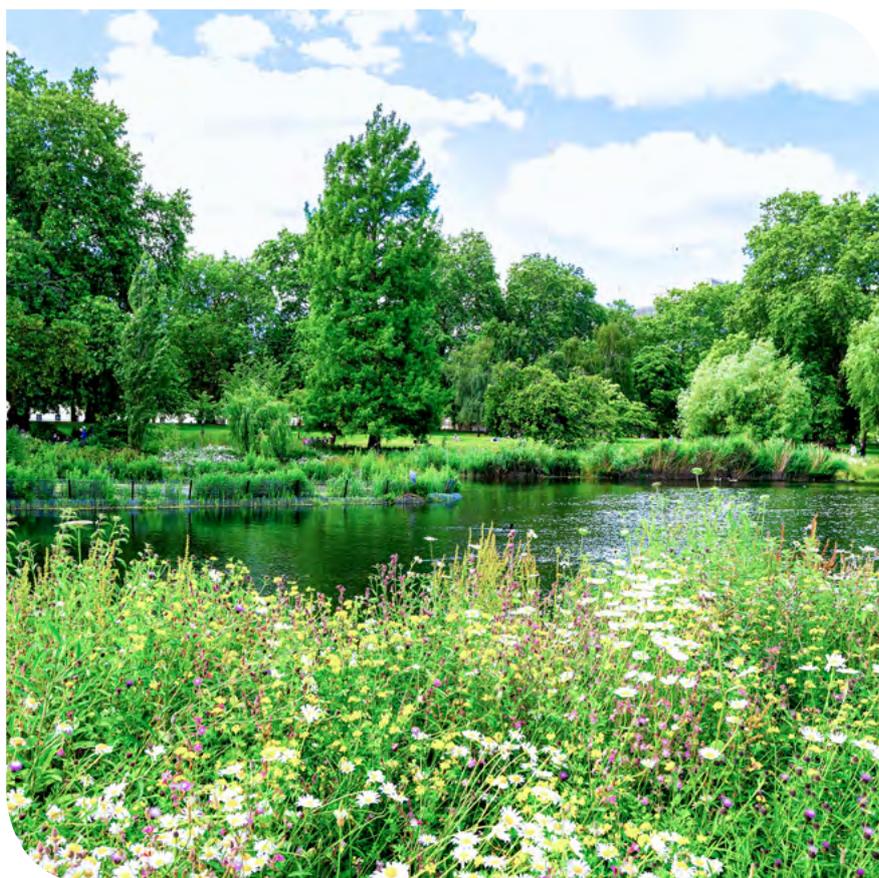


Irish Water's Biodiversity Action Plan

Embedding Biodiversity into Water Services



Contact us

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Executive Summary

Protection of the ecosystems in which we live and work is fundamental to Irish Water's business. Irish Water manages infrastructure that is located within a range of habitats, and our infrastructure often interacts directly with freshwater, estuarine, marine and terrestrial habitats through the abstraction of drinking water or the discharge of treated wastewater.

In recent years, it has become increasingly apparent that many species are being lost at an unprecedented rate. This is happening at national, European and global levels. In 2019, with many countries failing to meet targets set to reduce biodiversity loss, the Irish Government declared a 'biodiversity emergency', prompting an increased focus across all sectors in developing actions to protect biodiversity.

Irish Water recognises the need to urgently increase and accelerate efforts to halt the decline of biodiversity. We are committed to ensuring that we build and manage our infrastructure responsibly so that our ecosystems are protected, and where possible enhanced. We have developed a Biodiversity Action Plan (BAP) to help us to conserve, enhance and work with the natural environment. This plan clearly outlines our high-level strategic aims and the actions we will be taking to achieve them. The plan will also ensure that biodiversity is valued and is an integral factor in decision-making processes across the business. The plan will be reviewed and updated every five years in line with the company's periodic review.

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1. Introduction

Irish Water is Ireland's national water utility, responsible for providing water and wastewater services throughout the country. We supply drinking water to around 80% of the public (3.3m people), the equivalent of approximately 1.7 billion litres of drinking water each day. We collect wastewater from over 1,000 separate communities and treat 1.6 billion litres of wastewater daily, before we safely discharge it back into our rivers, estuaries and coastal areas.

Our mission is to ensure that all of our customers receive a safe, secure and sustainable supply of drinking water, and that wastewater is treated and safely returned to the environment. As identified in our Water Services Strategic Plan, under the objective of protecting and enhancing the environment, we are committed to building and managing our infrastructure so that our ecosystems are protected, and where possible enhanced. Our ability to take drinking water from the environment, and to return treated wastewater, requires a healthy and sustainable functioning ecosystem, fundamentally supported by a diversity of plant and animal life.

1.1 Biodiversity

'Biological diversity' or biodiversity is defined as the variety of all forms of life, from genes to species, through to the broad scale of ecosystems. The term biodiversity includes all life on earth. The inter-relationships between living species are highly complex and unique to different environments: if one species is lost, other species that depend on it directly or indirectly are also threatened.

Ireland has a rich diversity of ecosystems and wildlife in its land, freshwater and marine environments. More than 31,000 species have been recorded in Ireland: this includes over 28 species of land mammal, approximately 400

species of bird, more than 4,000 plant species, and in excess of 12,000 species of insect. It is estimated that there are at least 7,000 species of algae and fungi that have yet to be discovered in Ireland. Much of Ireland's richest biodiversity can be found in the marine environment where there are high numbers of whale and dolphin species, large seabird breeding colonies and cold-water coral communities in the deep seas. Ireland has a wide diversity of habitats including 58 Annex I habitats, of which 16 are priority habitats, as designated under the EU Habitats Directive (92/43/EEC). Our inland waterways (rivers, streams, lakes, ponds and wetlands) support internationally significant populations of threatened species in Europe, such as the Atlantic salmon, white-clawed crayfish and freshwater pearl mussel.

