Change Action Plan 2019-2024 | No. in FBAP | Action |
|---|---|---|---|
| E28 | **In all Council building projects, new build or retrofit, Swift Bricks or other nesting sites for swifts will be provided where practicable.** | 29 | Prepare planning & design guidance for incorporating nesting facilities in building facades. |
| T12 | **Build out Fingal's cycle network offering direct routes to local destinations and public transportation hubs. Develop linked cycling trails, greenways and green belts for recreation and biodiversity protection.** | 36 | All Council housing, parks and infrastructure projects to include biodiversity enhancement proposals. |
| F5 | **Protect and conserve floodplains, wetlands and coastal areas subject to flooding through available policy instruments.** | | Achieved through the County Development Plan. |
| F6 | **Assess the feasibility of green roofs on all new Fingal public, operational and social buildings and provide where viable and appropriate.** | 35 | Pilot a biodiversity inclusive design for a social housing estate with green roofs, green walls, wetland & pond SUDS, green carparking, nest boxes in facades, wildflower meadows and wildlife friendly shrubs and trees in open space. |
| F9 | **To engage with the Fingal Coastal Liaison Group with the integra-tion of adaptation strategies into planning policies, etc.** | | Achieved through participation in the Fingal Coastal Liaison group. |
| F13 | **Develop and implement Coastal Protection Plan for Portrane.** | | Not part of Biodiversity Plan. |
| F18 | **Develop a coastal monitoring programme to measure coastal erosion along the Fingal coast.** | 92 | Establish a monitoring programme on coastal dynamics along the Fingal Coast. |
| F19 | **Identify sites where flood defence features can be removed or relocated to increase flood capacity of rivers and estuaries.** | 48 | Identify and acquire where possible, Climate buffer sites where flood defence features can be removed or relocated to increase flood capacity of rivers and estuaries. |
| F20 | **Restore St Ita's wetlands to maximise water attenuation capacity and nature conservation benefits.** | 44 | Develop St. Ita's local nature reserve. |
| F23 | **Identify and put in place the resources to develop and promote SuDS, including: Promote and encourage community involvement in the retrofit of SuDS in existing developments, maintaining community rain gardens, discourage hard paving in gardens and retrofit raingardens / water butt installations.** | 42<br>45 | Develop Urban greening Plans for Dublin 15, Swords and Balbriggan.<br>Develop SUDS demonstration sites in the Tolka Valley, Ward River Valley, Balbriggan town Park and Rogerstown estuary. |

| No. | Biodiversity related actions Fingal Climate Change Action Plan 2019-2024 | No. in FBAP | Action |
|---|---|---|---|
| N1 | **Engage with sectoral adaptation plan on biodiversity to identify key habitats and species at risk from climate change impacts.** | 70 | Undertake study to identify the habitats and species at risk of climate change. |
| N2 | **Engage with regional working group on nature-based solutions once set up.** | | Not part of Biodiversity Plan, but Biodiversity Officer to engage with regional working group. |
| N3 | **Develop Green Infrastructure Strategy that incorporates climate change mitigation and adaptation to increase climate resilience.** | | The Ecological networks forms a major part of the Green infrastructure network in the County. The strategies and actions outlined in this document to develop the Ecological Network shall be part of the Green Infrastructure Strategy. |
| N8 | **Identify sites for woodland planting that promotes an appropriate native species mix.** | 47 | Acquire sites for woodland planting at St. Catherine's park and Ardgillan Demesne and prepare masterplans for the design of these woodlands. |
| N11 | **Develop a map of habitats and species at risk of climate change.** | 70 | Undertake study to identify the habitats and species at risk of climate change. |
| N12 | **Develop a monitoring programme of the habitats and species considered at risk of climate change.** | | This can be done once the study of habitats and species at risk (action 70) has been carried out and sites and species have been identified for future monitoring. |
| N13 | **Prepare a climate proof biodiversity plan.** | 92 | The preparation of this plan completes this action. |
| N14 | **Support and promote National Biodiversity Data Centre All-Ireland Pollinator Plan Actions for Councils.** | 37<br>38<br>39<br>41<br>40 | Develop pesticide use policy for Fingal Co. Council.<br>Support and promote All Ireland Pollinator Plan Actions for Councils and monitor resulting changes.<br>Develop a grass maintenance policy for open spaces including options for grass disposal from wildflower meadows.<br>Organise and monitor the effects of a biodiversity make-over of 3 housing estates in Fingal in conjunction with local residents and FCC Operations Dept.<br>Implement Tidy Towns Biodiversity Action Plans. |
| N15 | **Increase pollinator areas in public parks and open spaces.** | 38<br>39<br>41<br>40 | Support and promote All Ireland Pollinator Plan Actions for Councils and monitor resulting changes.<br>Develop a grass maintenance policy for open spaces including options for grass disposal from wildflower meadows.<br>Organise and monitor the effects of a biodiversity make-over of 3 housing estates in Fingal in conjunction with local residents and FCC Operations Dept.<br>Implement Tidy Towns Biodiversity Action Plans. |

| No. | Biodiversity related actions Fingal Climate Change Action Plan 2019-2024 | No. in FBAP | Action |
|---|---|---|---|
| N17 | **Prepare a heathland management plan for Howth with ecological input.** | 12 | Develop and implement detailed management plan for the Howth Head SAC & SPA. |
| N18 | **Prepare a fire management plan for heathland on Howth that includes environmental considerations.** | 13 | Implement SAAO Operational Plans for Howth Head and Liffey Valley SAAO. |
| N19 | **Create multi-functional master plans for Rogerstown and Baldoyle Estuaries and their surroundings.** | 1<br><br>10 | Implement masterplan for Rogerstown Inner Estuary and prepare & implement masterplan for Rogerstown Outer Estuary.<br>Prepare and implement masterplan for Baldoyle bay SAC & SPA. |

## 13.6 Fingal Biodiversity Plan Climate Proof?

So, is the Fingal Biodiversity Plan climate proof? The plan includes a wide range of actions for the identification of habitats and species at risk of climate change and to address these risks. Various actions for the protection and restoration of resilient ecosystems across the terrestrial, freshwater and marine environment are also contained within the plan. The action plan also includes actions that will directly benefit climate adaptation and mitigation by restoring carbon rich habitat to increase carbon sequestration, reducing emissions caused by ecosystem degradation and loss, and providing cost-effective protection against some of the threats that result from climate change. Accordingly, the Fingal Biodiversity Action Plan can be considered Climate Proof.


# 14. Communicating Biodiversity - Nature on Your Doorstep

Many people value wildlife, but most of us are only vaguely aware of the natural world around us. Our population has become increasingly urbanised and detached from the natural environment. Most kids and their parents are not able to identify trees, plants or birds anymore and their knowledge of environmental issues is often linked to what they have seen on television. Consequently, many people know about the melting of the ice caps or the decline of the rainforest, but do not know what is happening to the nature on their doorstep.

Research undertaken by Fingal County Council on people's appreciation and awareness of the natural environment in Fingal made some interesting observations:

- In terms of **awareness** of Fingal's natural environment, many people are not familiar with the most important wildlife species for Fingal; the national and international importance of certain species and habitats; European designations and their implications and how sites of significant conservation and ecological value are managed.
- Many people demonstrated a pride of place and a clear desire to know more about what is **special about their local area** and **what makes their local area so unique**.
- A **website**, **local newsletter**, and **interpretation panels** are the preferred methods for circulating information on Fingal's natural environment.
- Using the right **language and terminology** when interacting with the public is very important. Members of the public and scientists/conservationists differ in their interpretation and understanding of certain terms/phrases (e.g. protection – physical or legal; habitat – local environment versus global examples; rare species – rarely seen or rare because of reduced/threatened population).

Raising awareness of the natural environment is an important element of the Fingal Biodiversity Plan. This plan includes 8 actions related to awareness raising and nature education including running a nature education program for primary and secondary schools and developing a Nature Education Centre at Turvey Nature Park.

# 15. What Can You Do To Help?

To achieve the Ecological Network in the County and make our surroundings more wildlife friendly, there is much work to be done. The motto for biodiversity action is to ***"Think globally, act locally"***. Everybody can do something to help nature along in their locality. Here are a few ideas you might like try:

## *At Home:*

- Make your garden more interesting for wildlife by planting flowers to attract bees and butterflies, fruit-bearing trees and shrubs to attract birds, a garden pond to attract amphibians and damselflies. Even in the heart of the city, a window-ledge bird table or a birdbox will attract a surprising range of birds or you could build a batbox to invite bats into your garden.
- Become a member of one of Ireland's nature conservation organizations.
- Participate in one of the many community based nature studies such as the Garden Bird survey (see www.birdwatchireland.ie), Bumblebee Monitoring Scheme (see biodiversityireland.ie) and the Explore your Shore Survey (www.coastwatch.org). You don't need to be an experienced ecologist to participate in these surveys, so go and give it a try!

## *At Work:*

- Manage your grounds for wildlife - plant trees, hedgerows, colourful plants and build bird and bat boxes as these will attract a range of wildlife species.
- Sponsor Fingal's Nature Education Programme for primary and secondary schools.
- Organise a company nature conservation activity day or donate staff time to participate in practical nature conservation activities.

## *At School:*

- Go and explore wildlife in school grounds and nearby parks.
- Make school grounds more wildlife friendly by making bird boxes, a small meadow, a wildlife garden or planting trees.

**Visit the Fingal Biodiversity website www.fingalbiodiversity.ie for many more ideas on how to get involved in protecting nature in your area. And remember, the biodiversity officer in the County Council is there to help, so if you would like some advice or assistance with a local biodiversity project, do get in touch!**

# Bibliography


1. Department of Culture, Heritage and the Gaeltacht, 2019, Ireland's 6th National Report to the Convention on Biological Diversity.
2. IPBES (2019): Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, IPBES secretariat, Bonn, Germany.
3. UNEP (2019) New UN Decade on Ecosystem Restoration offers unparalleled opportunity for job creation, food security and addressing climate change opportunity. Available at: https://www.unenvironment.org/news-and-stories/press-release/new-un-decade-ecosystem-restorationoffers-unparalleled-opportunity.
4. CBD (2019). 'Decision XIII/5. Ecosystem restoration: short-term action plan', Available at: https://www.cbd.int/doc/decisions/cop-13/cop-13-dec-05-en.pdf
5. European Commission (2020) EU Biodiversity Strategy for 2030 - Bringing nature back into our lives. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. COM (2020) 380 final. Brussels. 20.5.2020.
6. Department of Culture, Heritage and the Gaeltacht (2017) National Biodiversity Plan
7. Segan, DB, Murray KA, Watson JEM 2016 A global assessment of current and future biodiversity vulnerability to habitat loss–climate change interactions Global Ecology and Conservation. Vol 5: 12-21
8. Dept. of Culture, Heritage and the Gaeltacht (2019) Ireland's Biodiversity Sectoral Climate Change Adaptation Plan.
9. Fingal City Council and Codema (2019) Dublin City Climate Action Plan (2019-2024).
10. EPA, 2019, Water Quality in Ireland 2013–2018
11. https://balticeye.org/en/policy-briefs/bottom-trawling-threatens-european-marine-ecosystems/
12. Sala, E., Mayorga, J., Bradley, D. et al. Protecting the global ocean for biodiversity, food and climate. Nature 592, 397–402 (2021).
13. J. B. Jones (1992) Environmental impact of trawling on the seabed: A review, New Zealand Journal of Marine and Freshwater Research, 26:1, 59-67
14. The Marine Institute and Bord Iascaigh Mhara, 2019 Shellfish Stocks and Fisheries Review 2019, An assessment of selected stocks
15. Went, A. E. J. "Oyster Fisheries." Dublin Historical Record, vol. 18, no. 2, Old Dublin Society, 1963, pp. 56–63
16. BirdWatch Ireland Assessing the Movements and Usage of Irish Sea Birds using Innovative Technology: A report on phase 1, Seabirds report for the Sustainable Energy Authority Ireland
17. Pierce S., 2009, Survey of Winter and Breeding Birds Bog of the Ring, Co. Dublin. Report for Fingal County Council. Swords, Co Dublin
18. ROD, 2018, Flap Valve Management Programme for the re-establishment of brackish habitats and fish in the Mayne River, Baldoyle, Co. Dublin. Report for Fingal County Council. Swords, Co Dublin
19. Daly, O.H., Brophy, J.T. & Aughney, T. (2021) Ecological Study of Sluice River Marsh, Portmarnock, Co. Dublin. A report for Fingal County Council.
20. Doogue D., 2011, Flora Study St. Itas Wetland Donabate, for Donabate Tidy Towns Committee
21. McCourt A. & D.L. Kelly, 2007, Fingal Hedgerow Survey Report, Department of Botany, School of Natural Sciences, Trinity College Dublin for Fingal County Council
22. Rogerstown Estuary SAC (site code 208) Conservation objectives supporting document -coastal habitats NPWS Version 1 May 2013
23. Malahide Estuary SAC (site code 205) Conservation objectives supporting document - coastal habitats NPWS Version 1 May 2013
24. Baldoyle Bay SAC (site code 199) Conservation objectives supporting document -coastal habitats NPWS Version 1 November 2012
25. Nairn, R. (2017) Ireland's Eye Management Plan 2018-2022. Fingal County Council. Swords, Co Dublin
26. Pisa LW, Amaral-Rogers V, Belzunces LP, Bonmatin JM, Downs CA, Goulson D, Kreutzweiser DP, Krupke C, Liess M, McField M, Morrissey CA, Noome DA, Settele J, Simon-Delso N, Stark JD, Sluijs JP, Dyck H, Wiemers M (2015) Effects of neonicotinoids and fipronil on non-target invertebrates. Environmental Science and Pollution Research 22:68–102

27. Lopez-Antia A, J. Feliu, P.R. Camarero, M.E. Ortiz-Santaliestra and R. Mateo (2016) Risk assessment of pesticide seed treatment for farmland birds using refined field data Journal of Applied Ecology 53, 1373–1381
28. Bat Conservation Ireland, 2010, Bats & Lighting Guidance Notes for: Planners, engineers, architects and developers
29. Lawton, J.H., Brotherton, P.N.M., Brown, V.K., Elphick, C., Fitter, A.H., Forshaw, J., Haddow, R.W., Hilborne, S., Leafe, R.N., Mace, G.M., Southgate, M.P., Sutherland, W.J., Tew, T.E., Varley, J., & Wynne, G.R. (2010) Making Space for Nature: a review of England's wildlife sites and ecological network. Report to Defra.
30. Crick, H. Q. P., Crosher, I. E., Mainstone, C. P., Taylor S. D., Wharton, A., Langford, P., Larwood, J., Lusardi, J., Appleton, D., Brotherton, P. N. M., Duffield, S. J. & Macgregor N. A. (2020) Nature Networks Evidence Handbook. Natural England Research Report NERR081. Natural England, York.
31. Duigan, C., Ayling, S., Bassett, D., Crick, H.Q.P. & Weyl, R. 2020. Terrestrial Nature Networks in the UK – A Review. JNCC Report No. 659, JNCC, Peterborough, ISSN 0963-8091.
32. The Wildlife Trust for Bedfordshire, Cambridgeshire & Northamptonshire, 2021, The Cambridge Nature Network; A Nature Recovery Network for Cambridge and its surrounds
33. Colding J. & Folke C. 2009; The Role of Golf Courses in Biodiversity Conservation and Ecosystem Management in Ecosystems (2009) 12: 191–206
34. DEHLG, Wildlife, Habitats and the Extractive Industry; guidelines for the protection of Biodiversity within the Extractive Industry
35. Davis, 2008, Designing wildlife corridors: wildlife need more complex travel plans, University of California
36. Alterra, 2001. Handboek Robuuste Verbindingen; ecologische randvoorwaarden. Wageningen, Alterra, Research Instituut voor de Groene Ruimte
37. Fischer R.A. & Fischenich J.G. 2000, Design recommendations for riparian corridors and vegetated buffer strips, U.S. Army Corps of Engineers Ecosystem Management and Restoration Research Program
38. Gregory, A.; Spence, E.; Beier, P.; Garding, E. Toward Best Management Practices for Ecological Corridors. Land 2021, 10, 140
39. Provincie Noord-Brabant, 2004, Groene schakels; Ecologische verbindingszones voorbeeldenboek
40. Natural England, Forest Research and Forestry Commission (2013) Guidance on managing woodlands with otter in England.
41. Igoe, F. Planning for Watercourses in the urban environment; A Guide to the Protection of Watercourses through the use of Buffer Zones, Sustainable Drainage Systems, Instream Rehabilitation, Climate / Flood Risk and Recreational Planning, Inland Fisheriesd
42. Northern Ireland Environment Agency (2011) Otters and Development, NEIA
43. Johnson C.W. 1999, Conservation Corridor Planning at Landscape Level; Managing for Wildlife Habitat, USA Natural Resources Conservation Services
44. Gemeente Den Haag, 2008, Nota Ecologische Verbindingszones 2008-2018; Hoofdlijnen voor inrichting and beheer
45. Teunissen, A, 2006, Natuur en Recreatie in Ecologische Verbindingszones; Inventarisatie van de effecten van recreatie op natuur in ecologische verbindingszones in the Provincie Utrecht en de mogelijke mitigerende inrichtingsmaatregelen. Voor Provincie Utrecht
46. EU Commission, 2009, Adapting to climate change: Towards a European framework for action
47. EU Commission, 2013, Guidelines on Climate Change and Natura 2000: Dealing with the impact of climate change on the management of the Natura 2000 Network of areas of high biodiversity value, Technical Report - 2013 – 068
48. Working with Nature: Towards a Strategy on Climate Change, Ecosystem Services and Biodiversity A discussion paper prepared by the EU Ad Hoc Expert Working Group on Biodiversity and Climate Change 2009
49. Naumann, Sandra, Gerardo Anzaldua, Pam Berry, Sarah Burch, McKenna Davis, Ana Frelih-Larsen, Holger Gerdes and Michele Sanders (2011): Assessment of the potential of ecosystem-based approaches to climate change adaptation and mitigation in Europe. Final report to the European Commission, DG Environment, Contract no. 070307/2010/580412/SER/B2, Ecologic institute and Environmental Change Institute, Oxford University Centre for the Environment
50. Vonk, M., C.C. Vos, D.C.J. van der Hoek, 2010: Adaption strategy for climate-proofing Biodiversity, Netherlands Environmental Assessment Agency