Healthy ecosystems provide a series of benefits for humans. These include the provision of food, materials, clean water, clean air, climate regulation, flood prevention, pollination, recreation and well-being. Healthy ecosystems are viewed as 'natural capital', while the services provided are considered 'ecosystem services'. An example of an ecosystem service provided to the agriculture sector in Ireland is nutrient cycling by soil organisms. This service is estimated to be worth approximately €1 billion each year¹.

¹ Bullock C, Kretsch C and Candon E, *The Economic and Social Aspects of Biodiversity Benefits and Costs of Biodiversity in Ireland*, 2008, doi:ISBN 978-1-4064-2105-7.

Introduction (continued)



1.2 Benefits of Biodiversity

The provision of sustainable water and wastewater services relies on functioning natural and biodiverse ecosystems. The benefits of the ecosystem services provided by biodiversity are evident for Irish Water in protecting the quality of our drinking water, or in the provision of wetland-based wastewater treatment. All of our sites, projects and activities interact with the ecosystems in which they are located. For example: supporting a meadow or woodland habitat within a site will reduce that site's overall operational needs; allowing natural wetland or riverside vegetation to flourish may reduce the risk of flooding; while effectively managing invasive species reduces both potential damage to infrastructure and health.

Working in partnership with other public bodies and with the local community to support ecosystem services can prove hugely beneficial. The protection or enhancement of a small area of a river, grassland, hedgerow or woodland will not only protect but further develop local biodiversity.

1.3 Biodiversity Threats

In Ireland, many habitats and species have declined over recent decades as the environment has come under increasing pressure from development, changing farming practices and climate change. The main threats to biodiversity include:

- Habitat change
- Over-exploitation
- Pollution
- Invasive alien species
- Climate change

Each of these threats are discussed in detail in Table 1 opposite.

	Threat	Description
	Habitat Change	Although Ireland's landscape and habitats have been modified by human activity, the pace and scale of change rapidly accelerated in the late 20th century. The rapid development of housing, roads and other infrastructure, including water services, in our towns and countryside, together with major changes in agricultural practices, have led to significant destruction, fragmentation and loss of habitats.
	Over-exploitation	Agriculture and forestry accounts for over 70% of Ireland's total land usage. Increased fertiliser and pesticide use has had a devastating impact on the natural environment. Overfishing has resulted in direct and indirect effects on our marine ecosystem.
	Water Quality (Pollution)	<p>The River Basin Management Plan (Second Cycle) identifies that the principal pressures on water quality in Ireland are agriculture, wastewater, hydromorphology and forestry.</p> <p>In ecological terms, higher nutrient levels stimulate the growth of aquatic plants, especially algae, which limits sunlight penetration and photosynthesis. This leads to a reduction in the oxygen levels of affected waters. Ultimately, these limitations in the available levels of sunlight and oxygen reduce the diversity of plant and fish life that the affected waters can sustain. In addition, some of the algae associated with higher nutrient levels (i.e., eutrophication) can produce toxins that are harmful to both humans and animals.</p>
	Invasive Alien Species	Alien species are non-native plants or animals that have been introduced to Ireland. Alien species become 'invasive' when they spread rapidly, outcompeting and pushing out native flora and fauna. The most significant invasive species in Ireland include Japanese knotweed (<i>Falopia japonica</i>), giant hogweed (<i>Heracleum mantegazzianum</i>) and Himalayan balsam (<i>Impatiens glandulifera</i>); these are listed in the European Communities (Birds and Natural Habitats) Regulations 2011. Many of these are located along watercourses, and hence are a particular concern for Irish Water.
	Climate Change	<p>Climate change can affect our habitats and species in a number of ways. Changes in environmental conditions can impact on the breeding bird population of Ireland – for example, droughts or floods at sub-Saharan African wintering grounds. Similarly, warmer weather conditions in the Arctic may lead to changes in the numbers of birds wintering in Ireland. The increasingly early flowering of trees, shrubs and other plants has a negative effect on insects and their avian predators.</p> <p>Rising sea levels and unforeseen weather events due to climate change put extra pressure on our rivers and coastal habitats, resulting in an increase in the extent, severity and recurrence of flooding, and the rate of coastal erosion. Heavier rainstorms in winter lead to frequent flash flooding, thus increasing pollution loads from soil run-off.</p>

Table 1: Threats to biodiversity

02



2. The Biodiversity Crisis

2.1 Global Context

Over-consumption and higher demands on energy, land and water places extraordinary pressure on our environment. This directly impacts our biodiversity, leading to declines in species on a global scale. Loss of biodiversity worldwide is accelerating the wide acceptance of the need to coordinate action for biodiversity on a global scale.

Following the establishment of the Biological Diversity Convention in the early 1990's, many countries came together to agree strategies and action plans to address biodiversity loss. To date, targets aimed at halting biodiversity loss have not been met, and biodiversity continues to decline throughout the world at a rate only previously seen during mass extinctions. In addition to species loss, population sizes are in decline. Aspects of biodiversity critical for food security,

such as soil health and pollinator populations, are increasingly under threat.

The IPBES Global Assessment Report on Biodiversity and Ecosystem Services (2019) – the most comprehensive report on biodiversity completed to date – found that approximately 1 million animal and plant species are now threatened with extinction, many within decades. This is more than ever before in human history. The report highlighted the following:

'The average abundance of native species in most major land-based habitats has fallen by at least 20%, mostly since 1900. More than 40% of amphibian species, almost 33% of reef forming corals and more than a third of all marine mammals are threatened. The picture is less clear for insect species, but available evidence supports a tentative estimate of 10% being threatened. At least 680 vertebrate species had been driven to extinction since the 16th century and more than 9% of all domesticated breeds of mammals used for food and agriculture had become extinct by 2016, with at least 1,000 more breeds still threatened.'

IPBES Global Assessment Report on Biodiversity and Ecosystem Services (2019)

In September 2015, the United Nations General Assembly adopted the 2030 Agenda for Sustainable Development. The 2030 Agenda includes 17 Sustainable Development Goals (SDGs) and 169 targets. Building on the principle

of 'Leaving no one behind', the new Agenda emphasises a holistic approach to achieving sustainable development for all.

The Biodiversity Crisis (continued)



Figure 1: United Nations Sustainable Development Goals (un.org)

The SDGs include two objectives particularly relevant for biodiversity:

Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development.

Goal 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

The Convention on Biological Diversity and the United Nations SDG's provide the global context for continued efforts to address biodiversity loss.

2.2 European Context

The EU Biodiversity Strategy for 2030 will put Europe's biodiversity on the path to recovery by 2030, for the benefit of people, climate and the planet. Climate change, the unprecedented loss of biodiversity, and the spread of devastating pandemics are sending a clear message: it is time to fix our broken relationship with nature.

Why the EU protects biodiversity:

- Biodiversity is essential for life. Our planet and the economy both depend on it. When nature is healthy, it protects and provides.
- Biodiversity and ecosystems provide us with food, health and medicines, materials, recreation, and well-being. They filter our air and water, help keep the climate in balance, convert waste back into resources, pollinate and fertilise crops, and do much more.
- Nature provides for businesses. Half of global Gross Domestic Product – €40 trillion – depends on nature. We are losing nature like never before because of unsustainable human activities.
- The global population of wild species has fallen by 60% over the last 40 years. One million species are at risk of extinction.
- Biodiversity loss and the climate crisis are interdependent, and they exacerbate each other. Restoring forests, soils and wetlands, and creating green spaces in cities is essential to achieve the climate change mitigation needed by 2030.

The new EU-wide biodiversity strategy will:

- Unlock €20 billion per year for biodiversity through various sources, including EU funds, and national and private funding. Natural capital and biodiversity considerations will be integrated into business practices.
- Put the EU in a leading position in addressing the global biodiversity crisis. The UN Commission will mobilise all tools of external action and international partnerships for an ambitious new UN Global Biodiversity Framework at the Conference of the Parties to the Convention on Biological Diversity in 2021.

2.3 Irish Context

The National Biodiversity Action Plan 2017–2021 sets out the government's vision: 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 National Biodiversity Action Plan aligns with the EU Biodiversity Strategy and the Convention on Biological Diversity.

Ireland has a strong history of biological recording and monitoring, enabling recent declines in biodiversity to be quantified. The National Biodiversity Data Centre (NBDC) manages schemes aimed at monitoring long-term trends in biodiversity, and reports on 52 key biodiversity indicators.

Between 1990 and 2015, butterfly populations in Ireland have declined by 30%, and 7 of our 20 bumble bee species are under threat of extinction. The National Parks and Wildlife Service (NPWS) have monitoring obligations under the Habitats and Birds Directives for designated habitats and species. The most recent monitoring report published in 2019 found that 85% of designated habitats and 30% of designated species are at inadequate or poor status, with 46% of habitats and 15% of species showing a declining trend. Birdwatch Ireland has identified significant declines from long-term monitoring datasets on Irish bird populations. Analysis of the Irish wetland bird surveys, for example, shows that Ireland has lost around half a million water birds, almost 40%, in under 20 years.

In 2019, the Irish Government declared a national climate change and biodiversity emergency to highlight significant concerns around Ireland's biodiversity, recognising the urgency to act on these interconnected global crises.

National Biodiversity Action Plan 2017–2021



03



3. Irish Water and Biodiversity

Biodiversity protection is a key part of Irish Water's Biodiversity and Sustainability Policies. We are committed to complying with all relevant environmental legislation, at both European and national levels.

Irish Water has developed a number of overarching strategies for conserving, enhancing and working with the natural environment. The overall aim of Irish Water's Biodiversity Policy is:



In association with the provision of water and wastewater services, biodiversity and the natural environment are conserved, protected and where practical enhanced, through our responsible stewardship, sustainable water services and strong partnerships.

In order to deliver a clear set of biodiversity objectives and actions, Irish Water's Biodiversity Action Plan (BAP) has been guided by the following overarching objectives:

- Ensure no net loss of biodiversity as a result of Irish Water activities, projects or plans. Follow the mitigation hierarchy by avoiding impacts in the first instance, before seeking to reduce, improve or compensate. Actively seek opportunities for biodiversity net gain by identifying opportunities for biodiversity enhancement at both existing and proposed Irish Water sites.
- Develop a community of staff/personnel who are informed and can easily access the appropriate information in relation to biodiversity and the expertise they require to support them.
- Collaborate with external stakeholders to deliver biodiversity benefits at local, regional and national scales. Work collaboratively with relevant public/private organisations and local communities to support healthy ecosystems that can deliver ecosystem services.



Further information and supporting documentation on the legislation for biodiversity protection can be found in Appendix E.

Irish Water and Biodiversity (continued)

3.1 Engagement and Education

Irish Water is proud to support a number of community sponsorships and regularly engage with the wider community on a number of educational initiatives to increase environmental awareness, including: Green Schools, Walk for Water events, Beach Cleans, the Green Flag Award, Science Week, and the Water Stewardship Training Programme.

As part of this plan, we regularly and proactively engage with local communities and our key stakeholders using a number of communication channels, including press releases to local/regional news publications, direct email updates, social media updates (LinkedIn, Twitter, Facebook), the Irish Water website, and elected representative/local authority updates.

“ Irish Water are proud to support a number of community sponsorships and regularly engage with the wider community on a number of educational initiatives to increase environmental awareness. ”



Take simple steps to increase biodiversity

Even small actions can have a big impact

UISCE
STREAMS • RIVERS • WATER

Reduce mowing and grow a grassland area

- Mow only after mid-April with 5 cuts thereafter.
- Set mowing height above 3 inches.
- Lift grass cuttings and compost.
- Mowing 'paths' through grass areas and edges is ok. This allows a variety of plants to develop including dandelions and clover.