# Appendices

# Appendix I: Locations Designated Sites

# Appendix II: Annex I Habitats in Fingal

| Code | Habitat Name |
|---|---|
| 1110 | **Sandbanks** |
| 1130 | **Estuaries** |
| 1140 | **Tidal Mudflats and Sandflats** |
| 1150 | **Coastal Lagoons*** |
| 1160 | **Large Shallow Inlets and Bays** |
| 1170 | **Reefs** |
| 1210 | **Annual vegetation of Drift Lines** |
| 1220 | **Perennial Vegetation of Stony Banks** |
| 1230 | **Vegetated Sea Cliffs** |
| 1310 | **Salicornia Mud** |
| 1320 | **Spartina Sward** |
| 1330 | **Atlantic Salt Meadows** |
| 1410 | **Mediterranean Salt Meadows** |

| Code | Habitat Name |
|---|---|
| 2110 | **Embryonic Shifting Dunes** |
| 2120 | **Marram Dunes** |
| 2130 | **Fixed Dunes (Grey Dunes)*** |
| 2170 | **Dunes with Creeping Willow** |
| 2190 | **Humid Dune Slacks** |
| 3110 | **Lowland Oligotrophic Lakes** |
| 3140 | **Hard Water Lakes** |
| 3260 | **Floating River Vegetation** |
| 4030 | **Dry Heath** |
| 6210 | **Orchid Rich Grassland/Calcareous Grassland*** |
| 7220 | **Petrifying Springs*** |
| 8330 | **Sea Caves** |

** indicates a Priority Habitat*

# Appendix III: Protected and Important Flora Species in Fingal

| English Name | Latin Name | Flora Protection Order | Red Data Book | Nationally Important Presence in Fingal | Habitat | Relevant Actions in Biodiversity Plan |
|---|---|---|---|---|---|---|
| **Lesser Centaury** | *Centaurium Pulchellum* | √ | NT | | Sand dunes | 27, 67 |
| **Meadow Barley** | *Hordeum Secalinum* | √ | V | | Damp ground, brackish grassland | 4, 10, 11, 19, 67 |
| **Hairy St. John's-Wort** | *Hypericum Hirsutum* | √ | V | | Woodland | 22, 46, 47, 67, 80 |
| **Rough Poppy** | *Papaver Hybridum* | √ | RE | | Sandy till | 1, 51, 67 |
| **Borrer's Saltmarsh Grass** | *Puccinellia Fasciculata* | √ | NT | | Drains, estuaries | 10, 67 |
| **Hairy Violet** | *Viola Hirta* | √ | V | | Sand dunes | 1, 3, 27, 53, 67 |
| **Curved Hardgrass** | *Parapholis Incurva* | | E | √ | Coastal grassland | 12 |
| **Green-Flowered Helleborine** | *Epipactis Phyllanthes* | | E | | Former wetland, dune slacks | 27, 53, 67 |
| **Green-Winged Orchid** | *Orchis Morio* | | V | | Dune grassland | 1, 3, 53, 67 |
| **Saltmarsh Flat Sedge** | *Blysmus Rufus* | | NT | | Saltmarsh | 67 |
| **Henbane** | *Hyoscyamus Niger* | | NT | | Shingle shores | 67 |
| **Brackish Water-Crowfoot** | *Ranunculus Baudotii* | | NT | | Brackish ponds | 27, 11, 67 |
| **Green Figwort** | *Scrophularia Umbrosa* | | NT | | River banks | 13, 20, 21, 23, 67 |
| **Blue Fleabane** | *Erigeron Acer* | | LC | | Walls | 67 |
| **Yellow Archangel** | *Lamiastrum Galeobdolon* | | LC | | woodland | 22, 46, 47, 67, 80 |
| **Bird's Foot** | *Ornithopus Perpusillus* | | LC | | Shallow soil over rock by the coast | 12, 67 |
| **Wild Clary** | *Salvia Horminoides* | | LC | | Grass verges | 12, 67 |
| **Spring Vetch** | *Vicia Lathyroides* | | | √ | Sand dunes | 27, 53, 67 |
| **Sea Bindweed** | *Calystegia Soldanella* | | | √ | Sand dunes | 27, 53, 67 |

| English Name | Latin Name | Flora Protection Order | Red Data Book | Nationally Important Presence in Fingal | Habitat | Relevant Actions in Biodiversity Plan |
|---|---|---|---|---|---|---|
| **Dioecious Sedge** | *Carex Dioica* | | | √ | Wetland | 12, 67 |
| **Golden Samphire** | *Inula Crithmoides* | | | √ | Sea cliffs | 67 |
| **Common Tooth-Wort** | *Lathraea Squamaria* | | | √ | Woodland | 22, 46, 47, 67, 80 |
| **Bee Orchid** | *Ophrys Apifera* | | | √ | Dune grassland | 9, 12, 27, 16, 67 |
| **Spring Squill** | *Scilla Verna* | | | √ | Coastal grassland | 12, 27, 67 |
| **Strawberry Clover** | *Trifolium Fragiferum* | | | √ | Coastal grassland | 5, 16, 27, 49, 67 |

***Red Data Book Abbreviations:***
*RE = Regionally extinct, E = Endangered, V = Vulnerable, NT = Near Threatened, LC = Least Concern*

# Appendix IV: Protected and Important Fauna Species in Fingal

| English Name | Latin Name | EU Habitats Directive | Wildlife Act 1976 & 2000 | Red List | Habitat | Relevant Actions in Biodiversity Plan |
|---|---|---|---|---|---|---|
| **Whiskered Bat** | *Myotis Mystacinus* | IV | √ | LC | Woodland, hedgerows | 1, 5, 10, 16, 17, 18, 19, 20, 21, 22, 23, 24, 29, 31, 32, 40, 43, 44, 46, 54, 63, 69, 80, 82, 85 |
| **Natterer's Bat** | *Myotis Natteri* | IV | √ | LC | Woodland, pasture | 1, 5, 10, 16, 17, 18, 19, 20, 21, 22, 23, 24, 29, 31, 32, 40, 43, 44, 46, 54, 63, 69, 80, 82, 85 |
| **Daubenton's Bat** | *Myotis Daubentoni* | IV | √ | LC | Canal, river, pond | 1, 5, 10, 16, 17, 18, 19, 20, 21, 23, 24, 29, 31, 32, 40, 43, 44, 49, 54, 63, 69, 80, 82, 85 |
| **Brandt's Bat** | *Myotis Brandtii* | IV | √ | LC | Woodland, waterbodies | 1, 5, 10, 16, 17, 18, 19, 20, 21, 22, 23, 24, 29, 31, 32, 40, 43, 44, 46, 54, 63, 69, 80, 82, 85 |
| **Leisler's Bat** | *Nyctalus Leisleri* | IV | √ | LC | Woodland, parks, hedgerows | 1, 5, 10, 16, 17, 18, 19, 20, 21, 22, 23, 24, 29, 31, 32, 40, 41, 42, 43, 44, 46, 49, 54, 63, 69, 80, 82, 85 |
| **Common Pipistrelle** | *Pipistrellus Pipistrellus* | IV | √ | LC | Farmland, woodland, gardens, hedgerows | 1, 5, 10, 16, 17, 18, 19, 20, 21, 22, 23, 24, 29, 31, 32, 40, 41, 42, 43, 44, 46, 49, 54, 63, 69, 80, 82, 85 |
| **Soprano Pipistrelle** | *Pipistrellus Pygmaeus* | IV | √ | LC | Woodland, parks, hedgerows | 1, 5, 10, 16, 17, 18, 19, 20, 21, 22, 23, 24, 29, 31, 32, 40, 41, 42, 43, 44, 46, 49, 54, 63, 69, 80, 82, 85 |
| **Nathusius Pipistrelle** | *Pipistrellus Nathusii* | IV | √ | LC | Woodland, mature hedgerow | 1, 5, 10, 16, 17, 18, 19, 20, 21, 22, 23, 24, 29, 31, 32, 40, 43, 44, 54, 63, 69, 80, 82, 85 |
| **Brown Long-Eared Bat** | *Plecetus Auritus* | IV | √ | LC | Woodland, parkland | 1, 5, 10, 16, 17, 18, 19, 20, 21, 22, 23, 24, 29, 31, 32, 40, 41, 42, 43, 44, 46, 49, 54, 63, 69, 80, 82, 85 |
| **Irish Hare** | *Lepus Timidus* | V | √ | LC | Grassland | 19, 27, 54, 63, 82 |
| **Red Squirrel** | *Scurius Vulgaris* | | √ | LC | Woodland | 22, 46, 82 |
| **Otter** | *Lutra Lutra* | II, IV | √ | LC | Rivers & wetlands | 1, 5, 10, 11, 16, 17, 18, 20, 21, 23, 24, 32, 43, 49, 50 68, 82 |
| **Pine Marten** | *Martes Martes* | V | √ | LC | Woodland | 13, 22, 32, 46, 82 |

| English Name | Latin Name | EU Habitats Directive | Wildlife Act 1976 & 2000 | Red List | Habitat | Relevant Actions in Biodiversity Plan |
|---|---|---|---|---|---|---|
| **Badger** | *Meles Meles* | | √ | LC | Woodland, hedgerows and grassland | 16, 17, 18, 19, 20, 22, 25, 32, 46, 54, 63, 82 |
| **Grey Seal** | *Halichoerus Grypus* | II, V | √ | | Sea and islands | 14, 56, 57, |
| **Harbour Seal** | *Phoca Vitulina* | II, V | √ | | Sea and islands | 14, 56, 57 |
| **Bottle-Nose Dolphin** | *Tursiops Truncatus* | II, IV | √ | | Sea | 56, 57 |
| **Common Dolphin** | *Delphinus Delphis* | IV | √ | | Sea | 56, 57 |
| **Harbour Porpoise** | *Phocoena Phocoena* | II, IV | √ | | Sea | 56, 57, 75 |
| **Striped Dolphin** | *Stenella Coeruleoalba* | IV | | | Sea | 56, 57 |
| **Minke Whale** | *Balaenoptera Acutorostrata* | IV | | | Sea | 56, 57 |
| **Fin Whale** | *Balaenoptera Physalus* | IV | | | Sea | 56, 57 |
| **Common Frog** | *Rana Temporaria* | V | √ | LC | Ponds and wetlands | 1, 11, 12, 16, 19, 20, 21, 23, 24, 27, 28, 32, 43, 45, |
| **Common Newt** | *Triturus Vulgaris* | | √ | LC | Ponds | 1, 11, 12, 16, 19, 20, 21, 23, 24, 27, 28, 32, 43, 45, |
| **Common Lizard** | *Lacerta Vivipara* | | √ | LC | Dunes | 12, 27, 28, 29, 32, 53 |
| **River Lamprey** | *Lampetra Fluviatilis* | II, V | | LC | River | 1, 5, 10, 16, 17, 18, 20,32, 43, 48, 49, 84 |
| **Brook Lamprey** | *Lampetra Planeri* | II | | LC | River | 1, 5, 10, 16, 17, 18, 20,32, 43, 48, 49, 84 |
| **Sea Lamprey** | *Petromyzon Marinus* | II | | NT | River | 1, 5, 10, 16, 17, 18, 20,32, 43, 48, 49, 84 |
| **Atlantic Salmon** | *Salmo Salar* | II, V | | V | River | 1, 5, 10, 16, 17, 18, 20,32, 43, 48, 49, 84 |
| **Brown Trout** | *Salmo Trutta* | | | LC | River | 1, 5, 10, 16, 17, 18, 20,32, 43, 48, 49, 84 |

***Red Data Book Abbreviations:***
*Least Concern = LC; Near Threatened = NT; Vulnerable = VU; Endangered = EN*

# Appendix V: Bee Species in Fingal

| English Name | Latin Name | National Status IUCN Category | Suggested Local Status in Fingal | Habitat | Relevant Actions in Biodiversity Plan |
|---|---|---|---|---|---|
| **Northern Colletes** | *Colletes Floralis* | VU | EN | Sand dunes | 3, 27, 53, 76 |
| **Heath Colletes** | *C. Succinctus* | LC | VU | Heathland | 12 |
| **Sand Mining Bee** | *Andrena Barbilabris* | NT | NT | sand dunes, bare sand | 3, 27, 53, 76 |
| **Heath Mining Bee** | *A. Fuscipes* | VU | VU | Heathland | 12 |
| **Mining Bee** | *A. Nigroaenea* | VU | NT | Clay banks | 54, 61, 63 |
| **Small Mining Bee** | *A. Semilaevis* | VU | VU | Heathland | 12 |
| **Mining Bee** | *A. Wilkella* | VU | VU | Sandy soils | |
| **Mining Bee** | *Lasioglossum Nitidiusculum* | DD | VU | Sandy soils | |
| **Cuckoo Bee** | *Nomada Goodeniana* | VU | EN | Clay soils | 5, 54, 61. 63 |
| **Cuckoo Bee** | *N. Rufipes* | LC | VU | Heathland | 12 |
| **Golden Osmia** | *Osmia Aurulenta* | NT | VU | Sand dunes, shingle beaches | 3, 27, 53, 76 |
| **Garden Bumblebee** | *Bombus Hortorum* | LC | NT | Grassland | 54, 61, 63 |
| **Heath Bumblebee** | *B. Jonellus* | LC | NT | Heathland | 12 |
| **Red-Tailed Bumblebee** | *B. Lapidarius* | NT | NT | Dunes and unimproved grasslands | 27, 38, 42, 53, 54, 63, 76 |
| **Large Carder Bee** | *B. Muscorum* | NT | NT | Dunes and unimproved grasslands | 27, 38, 42, 53, 54, 63, 76 |

***IUCN and Fingal Categories:***
*Least Concern = LC; Near Threatened = NT; Vulnerable = VU; Endangered = EN*

*National status based on Fitzpartrick et al, Regional Red List of Irish Bees 2006*
*Suggested local status based on Ronayne C, Ecological Study of the Coastal Habitats in Fingal Phase IV - Bees, 2006*

# Appendix VI: Protected and Important Bird Species in Fingal

| English Name | Latin Name | EU Birds Directive | Birds of Conservation Concern * | Breeding in Fingal | Wintering in Fingal | Habitat | Relevant Actions in Biodiversity Plan |
|---|---|---|---|---|---|---|---|
| **Kingfisher** | *Alcedo Atthis* | I | Amber | √ | √ | Rivers | 16, 17, 18, 20, 21, 24, 32, 43, 49, 63, 85 |
| **Little Egret** | *Egretta Garzetta* | I | Green | √ | √ | Estuary, woodland | 1, 5, 10, 66, 46 |
| **Peregrine** | *Falco Peregrinus* | I | Green | √ | √ | Cliffs, islands, quarry | 28, 29 |
| **Little Tern** | *Sterna Albifrons* | I | Amber | √ | | Beach | 1, 3, 6, 88 |
| **Roseate Tern** | *Sterna Dougalii* | I | Amber | √ | | Islands | 56, 57 |
| **Common Tern** | *Sterna Hirundo* | I | Amber | √ | | Islands | 6, 56, 57 |
| **Arctic Tern** | *Sterna Paradisaea* | I | Amber | √ | | Islands | 6, 56, 57 |
| **Hen Harrier** | *Circus Cyaneus* | I | Amber | | √ | Farmland | |
| **Short-Eared Owl** | *Asio Flammeus* | I | Amber | | √ | Grassland, farmland, islands | 1, 5, 10 |
| **Ruff** | *Philomachus Pugnax* | I | Amber | | √ | Estuary | 1, 5, 10, 66 |
| **Golden Plover** | *Pluvialis Apricaria* | I | Red | | √ | Estuary, farmland | 1, 5, 10, 15, 65, 66 |
| **Dunlin** | *Calidris Alpina* | I | Amber | | √ | Estuary, beach | 1, 5, 10, 66 |
| **Merlin** | *Falco Columbarius* | I | Amber | | √ | Estuary, islands | |
| **Gannet** | *Morus Bassanus* | | Amber | √ | | Islands | 56, 57 |
| **Razorbill** | *Alca Torda* | | Red | √ | √ | Islands | 56, 57 |
| **Black Guillemot** | *Cepphus Grylle* | | Amber | √ | √ | Islands, harbour walls | 56, 57 |
| **Guillemot** | *Uria Aalge* | | Amber | √ | √ | Islands | 56, 57 |
| **Puffin** | *Fratercula Arctica* | | Red | √ | √ | Islands | 56, 57 |