Reduce weeding and use of pesticides

- Many weeds are native wildflowers.
- Make some space for nature on our sites.

Sow a wildflower meadow

- A meadow only needs 1 or 2 cuts and lift per year.
- Our ecologists can help with advice on sowing wildflower seeds.

Manage a hedgerow for wildlife and plant diversity

- Do not trim hedgerows every year.
- Use native species if planting new trees.
- Leave deadwood on site as a valuable habitat.

Install bird and bat boxes where appropriate

Plant native trees to support local wildlife

For more information please see the Biodiversity Action Plan at water.ie/biodiversity or contact biodiversity@water.ie

Irish Water Biodiversity Poster



04



4. Irish Water's Biodiversity Action Plan

4.1 Objectives

Irish Water's Biodiversity Action Plan (BAP) details specific objectives and actions to address the biodiversity emergency. These objectives and actions align with Irish Water policy-level strategic objectives, and have been developed in such a way that they can be implemented immediately. The plan will be reviewed and updated every five years in line with the company's periodic review.

The following key objectives have been identified:



Issue all Irish Water sites with a clear set of measures that will enhance and protect biodiversity.



Raise awareness and provide educational supports on biodiversity to Irish Water staff and its partners.



Ensure 'no net loss' of biodiversity when carrying out activities, or delivering plans or projects.



Implement actions arising from the All-Ireland Pollinator Plan across all Irish Water sites, to support and increase our pollinator population.



Promote the use of nature-based solutions for water protection and wastewater treatment.



Manage invasive alien species at Irish Water sites.



Collaborate and work with key internal and external stakeholders, and the wider community, to protect and enhance biodiversity.

Irish Water's Biodiversity Action Plan (continued)

4.2 Actions



Objective 1 – Issue all Irish Water sites with a clear set of measures that will enhance and protect biodiversity.

In order to protect and enhance biodiversity across our sites, it is important to get a clear understanding of the habitats and species within them. In 2017, a number of surveys were undertaken at selected Irish Water sites to inform the development of Biodiversity Management Plans. The surveys and plans undertaken to date have considered sites likely to be rich in biodiversity (e.g. semi-natural habitats and designated sites) as well as those with significant potential (e.g. large areas of undeveloped land). This process has proved invaluable, not only enabling us to establish baseline conditions and identify biodiversity 'hotspots', but also in developing suitable protection or enhancement measures specific to each site.

As part of this objective, it is proposed to continue to develop Biodiversity Management Plans at designated sites, and to work collaboratively with site personnel to implement these plans. Irish Water will seek to develop habitats with biodiversity value, where possible linking to the surrounding landscape.

While site-specific plans are ideal, they can be resource-intensive: often several common habitats with nature value occur across large numbers of our sites. In order to address this potential issue, guidance has been developed to provide 'biodiversity-friendly' management in some of the more commonly occurring habitats – see Appendix A for more information.



Key benefit

Managers of Irish Water sites have access to a clear set of resources that support the enhancement and management of biodiversity on site.



Actions:

- Irish Water has developed a series of standard biodiversity-friendly management practices to be implemented across all Irish Water sites. These biodiversity-friendly management practices provide details on how to best protect and manage areas of grassland, woodland and hedgerows within the Irish Water sites – see Appendices B, C & D. As site management contracts are renewed, the new contracts will incorporate this series of biodiversity enhancement and management standards.
- Irish Water will continue to develop site-specific Biodiversity Management Plans for selected sites, identifying opportunities for the enhancement of habitats either through planting or management.

Biodiversity enhancement measures in place at Limerick Wastewater Treatment Plant site, which includes hedgerow management and wildflower meadows.



Objective 2 – Raise awareness and provide educational supports on biodiversity to Irish Water staff and its partners.

Irish Water manages sites in partnership with local authorities and service providers across the country. The workforce is diverse, with various backgrounds and interests, and everyone can play a role in the protection and enhancement of biodiversity. Irish Water, led by our established Biodiversity Team, will ensure that up-to-date information on biodiversity is communicated to all personnel in order to raise awareness and support the implementation of biodiversity measures. Regular updates relating to biodiversity will be issued via both informal and formal channels, including email updates, face-to-face meetings, lunch & learns, and a dedicated biodiversity section on www.water.ie.



Key benefit

Increasing biodiversity awareness within Irish Water empowers everyone to act in ways that better support nature and benefit wider communities.



Actions

- Irish Water has developed a biodiversity webpage, which will report regularly on progress and provide updates on the biodiversity actions taken by Irish Water.
- Irish Water, led by our Biodiversity Team, will deliver regular updates and educational supports on biodiversity to all relevant internal stakeholders within Irish Water. This will include on-site guidance and advice, workshops and presentations, publication of education/information materials, and ongoing social media updates regarding current developments.
- Irish Water, working with our partners (such as An Taisce), and local Tidy Towns groups and community groups, will use flagship sites to deliver community and school education programmes.
- Irish Water will use different communication channels to provide relevant educational information and regular updates to personnel. Our Biodiversity Team will continue to work collaboratively with site-based personnel to deliver site-specific solutions.

Irish Water's Biodiversity Action Plan (continued)



Objective 3 – Ensure 'no net loss' of biodiversity in carrying out our activities, plans or project.

Irish Water builds and operates infrastructure within every county in the Republic of Ireland, presenting a range of different environmental constraints and opportunities. As new infrastructure is built and existing infrastructure is upgraded, and in the context of ongoing site activities, all works will be carried out in line with best practice guidelines and relevant legislation. We will follow the mitigation hierarchy by avoiding impacts in the first instance before seeking to reduce or improve.



Key benefit

This objective will ensure that biodiversity is protected for all new Irish Water developments.