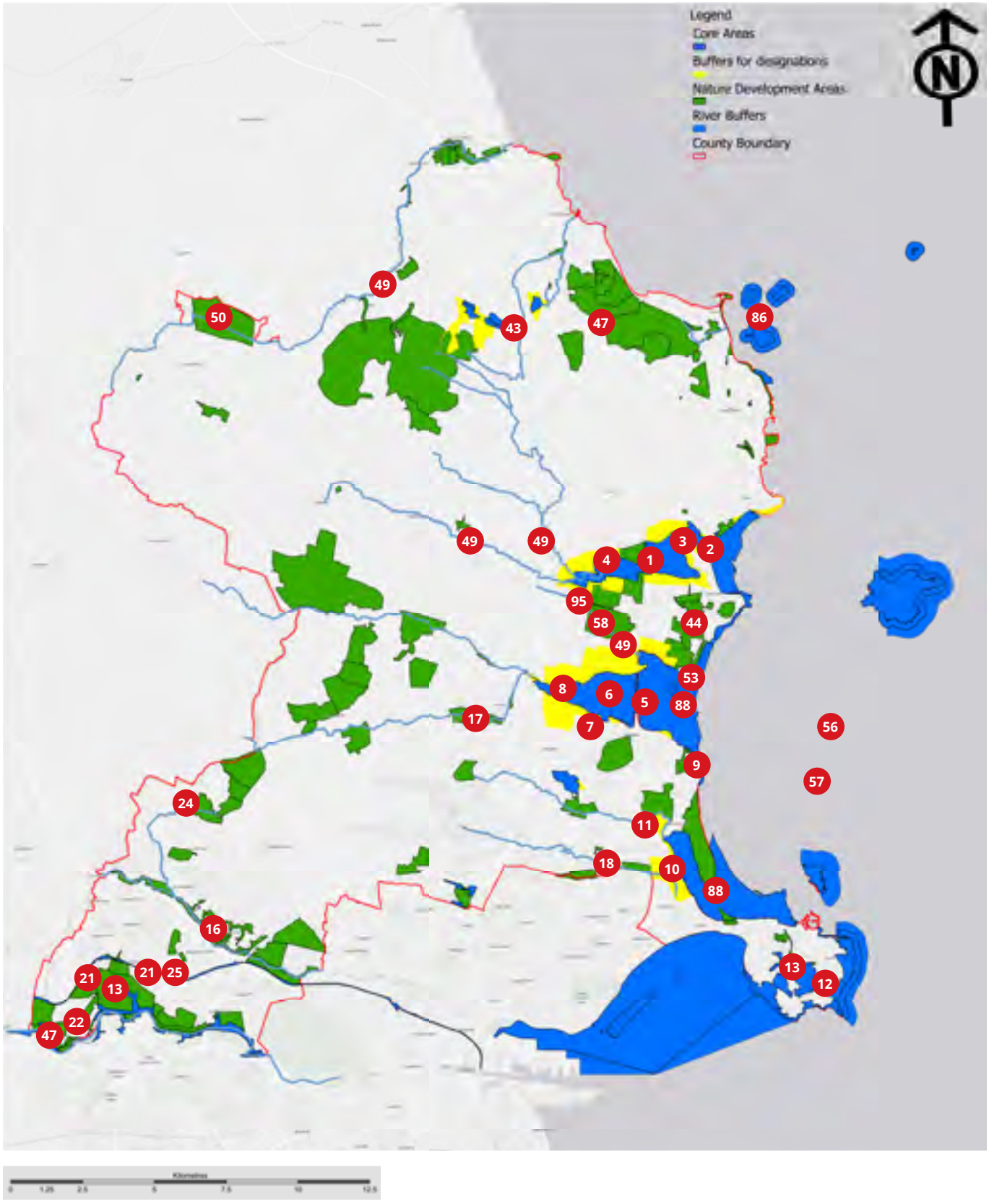
| English Name | Latin Name | EU Birds Directive | Birds of Conservation Concern * | Breeding in Fingal | Wintering in Fingal | Habitat | Relevant Actions in Biodiversity Plan |
|---|---|---|---|---|---|---|---|
| **Cormorant** | *Phalacrocorax Carbo* | | Amber | √ | √ | Islands, wetlands | 56, 57 |
| **Shag** | *Phalacrocorax Aristotelis* | | Amber | √ | √ | Islands | 56, 57 |
| **Manx Shearwater** | *Puffinus Puffinus* | | Amber | √ | √ | Islands | 56, 57 |
| **Kittiwake** | *Rissa Tridactyla* | | Red | √ | √ | Islands | 56, 57 |
| **Great Black-Backed Gull** | *Larus Marinus* | | Green | √ | √ | Islands | 1, 5, 10, 56, 57, 66 |
| **Lesser Black-Backed Gull** | *Larus Fuscus* | | Amber | √ | √ | Estuary | 1, 5, 10, 56, 57, 66 |
| **Common Gull** | *Larus Canus* | | Amber | √ | √ | Islands, estuary | 1, 5, 10, 56, 57, 66 |
| **Herring Gull** | *Larus Argentatus* | | Amber | √ | √ | Islands, beach, estuary | 1, 5, 10, 56, 57, 66 |
| **Black-Headed Gull** | *Larus Ridibundus* | | Amber | | √ | Islands, beach, estuary | 1, 5, 10, 56, 57, 66 |
| **Ringed Plover** | *Charadrius Hiaticula* | | Amber | √ | √ | Islands, beach | 1, 3, 88 |
| **Common Scoter** | *Malanitta Nigra* | | Red | | √ | Sea | 56, 57 |
| **Great Northern Diver** | *Gavia Immer* | | Amber | | √ | Sea | 56, 57 |
| **Red-Throated Diver** | *Gavia Stellata* | | Amber | | √ | Sea | 56, 57 |
| **Great-Crested Grebe** | *Podiceps Cristatus* | | Amber | | √ | Sea, wetlands | 43, 56, 57 |
| **Pintail** | *Anas Acuta* | | Red | | √ | Estuary | 1, 5, 10, 66 |
| **Shoveler** | *Anas Clypeata* | | Red | | √ | Estuary | 1, 5, 10, 66 |
| **Teal** | *Anas Crecca* | | Amber | | √ | Estuary | 1, 5, 10, 66 |
| **Wigeon** | *Anas Penelope* | | Amber | | √ | Estuary | 1, 5, 10, 66 |
| **Pochard** | *Aythya Ferina* | | Red | | √ | Estuary | 1, 5, 10, 66 |

| English Name | Latin Name | EU Birds Directive | Birds of Conservation Concern * | Breeding in Fingal | Wintering in Fingal | Habitat | Relevant Actions in Biodiversity Plan |
|---|---|---|---|---|---|---|---|
| **Goldeneye** | *Bucephala Clangu-La* | | Red | | √ | Estuary | 1, 5, 10, 66 |
| **Red-Breasted Merganser** | *Mergus Serrator* | | Amber | | √ | Estuary | 1, 5, 10, 66 |
| **Gadwall** | *Mareca Strepera* | | Amber | √ | √ | Brackish ponds, estuary | 1, 5, 10, 66 |
| **Grey Plover** | *Pluvialis Squatarola* | | Red | | √ | Estuary | 1, 5, 10, 66 |
| **Greenshank** | *Tringa Nebularia* | | Amber | | √ | Estuary | 1, 5, 10, 66 |
| **Redshank** | *Tringa Totanus* | | Red | | √ | Estuary | 1, 5, 7, 10, 15, 65, 66, 89 |
| **Bar-Tailed Godwit** | *Limosa Lapponica* | | Red | | √ | Estuary, beach | 1, 5, 7, 10, 66 |
| **Black-Tailed Godwit** | *Limosa Limosa* | | Red | | √ | Estuary, beach, farmland | 1, 5, 10, 15, 65, 66 |
| **Knot** | *Calidris Canutus* | | Red | | √ | Estuary, beach | 1, 5, 10, 66 |
| **Curlew** | *Numenius Arquata* | | Red | | √ | Estuary, farmland | 1, 5, 10, 15, 65, 66 |
| **Shelduck** | *Tadorna Tadorna* | | Amber | √ | √ | Estuary, dunes | 1, 5, 10, 66 |
| **Greylag Goose** | *Anser Anser* | | Amber | | √ | Estuary, farmland, islands | 1, 66 |
| **Brent Goose** | *Branta Bernicla* | | Amber | | √ | Estuary, farmland, islands, grassland | 1, 5, 7, 10, 15, 65, 66 |
| **Lapwing** | *Vanellus Vanellus* | | Red | √ | √ | Estuary, grassland | 1, 5, 10, 66, 81, 89 |
| **Snipe** | *Gallinago Gallinago* | | Red | √ | √ | Estuary, wetland | 1, 5, 10, 43, 66, 81, 89 |
| **Oyster-catcher** | *Haematopus Ostralegus* | | Red | √ | √ | Beach, grassland | 1, 5, 7, 10, 15, 65, 66 |
| **Sand Martin** | *Riparia Riparia* | | Amber | √ | √ | Cliff, river, quarry | 1, 12, 28, 81 |