Actions

- All Irish Water plans, projects and activities will comply with the Habitats and Birds Directives, and their implementing regulations, and be subject to appropriate assessment screening.
- All Irish Water plans, projects and activities will comply with the Wildlife Act.
- New infrastructure will be sited, designed and constructed in line with Irish Water's Civil Specification and Guidance (IW-TEC-300-01 and IW-TEC-300-02) and Landscape Treatment Guidelines (IW-AMT-GL-009).
- Irish Water will work with key stakeholders such as the NPWS, Inland Fisheries Ireland (IFI), Environmental Protection Agency (EPA) and local communities in undertaking plans, projects and activities that have the potential to impact the environment.
- Irish Water will work with the EPA towards achieving the objectives of the Water Framework Directive.



Irish Water Ecologists advising on biodiversity enhancement works at Waterford Wastewater Treatment Plant site, which includes woodland, hedgerow and grassland management.



Objective 4 – Implement actions arising from the All Ireland Pollinator Plan across all Irish Water sites.

The All-Ireland Pollinator Plan is aimed at all sectors of society, from farmers to local authorities, and schools, gardeners and businesses. It aspires to create an Ireland where pollinators can survive and thrive. The first plan covers the period 2015–2020, and a new All-Ireland Pollinator Plan is being developed to cover 2021–2025. Irish Water has committed to becoming a key partner in this new plan and will report annually against the targets set in this new All-Ireland Pollinator Plan. Implementing the Plan involves changing the way we develop and manage Irish Water sites, seeking out opportunities to support Ireland’s pollinators through appropriate planting and management of ‘green’ areas, while not impacting the core nature of the work Irish Water is undertaking.

Fundamentally, it is important to highlight that this does not equate with the absence of any management, or letting areas ‘go wild’, but instead, it is informed by purposeful management of particular areas of land under our stewardship. Irish Water fully supports the new All-Ireland Pollinator Plan (2021–2025) and is committed to implementing actions across our network of sites to support and encourage pollinators, and to help ensure the success of the plan.

The actions below are supported by the actions identified under other objectives within the BAP, specifically the actions under Objective 1, 2 and 3 which will ensure our sites are managed in such a way as to promote pollinators.

This objective aligns with the EU Biodiversity Strategy for 2030; to restore degraded ecosystems at land across the whole of Europe by halting and reversing the decline of pollinators and reducing the use and risk of pesticides by 50% by 2030.



Key benefit

Supporting pollinators will aid their recovery, which in turn, will bring benefits to the greater natural environment.



Actions

- Irish Water is a key partner in the new All-Ireland Pollinator Plan (2021–2025), and has formally committed to implementing and reporting on the All-Ireland Pollinator Plan actions.
- Irish Water has developed standard management practices for grass-cutting at Irish Water sites that align with the All-Ireland Pollinator Plan, allowing flexibility for the range of sites and environments.
- Irish Water will, in the development of new sites and the management of existing sites, incorporate the use of native and/or pollinator-friendly planting.
- Irish Water will establish monitoring programmes to demonstrate the success of the All-Ireland Pollinator Plan actions, encouraging personnel to play a proactive role.

Irish Water's Biodiversity Action Plan (continued)



What are pollinators and why are they important?

The annual value of pollinators for human food crops has been estimated at approximately €153 billion worldwide, and at least €53 million in the Republic of Ireland (www.biodiversityireland.ie). This service has always been carried out for free by our wonderful insects, but fruit growers increasingly have to import pollinators for this service.

In Ireland, all of the pollinators are insects, with bees doing most of the work – including 99 species of bee (1 species of honey bee and 20 bumble bee species, with the remainder made up of solitary bee species). Hoverflies, flies, butterflies and moths all aid with pollination services.

Pollinators are under pressure in the environment, as pesticide use has increased in recent years, as has habitat loss. This results in fewer flowering plants, which in turn leads to starvation in our pollinator populations.



Objective 5 – Promote the use of nature-based solutions for water protection and wastewater treatment.

Nature-based solutions for water protection and wastewater treatment have significant potential to deliver biodiversity benefits and cost savings for Irish Water. We encourage and promote the identification of opportunities for the incorporation of integrated constructed wetlands, sludge-drying reed beds, or willow plantations into wastewater sites. Catchment management activities, such as planting riparian woodland within our water supply catchments, are equally supported. Aside from providing biodiversity benefits, source water protection or wastewater treatment, nature-based solutions have many additional benefits, including a reduction in energy usage, carbon sequestration, and amenity use for local communities, while also meeting the objectives of the Water Framework Directive.

This work underpins the EU-wide Strategy for Biodiversity, 2030, tying in with one of its goals to restore degraded ecosystems across the whole of Europe by planting 3 billion trees by 2030.



Key benefit

Promoting and enhancing biodiversity, using the most natural ways possible. This approach allows nature to lead the way.



Actions

- Irish Water will, wherever feasible, advocate the use of integrated constructed wetlands (ICWs), reed beds and other nature-based solutions as wastewater treatment solutions.
- Irish Water will identify sites within our ownership suitable for riparian woodland, and implement appropriate tree-planting schemes.
- Irish Water will collaborate with external stakeholders, land owners and community groups on wider catchment management-based initiatives that result in source water protection.



Dunhill Integrated Constructed Wetland in County Waterford was the first ICW in Ireland and has been operational since 2000. In this time the 10 hectares site has provided valuable habitat for a wide range of wildlife along with treating wastewater from local communities.

An integrated constructed wetland (ICW) is a type of sustainable purifying water system that is designed to look and function as a natural wetland does. Constructed wetlands are created for the purpose of treating wastewater from communities in an environmentally friendly way before allowing it to return to the water system safely. ICWs can be used in surface water and storm water overflows treatment, and as part of source water protection.

Riparian woodland is another nature-based solution employed by Irish Water, where woodland is established along rivers and lakes. Irish Water uses native tree species to re-create a habitat that would have existed along the watercourses before these habitats were cleared for other land uses. Riparian woodlands prevent contaminants from entering the watercourse, for example, soil, fertilisers and other pollutants. Funded schemes, such as the Department of Agriculture, Food and the Marine (DAFM) 'Woodlands for Water' scheme, could be used by Irish Water for sites of a sufficient size.