| English Name | Latin Name | EU Birds Directive | Birds of Conservation Concern * | Breeding in Fingal | Wintering in Fingal | Habitat | Relevant Actions in Biodiversity Plan |
|---|---|---|---|---|---|---|---|
| **Tufted Duck** | *Aythya Fuligula* | | Amber | √ | √ | Lakes and ponds | 45, 91 |
| **Coot** | *Fulica Atra* | | Red | √ | √ | Lakes and ponds | 45, 91 |
| **Woodcock** | *Scolopax Rusticola* | | Amber | √ | √ | Woodland, wetlands | 1, 80 |
| **Spotted Flycatcher** | *Muscicapa Striata* | | Amber | √ | √ | Woodland, hedgerow | 22, 46, 80 |
| **Skylark** | *Alauda Arvensis* | | Amber | √ | √ | Grassland, farmland | 11, 63, 81 |
| **Meadow Pipit** | *Anthus Pratensis* | | Red | √ | √ | Grassland | 54, 63, 81 |
| **Stock Dove** | *Columba Oenas* | | Red | √ | √ | Farmland | 11, 54, 63, 81 |
| **Yellow-hammer** | *Emberiza Citrinella* | | Red | √ | √ | Farmland, hedgerow | 11, 54, 63, 81 |
| **Linnet** | *Carduelis Cannabina* | | Amber | √ | √ | Farmland | 54, 63, 81 |
| **Tree Sparrow** | *Passer Montanus* | | Amber | √ | √ | Farmland, hedgerow | 54, 61, 63, 81 |
| **Barn Owl** | *Tyto Alba* | | Red | √ | √ | Farmland | 54, 61, 62, 63, 81 |
| **Red Kite** | *Milvus Milvus* | | Red | √ | √ | Farmland | 54, 61, 62, 63, 81 |
| **Kestrel** | *Falco Tinnunculus* | | Red | √ | √ | Farmland | 54, 61 62, 63, 81 |
| **Grey Partridge** | *Perdix Perdix* | | Red | √ | √ | Farmland | 54, 61, 63, 81 |
| **Starling** | *Sturnus Vulgaris* | | Amber | √ | √ | Urban, farmland | 29, 61, 63, 69, 81 |
| **Swallow** | *Hirundo Rustica* | | Amber | √ | √ | Urban, farmland | 29, 61, 63, 69, 81 |
| **Swift** | *Apus Apus* | | Red | √ | √ | Urban, farmland, estuary | 29, 61, 63, 69 |
| **House Martin** | *Delichon Urbica* | | Amber | √ | √ | Urban | 29, 61, 63, 69 |
| **House Sparrow** | *Passer Domesticus* | | Amber | √ | √ | Urban | 29, 61, 63, 69 |

** Birds of Conservation Concern 4: 2020 - 2026*

# Appendix VII: Fingal Ecological Network with Action Plan Numbering



# Appendix VIII: Ecological Network Categories and Target Habitats and Species

| Categories | Areas | Habitats | Target species |
|---|---|---|---|
| **Core Areas - Designated Sites** | *Estuaries* | • Tidal mudflats and sandflats<br>• Coastal lagoons*<br>• Salicornia mud<br>• Spartina swards<br>• Atlantic Salt Meadows<br>• Mediterranean saltmeadows<br>• Large shallow inlets and bays | Dunlin, Little Egret, Little Tern, Kingfisher, Golden Plover, Pale-Bellied Brent Goose, Greylag Goose, Bar-Tailed Godwit, Black-Tailed Godwit, Pintail, Shoveler, Teal, Wigeon, Grey Plover, Ringed Plover, Knot, Curlew, Greenshank, Redshank, Snipe, Shelduck, Lapwing, Oystercatcher, Saltmarsh Flat Sedge, Otter |
| | *Islands* | • Vegetated sea cliffs<br>• Shingle beach | Roseate Tern, Common Tern, Arctic Tern, Manx Shearwater, Eider, Cormorant, Black Guillemot, Great Black-Backed Gull, Herring Gull, Lesser Black-Backed Gull, Common Gull, Guillemot, Gannet, Kittiwake, Puffin, Razorbill, Shag, Ringed Plover |
| | *Sand dunes* | • Embryonic shifting dunes<br>• Marram dunes<br>• Fixed dunes*<br>• Dunes with creeping willow<br>• Humid dune slacks | Hairy Violet, Lesser Centaury, Greenwinged Orchid, Bee Orchid, Green-Flowered Helleborine, Spring Vetch, Sea Bindweed, Skylark, Shelduck, Small Blue, Dark Green Fritillary And Grayling, Colletes Floralis, C. Similis, Osmia Aurulenta, Andrena Barbilabris, Bombus Lapidarius, B. Muscorum, Common Lizard |
| | *Freshwater, brackish marsh* | • Lowland oligotrophic lakes<br>• Hard Water lakes | Otter, Snipe, Kingfisher, Gadwall, Woodcock, Common Frog, Borrer's Saltmarsh Grass, Meadow Barley |
| **Core Areas - Inshore Waters** | | • Sandbanks<br>• Sea | Grey Seal, Harbour Seal, Bottle-Nose Dolphin, Common Dolphin, Harbour Porpoise, Striped Dolphin, Minke Whale, Fin Whale, Common Scoter, Great-Crested Grebe, Great Northern Diver, Red-Throated Diver |
| **Core Areas - Undesignated Annex I Habitats** | | • Annual vegetation of drift lines<br>• Perennial vegetation of stone banks<br>• Petrifying springs*<br>• Vegetated sea cliffs<br>• Calcareous grassland* | Henbane, Golden Samphire, Spring Squill, Strawberry Clover |

| Categories | Areas | Habitats | Target species |
|---|---|---|---|
| **Core Areas - Protected and Rare Plant Species** | | | Lesser Centaury, Meadow Barley, Hairy St. John's-Wort, Rough Poppy, Borrer's Saltmarsh-Grass, Hairy Violet, Wild Clary, Green-Flowered Helleborine, Bird's-Foot, Henbane, Spring Vetch, Blue Fleabane, Green Figwort, Yellow Archangel, Green-Winged Orchid, Saltmarsh Flat Sedge, Sea Bindweed, Dioecious Sedge, Golden Samphire, Common Toothwort, Curved Hard-Grass, Bee Orchid, Brackish Water-Crowfoot, Spring Squill, Strawberry Clover |
| **Bufferzones** | | • Dry calcareous grassland<br>• Wet grassland<br>• Hedgerows<br>• Ponds<br>• Embryonic shifting dunes<br>• Marram dunes<br>• Fixed dunes* | Pale-Bellied Brent Goose, Greylag Goose, Golden Plover, Black-Tailed Godwit, Curlew, Lapwing, Oystercatcher, Redshank, Snipe, Short-Eared Owl, Skylark, Meadow Pipit, Yellowhammer, Tree Sparrow, Otter, All Bats, Common Frog, Meadow Barley, Green Winged Orchid, Hairy Violet, Rough Poppy, Borrer's Saltmarsh Grass |
| **Nature Development Areas** | *Farmland* | • Field margins<br>• Hedgerows<br>• Dry calcareous, neutral or acid grassland<br>• Wet grassland<br>• Ponds | Yellowhammer, Stock Dove Linnet, Tree Sparrow, Skylark, Meadow Pipit, Grey Partridge, Barn Owl, Red Kite, Kestrel, Lapwing, Common Frog, Common Newt, Badger, All Bats, Pine Marten, Irish Hare, Andrena And Nomada Ground Nesting Bee Species |
| | *Demesnes* | • Woodland<br>• Dry neutral & calcareous grassland<br>• Hedgerows<br>• Ponds | Hairy St. John's-Wort, Yellow Archangel, Common Toothwort, Common Pipistrelle, Soprano Pipistrelle, Leislers Bat, Natterer's Bat, Whiskered Bat, Brown Long-Eared Bat, Badger, Pine Marten, Irish Hare, Spotted Flycatcher, Skylark, Meadow Pipit, Common Frog, Common Newt |
| | *Quarries* | • Dry calcareous grassland<br>• Dry acid grassland<br>• Ponds<br>• Freshwater marsh | Peregrine Falcon, Sand Martin, Common Frog, Common Newt, Orchids |
| | *Parkland* | • Dry calcareous grassland<br>• Dry neutral grassland<br>• Woodland<br>• Hedgerows<br>• Freshwater marsh<br>• Ponds | Otter, Common Pipistrelle, Soprano Pipistrelle, Leislers Bat, Natterer's Bat, Whiskered Bat, Brown Long-Eared Bat, Badger, Irish Hare, Skylark, Kingfisher, Common Frog, Common Newt |