Riparian woodland along the shore of Lough Guitane, Co. Kerry.



Irish Water's Biodiversity Action Plan (continued)



Objective 6 – Manage invasive alien species at Irish Water sites.

Invasive alien species are a major threat to biodiversity, as they have the ability to out-compete our native species. This results in the loss of natural flora and fauna, a reduction in diversity, and the loss of ecosystem services that native habitats provide (e.g. bank stability along rivers, native flowers for pollinators). Certain invasive species present additional threats, for example, knotweed species can cause significant structural damage to infrastructure, while Giant Hogweed is a health hazard. It is recognised that climate change will lead to the further spread of invasive species in Ireland, and so it is essential that we are proactive in our management of these species.

To date, Irish Water has been managing or eradicating invasive alien species identified on established Irish Water sites or in the course of developing new infrastructure. To assist with this, we have produced a series of guidance documents on the management of key invasive plant species of concern, as well as biosecurity protocols and guidance:

- AM-SOP-009 Information and Guidance Document on Japanese Knotweed;
- IW-AMT-GL-001 Irish Water Guidance on the Management of Giant Hogweed;
- IW-AMT-GL-002 Irish Water Guidance on the Management of Himalayan Balsam;
- IW-AMT-GL-007 Irish Water Guidance on Biosecurity for Aquatic Sampling Activities; and
- IW-OPM-SOP-10 Biosecurity Standard Operating Procedure for Aquatic Sampling.

Irish Water will continue to review and update our recording and management of invasive species in order to ensure that risks to biodiversity are effectively controlled, and our assets are protected. Educating and proactively engaging with all Irish Water personnel will be key to achieving this goal.



Key benefit

Managing any invasive species on Irish Water sites will result in increased biodiversity on our sites and reduce risks to our assets.



Actions

- Irish Water will provide training and guidance to relevant personnel on the identification and eradication of invasive species.
- Irish Water will develop a database for recording and monitoring infestations of invasive species at our sites.
- Irish Water will continue the roll-out of biosecurity protocols and guidance.



Objective 7 – Collaborate and work with key internal and external stakeholders, and the wider community, to protect and enhance biodiversity.

The implementation of the BAP will involve collaboration with a wide variety of external stakeholders and communities in line with the EU Biodiversity Strategy for 2030. Our actions are strengthened, and deliver greater biodiversity benefit, when we work with stakeholders to align and communicate our approaches. It is essential that information, guidance and procedures that arise from the actions are compliant with legislation and are based on up-to-date expert advice. We will, therefore, proactively engage with all relevant stakeholders in the further development and implementation of biodiversity actions.



Key benefit

Working with other bodies will enable us to share and further develop in other areas, ensuring that the most appropriate and efficient actions are implemented.



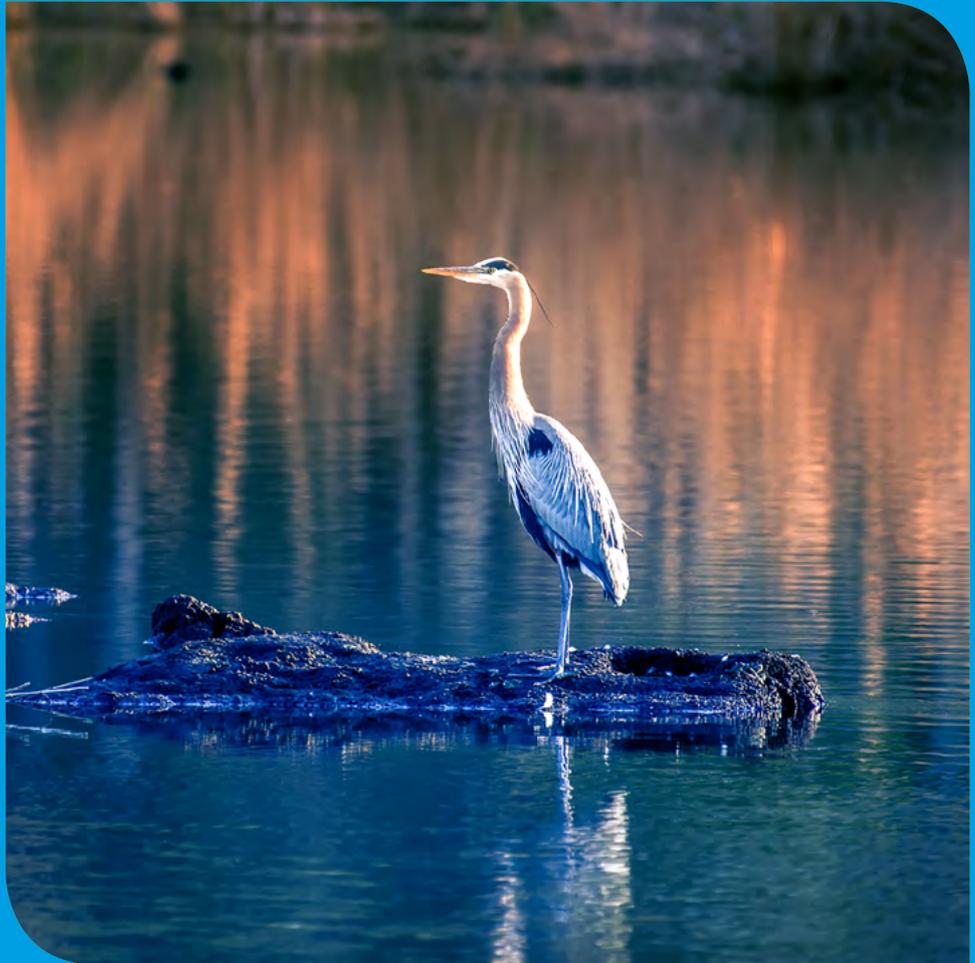
Actions

- Irish Water will, in the development and implementation of biodiversity actions, collaborate with external stakeholders including: IFI, NPWS, NBDC, LAWPRO, EPA, DAFM and local communities.
- Irish Water will work with local authorities, Tidy Towns and other local community environmental groups where possible. We will develop our biodiversity actions to align with and support local biodiversity projects and initiatives, such as those ongoing as part of the Environmental and Nature Fund (The Community Foundation for Ireland).