| Categories | Areas | Habitats | Target species |
|---|---|---|---|
| **Nature Development Areas (cont.)** | *Golf courses* | • Dry calcareous grassland<br>• Dry neutral grassland<br>• Woodland<br>• Hedgerows<br>• Ponds<br>• Freshwater marsh | Common Pipistrelle, Soprano Pipistrelle, Leislers Bat, Natterer's Bat, Whiskered Bat, Brown Long-Eared Bat, Badger, Irish Hare, Skylark, Common Frog, Common Newt |
| | *Waterbodies* | • Open water<br>• Reedbeds<br>• Freshwater marsh<br>• Ponds<br>• Wet grassland<br>• Scrub | Otter, Coot, Snipe, Tufted Duck, Common Frog, Common Newt |
| | *New woodland* | • Native woodland<br>• Alluvial woodland | Hairy St. John's-Wort, Yellow Archangel, Common Toothwort, Common Pipistrelle, Soprano Pipistrelle, Leislers Bat, Natterer's Bat, Whisk-Ered Bat, Brown Long-Eared Bat, Badger, Pine Marten, Spotted Flycatcher |
| **Ecological Corridors** | *River and floodplains* | • Alluvial woodland<br>• Wet grassland<br>• Freshwater marsh<br>• Willow scrub<br>• Floating river vegetation | Otter, All Bats, Kingfisher, Dipper, Sand Martin, Atlantic Salmon, Brown Trout, River or Brook Lamprey, Common Frog, Common Newt, Green Figwort |

# Appendix IX: Planning Requirements Ecological Network - Core Sites

### *Special Area of Conservation (SAC's) and Special Protection Area (SPA)*

The Habitats Directive requires that the impacts of any plans or projects likely to affect Natura 2000 sites are assessed by the planning authority. This process is known as Appropriate Assessment. Appropriate Assessment means an assessment, based on best scientific knowledge, of the potential impacts of a plan or project, wherever located, on the conservation objectives of any Natura 2000 site and the development, where necessary, of mitigation or avoidance measures to preclude negative effects. The impacts assessed must include the indirect and cumulative impacts of approving the plan or project.

While the responsibility for carrying out Appropriate Assessment lies with the Planning Authority, applicants must provide enough supporting information with a planning application to enable the authority to complete the screening process and full Appropriate Assessment if screening cannot exclude significant effects on Natura 2000 sites. For projects requiring an Appropriate Assessment it is the responsibility of the project proponents to have a Statement for Appropriate Assessment prepared for submission to the planning authority as part of the planning application. To ensure that Appropriate Assessments are based on best scientific knowledge, those preparing Statements for Appropriate Assessment must have sufficient expertise and experience in relation to the ecological or other (e.g. hydrological) issues concerned and demonstrate an appropriate regard for the latest and most appropriate scientific methodology and assessment procedures. Those preparing Statements for Appropriate Assessments should consult the guidance issued by the Department of the Environment, Heritage and Local Government Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (Department of Environment, Heritage and Local Government 2010 revision) and relevant EU Guidance documents.

The County Council will consult with the Prescribed Bodies, and other Government agencies where appropriate, when considering plans or projects which are likely to affect Natura 2000 sites (or those sites proposed to be designated as Natura 2000 sites). In accordance with Article 6(3) of the Habitats Directive, the Council will normally only grant permission in cases where it is clearly demonstrated that a proposed development, either individually, or in combination with other plans and projects, will not adversely affect the ecological integrity of a Natura 2000 site or sites. Following a finding that a proposed development will adversely affect the integrity of a Natura 2000 site, planning permission may only be granted in exceptional cases, where there are no other alternatives, and the project is required for imperative reasons of over-riding public interest subject to the strict requirements of Article 6(4) of the Habitats Directive.

### *Natural Heritage Areas and Sites with Annex I Habitats*

Fingal has 13 sites within the county that are proposed Natural Heritage Areas under the Wildlife Act 1976. Most of these are wetland sites or geologically important areas, which are very important in a national context. Many of these sites also overlap with the EU Habitat and Bird Directive designations described in the previous appendix.

There are several sites outside the Special Areas of Conservation with habitats that are listed in Annex I of the Habitats Directive such as Embryonic shifting dunes, Marram dunes, fixed dunes*, shingle and gravel banks and shores, orchid rich grasslands*, petrifying springs*, and vegetated sea cliffs. These habitats are threatened in the EU and some of them are in danger of disappearing completely from the EU and elsewhere in the world.

Fingal is fortunate to have some of these unique habitats within the county, but it also means that we have an international responsibility to make sure that these habitats are protected.

Because of the national and international importance of these sites, the planning process seeks to protect these sites from adverse developments and improve the nature conservation status of the site where possible. Accordingly, where development (incl. waste permits) is proposed within pNHA's or Annex I habitats, the applicant is required to submit an ecological assessment to establish if the proposed development is likely to have a detrimental impact on the integrity of the site, habitat and any protected species within the Natural Heritage Area or Annex I habitat. To ensure that Ecological Assessments are based on best scientific knowledge, those preparing the Ecological Assessment must have sufficient expertise and experience in relation to the ecological or other (e.g. hydrological) issues concerned and disclose an appropriate regard for the latest and most appropriate scientific methodology and assessment procedures.

The County Council will consult with the Prescribed Bodies, and other Government agencies where appropriate, when considering plans or projects which are likely to affect the Natural Heritage Areas and habitats listed in the Annex I of the EU Habitats Directive.

Planning permission will normally only be granted where it is clearly demonstrated that a proposal will have no significant adverse impact on the ecological integrity of the Annexed habitats or pNHA's. Where development is permitted, the development proposer may be asked by the planning authority to undertake habitat protection or improvement works to enhance the conservation status of the NHA or Annexed habitat.

** priority habitats because their global distribution largely falls within the EU and they are in danger of disappearance.*

# Appendix X: Planning Requirements Ecological Network - Protected Plant & Animals

Certain plant, animal and bird species are protected by law. This includes plants listed in the Flora Protection Order, 2015 and their habitats, birds listed in Annex 1 of the Birds Directive and animals and birds listed in the Wildlife Act, 1976 & 2000 and subsequent statutory instruments. In addition, strict protection under the Habitats Directive applies to the species listed in Annex IV of that Directive, including all Bat species, the Otter, and all Cetaceans. Where Annex IV species are present all possible measures must be taken to avoid damage and disturbance to these species when preparing proposals for development. Where the risk of damage or disturbance is unavoidable an application for a derogation license may be made to the Minister for the Environment, Heritage and Local Government under Regulation 23 of the Habitats Regulations 1997 (S.I. 94/1997). This should take place in advance of seeking planning permission for the proposed development.

The planning process will seek to protect and enhance species protected by law and their habitats. Applicants must demonstrate that proposals will not have a significant adverse impact on protected species and their habitats. This can often be done by avoiding adverse impacts - for example, by redesigning the proposed development to exclude impacts on protected species and their habitats or by ensuring that development takes place outside the breeding season. In some cases, it may be appropriate to provide alternative roosts (for bats, for example), or to provide suitable habitat elsewhere. In some cases, it may be necessary to re-locate the proposed development.

Consultation with the Prescribed Bodies, and appropriate Government agencies, will take place when considering undertaking, approving or authorising development which is likely to affect species listed in Annex IV of the Habitats Directive, Annex I of the Birds Directive or the Flora Protection Order. In the case of species listed in Annex IV of the Habitats Directive applications for planning permission must be accompanied by a copy of the application for a derogation license made to the Minister for the Environment, Heritage and Local Government. The Planning Authority shall take account of the views of the Prescribed Bodies and any licensing requirements in relation to protected species.

An ecological impact assessment shall be required for any proposed development likely to have a significant impact on species protected by law and their habitats. The Council will normally only grant permission where it is clearly demonstrated that a proposal will have no significant adverse impact, incapable of satisfactory avoidance or mitigation, on the species of interest and associated habitat(s).

# Appendix XI: Planning Requirements Ecological Network - Buffer Zones

To ensure the protection of our nationally and internationally designated sites and the associated flora & fauna species and to comply with Habitat Directive regulations the following requirements apply where development is proposed within the buffer zones:

- Within the buffer zones of the three EU designated estuaries, all proposed developments shall be subject to an Appropriate Assessment Screening procedure. A full AA assessment is required where a potential impact on the designated site has been identified (see appendix XIIa for more details on the appropriate assessment).
- All proposed developments within the buffer of the Bog of the Ring and Sluice River Marsh pNHA's shall be subject to a hydrological impact assessment to establish whether the development may have an impact on the hydrology and chemical composition of the surface and groundwater that feeds these wetlands. This hydrological assessment is particularly important around the Bog of the Ring to protect the supply of drinking water extracted from the area.

The County Council will consult with the Prescribed Bodies, and other Government agencies where appropriate, when considering plans or projects which are likely to affect the designated sites. In accordance with Article 6(3) of the Habitats Directive the Council will normally only grant permission in cases where it is clearly demonstrated that, a proposed development either individually, or in combination with other plans and projects, will not adversely affect the ecological integrity of a Natura 2000 site or sites. Following a finding that a proposed development will adversely affect the integrity of a Natura 2000 site planning permission may only be granted in exceptional cases, in the absence of any alternatives, for imperative reasons of overriding public interest subject to the strict requirements of Article 6(4) of the Habitats Directive. Where planning permission is granted, the applicant may be requested by the planning authority to provide land for actions or implement management measures that are outlined in the masterplans that shall be prepared for the Special Areas of Conservation and their surrounding buffers.

If a proposed development is found to have a hydrological impact on the Bog of the Ring or Sluice River, the applicant will be requested to amend the proposal to ensure that no impacts occur. The Council will normally only grant permission in cases where it is clearly demonstrated that, a proposed development will not adversely affect the ecological integrity of these wetland sites. It is particularly important that sewage from the proposed development is adequately treated before allowed seeping into the ground and that nutrient flows on the farm holdings are balanced to protect the surface and groundwater quality of the pNHA's.

# Appendix XII: Planning Guidelines Ecological Network - Nature Development Areas and Corridors

Where landowners within the Green Infrastructure Network wish to develop or re-develop their property, the County Council will request the applicants to retain existing natural features as much as possible. This will protect the existing wildlife on the site and enhance the nature conservation interest of the lands within the ecological network. The following planning guidelines apply:

1. **Identify the most important wildlife features and incorporate these features as part of the development.** The aim should be to avoid an overall loss in acreage of natural habitats and maintain the existing wildlife corridors. This will conserve the existing wildlife value of the area and will provide a basis for improving the nature conservation interest of the site.

2. **Design the footprint of the development to avoid impacts on areas of biodiversity value.** Locate developments in areas of low biodiversity interest. Brownfield sites improved agricultural grassland and arable lands often have a low biodiversity value and are generally most suitable for development.

3. **Cluster development elements (e.g., buildings, sheds, parking areas) to leave larger natural areas.** Locating structures close together can save time and money on development and maintenance and helps to keep large areas of the property in a natural state. Avoid bi-secting habitat patches with roads, fairways, or paths. Instead, place these features along the perimeter of a habitat patch where possible.

4. **Avoid developments within the 48m buffer of the river corridor or in a floodplain of the Liffey, Tolka, Pinkeen, Mayne, Sluice, Ward, Broadmeadow, Ballyboughal, Corduff, Matt and Delvin.** This will ensure that the corridor function of the river and adjacent lands is protected, and that movement of flora and fauna is not compromised.

5. **Use wetland features for water treatment.** Reedbeds and ponds are natural filter systems and can be located at outfalls of drainage systems and septic tanks to intercept any fertilizers, pesticides and nutrients that have been washed out of the soil. Where reedbed systems are used to treat the effluent of septic tanks it is important to use a liner to prevent polluted water draining into the soil before it is fully treated in the reedbed.

# Appendix XIII: Planning Requirements - Nature Development Areas

There is a range of habitat creation and management options that can be implemented to improve the wildlife value of the nature development areas. However, specific planning requirements only apply to Quarries, Golf Courses and Demesnes. It is recommended that all applicants consult with the Biodiversity Officer to discuss the content of any management plans and the funding supports available to prepare these plans.

| | | |
|---|---|---|
| **Quarries** | - | Requirement 1 |
| **Golf Courses** | - | Requirement 2 |
| **Demesnes** | - | Requirement 3 |
| **Farmland** | - | No specific planning requirements |
| **Parkland** | - | No specific planning requirements |
| **Waterbodies** | - | No specific planning requirements |
| **Woodland Opportunity areas** | - | No specific planning requirements |

1. **Prepare and implement Biodiversity Management Plan for Quarry.** This audits the habitat and species present in and around the quarry, identifies local and national priority habitats and species, and provides a framework to maximise site biodiversity during the extraction phase and restoration afterwards. The Council can provide a 75% contribution of the cost of the preparation of a Biodiversity Management Plan should the applicant wish to avail of that.

2. **Prepare and implement an ecological management plan for the golf course.** This plan would guide any nature conservation and environmental efforts on the golf course. It would give an overview of the existing wildlife and habitat resource within the golf course and shall include a list of actions on how the golf course can be improved for wildlife and how the various habitats can be connected. The Council can provide a 75% contribution of the cost of the preparation of an ecological management plan should the applicant wish to avail of that.

3. **Prepare and implement an ecological management plan for the Demesne.** This plan would guide any nature conservation efforts at private and public demesnes. It would give an overview of the existing wildlife and habitat resource within the demesne and shall include a list of actions on how the demesne can be improved for wildlife. The Council can provide a 75-100% contribution of the cost of the preparation of an ecological management plan should the applicant wish to avail of that.

# Appendix XIV: Planning Requirements - Corridors

Ecological corridors are linear landscape features such as rivers and hedgerows that facilitate the movement of wildlife through the landscape. Stepping stones are located along these corridors and comprise a series of smaller landscape features such as small woodlands, areas of scrub, wet grassland and marshes. The key corridors in Fingal are located along the main rivers, including their floodplains and the adjacent farmland or parkland. Within urban areas the Council aims to protect, develop and enhance terrestrial urban ecological corridors along existing linear features such as hedgerows.

The Council will normally only grant planning permission where it is clearly demonstrated that a proposal will not adversely affect the habitats and/or species of interest in the corridor or compromise its function as an ecological corridor. Proposals for development affecting these areas should also seek to enhance the ecological values of the corridor or stepping stone as an integral part of the proposal. An ecological assessment may be required for any proposed development likely to have a significant impact on habitats and species of interest in an ecological corridor or stepping stone It is recommended that applicants consult with the Biodiversity Officer to assess which design options are most appropriate at their site.

### *River Corridors*

The river corridors are a minimum of 48m wide on either side of the river. Where the floodplain is wider than 48m, the ecological corridors shall follow the line of the flood zone. The 96m width extends along the main channel of the all main rivers in Fingal. Tributary streams will have a buffer zone of 10m on either side of the stream. The corridor includes the river and the floodplain habitat as well as adjoining terrestrial habitats such as hedgerows and farmland. The purpose of these corridors is to protect the habitat of typical riverine species such as Otter, Trout & Salmon, Kingfisher, Dipper and Bats and to ensure free movement of terrestrial wildlife through the countryside and urban areas. Potential enhancement works along the river corridors include the restoration of meandering river channels and floodplain habitats such as marshland, alluvial woodland, scrub and wet grassland with pools. Bankside tree planting and species conservation actions can be taken too such as building an Otter holt, Kingfisher bank, or adding a 100m of gravel and pool areas in the stream for Trout & Salmon. Exclusion fencing should be installed where livestock is poaching the riverbanks to prevent the loss of land and bank erosion.

Any new bridge or culvert developments across the main rivers shall include mammal passes to ensure that mammals such as Otter can pass underneath road infrastructure. Engineered bank protection measures should be avoided.

### *Urban Corridors*

The urban terrestrial ecological corridors shall be a minimum of 25m wide and comprise of a mixture of hedgerow, scrub, rank grassland, wildflower meadow, ponds, marshland and dead timber. These terrestrial corridors will provide a suitable habitat or feeding ground for a range of species such as Swift, House Martin, House Sparrow and Starling, Hedgehogs, Bats, Amphibians and many insects, such as Dragonflies, Butterflies, Bees, Hoverflies, Spiders and Beetles. The design should be as sinuous and irregular as possible to create a variety of environmental conditions e.g. sunny & shady, windy-calm, wet-dry. Where a continuous corridor through an urban area is not possible, the stepping stone approach of habitat patches at regular intervals may provide a suitable alternative. SUDS measures such as ponds and wetlands are encouraged to be incorporated into the ecological corridors. The ecological corridors can be part of the Open Space provision and provide an attractive natural feature in the estate. Natural play features can be incorporated within the ecological corridor, as long as natural habitat is incorporated in the design of the play area. Buildings nearby will incorporate Swift, House Sparrow, Starling and bat boxes to provide birds and bats with suitable nesting, resting and breeding accommodation.

The narrower ecological corridors should connect to larger ecologically important areas to allow species to move through a wider landscape. These connections to nearby parkland and nature conservation areas are also to benefit the local community by incorporating walking and cycling routes in the design of the corridors. Where recreational co-use of the ecological corridor is proposed it should be located on only one side of the ecological corridor, to reduce the disturbance impact of recreational use on wildlife (dog walking in particular).

**Comhairle Contae Fhine Gall**
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