A sign at Dunhill ICW demonstrating the collaboration between Irish Water, the National Biodiversity Data Centre and Waterford City & County Council on the All-Ireland Bumblebee and Irish Butterfly Monitoring Schemes.

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5. Irish Water's Commitment to Biodiversity

Irish Water is committed to proactively increasing and accelerating efforts to halt the decline of biodiversity. Our BAP is aligned to both the National Biodiversity Action Plan and the EU Biodiversity Strategy, and demonstrates our continued commitment to conserving biodiversity and addressing the biodiversity emergency.

The plan details the specific objectives and actions that we will take to conserve biodiversity, which includes a series of standard biodiversity-friendly management practices to be implemented across all Irish Water sites. The action plan will ensure that biodiversity is valued and is an integral factor in decision making across our business.

We have developed a biodiversity webpage, which will report progress and provide updates on the number of biodiversity actions taken by Irish Water. As a key partner in the new All-Ireland Pollinator Plan, we have formally committed to implementing and reporting on the Ireland Pollinator Plan actions.

This plan will be reviewed and updated every five years, in line with the company's periodic review.



Glossary & Abbreviations

Abbreviations:

BAP	Biodiversity Action Plan
DAFM	The Department of Agriculture, Food and the Marine
EPA	Environmental Protection Agency
EU	European Union
GDP	Gross Domestic Product
ICWs	Integrated Constructed Wetlands
IFI	Inland Fisheries Ireland
LAWPRO	Local Authority Waters Programme
NHA	Natural Heritage Areas
NBDC	National Biodiversity Data Centre
NPWS	National Parks and Wildlife Service
SAC	Special Area of Conservation.
SDGs	Sustainable Development Goals
SPA	Special Protection Area
UN	United Nations
UWWTD	Urban Wastewater Treatment Directive
WFD	Water Framework Directive
WWTP	Wastewater Treatment Plant

Glossary:

All-Ireland Pollinator Plan

A programme developed by the NBDC to facilitate the coming together of all stakeholders to try to create an Ireland where pollinators can survive and thrive (<https://pollinators.ie/>).

Biodiversity

The joining of two words, 'biological' and 'diversity'. The variety of all life on earth.

Habitat

The natural home or environment of a plant or animal.

Habitats and Birds Directives

The Habitats Directive (together with the Birds Directive) forms the cornerstone of Europe's nature conservation policy. It is built around two pillars: the Natura 2000 Network of protected sites, and the strict system of species protection.

IPBES

The Intergovernmental Science – Policy Platform on Biodiversity and Ecosystem Services. The intergovernmental body that assesses the state of biodiversity and of the ecosystem services it provides to society.

National Biodiversity Data Centre (NBDC)

National centre for the collection, collation, management, analysis and dissemination of data on Ireland's biological diversity (<https://www.biodiversityireland.ie/>).

Pollinator

An animal that moves pollen from the male anther of a flower to the female stigma of a flower.

Appendix A – General Biodiversity-Friendly Management Measures

Biodiversity is important for everyone. Protecting and enhancing biodiversity can vary depending on the site. Even small actions can have a big impact.

A number of simple and cost-effective measures can be implemented to work with the existing environmental setting at any site. For example:

Preserve and Enhance Existing Vegetation

- Preserve valuable habitat on site – especially trees, hedgerows and water habitats – as refuges for biodiversity.

Weed Control

- If you can, leave weeds in place. Dandelions, for example, are an important early source of nectar, and have many health benefits for humans too.
- If weed killers must be used, do so sparingly. They should be applied by trained authorised personnel only, and never along watercourses.

Bird and Bat Boxes

- Bird and bat boxes can be supplied and installed in most sites. Advice can be provided on the best installation locations.

Example of a bird box on one of our sites in Waterford

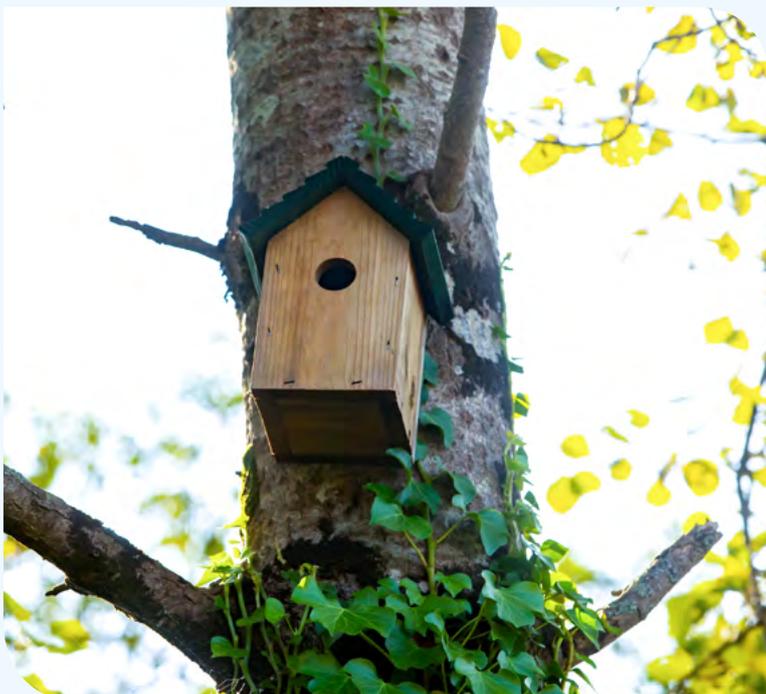


Photo Credit: Ashy Miner Bee on Dandelion (Butterfly Conservation Ireland)





Example of dead wood at Navan Wastewater Treatment Plant

Tidying Up

- Old branches and other bits of dead wood can provide a habitat for insects – stack them somewhere on site, out of way, where they can be used by insects.
- Remove grass cuttings to reduce coarse grasses and increase wildflower diversity. On a wildflower-rich site, where feasible, grass should be turned after cutting to allow seeds to fall.
- Reduce mowing frequency where grass areas are low in nutrients. This will allow wildflowers to grow.
- Allow wildflowers to grow around the marginal habitats. Flowers/weeds like dandelion, clovers, knapweed, vetches and creeping thistle growing along access paths and in field corners enhance the value of the site for wildlife

“ If you can leave weeds in place - dandelions, for example, are an important early source of nectar and have many health benefits for humans too. ”

Appendix B – Grassland Management

GM1 – Reduce Mowing

Manage as a species-rich grassland (five cut and lifts per year).

Mowing of grassy areas should follow the advice given in the All-Ireland Pollinator Plan Advice to Councils, that is: don't mow until 15th April, then cut on a six-weekly rotation with cuttings removed; mow at the end of May, and not again until mid-late July; then a fourth cut in late August, and a fifth cut after mid-October. Mowing height should be set to three inches. This regime keeps grass at a manageable level while increasing the growth of wildflowers and saving maintenance costs. Not cutting until mid-April allows dandelions to flower, but not set seed. Dandelions are a vital food source for pollinators in spring. Cutting at the end of May and not again until mid-late July will increase the growth of important plants like clover, self-heal, cuckooflower and bird's-foot trefoil.

Other considerations:

- If there are concerns regarding the visually 'untidy' nature of grasslands being managed this way, then paths can be mowed within or around the grassland more frequently to highlight that these areas are actively managed.
- In general, herbicides/pesticides should be avoided or used sparingly where absolutely necessary, such as in the treatment of invasive species like Japanese knotweed.
- If large areas cannot be managed, sections/ small areas should be managed as above, e.g. corners and/or edge strips of various widths.
- A 'Managed for Wildlife' sign can be provided.

Mowing along the edge gives a neater look while allowing the species rich grassland to develop further in (Castlebar WWTP)





Example of a wildflower meadow planted at Limerick Wastewater Treatment Plant

GM2 - Wildflower Meadow

Manage as a wildflower meadow (one cut and lift per year).

If soils are suitably low in nutrients and it is proposed to manage an area as a wildflower meadow, mowing should take place just once a year in late August/early September, with cuttings removed.

Sow a native wildflower mix and/or yellow rattle (which outcompetes grasses, creating space for wildflowers) into suitable areas where biodiversity enhancement management will be ongoing. If you have any queries, please contact Irish Water's ecologists at biodiversity@water.ie.

Appendix C – Hedgerow Management

Why are hedgerows important? Hedgerows in our landscape provide a number of important services, including:

- A food source for insects, birds and mammals. The variety of trees in hedgerows is vital, as this diversity will provide food throughout the year in the form of berries, nuts, pollen and nectar.
- Places to shelter and nest. Hedgerows contain numerous niches in which different animals can live and breed. The obvious ones are nesting areas for a number of bird species, but many insects also live in earthen banks, dead wood and holes in the hedgerow trees themselves.
- Biodiversity corridors. Hedgerows provide important linkages between other habitats that allow animals to move along from one site to another.
- Hedgerows store carbon dioxide as they grow.

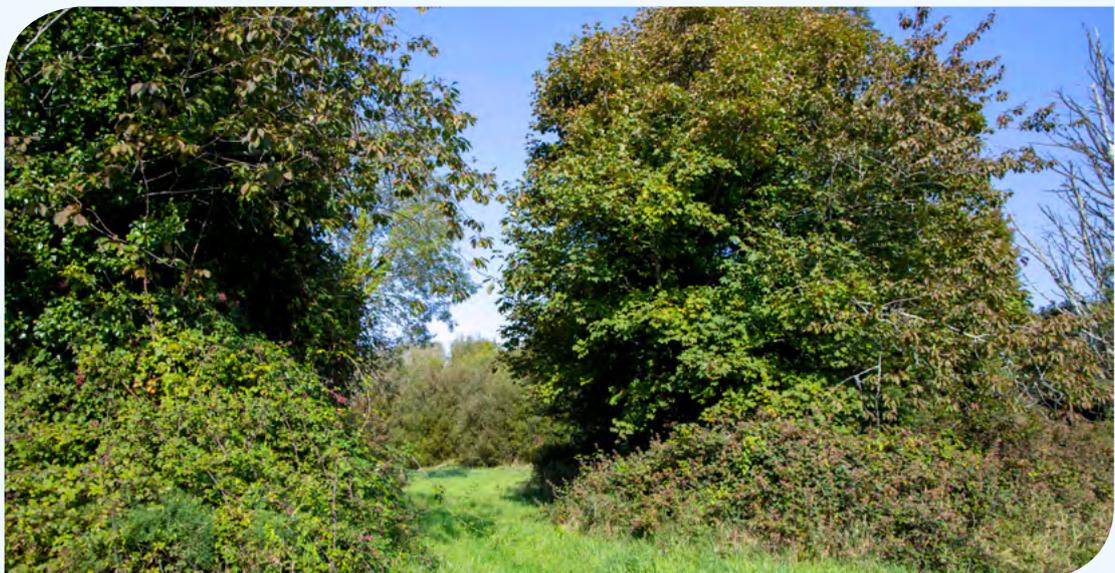
Hedgerow Management:

- If planting a new hedgerow, it is important that a variety of native plants be used.
- Don't trim hedgerows every year: hedgerow trees may not flower the year they are cut.
- Do not remove ivy, as it is an important source of pollen and nectar, and provides a place for animals to live.
- After trimming, leave deadwood under the hedge, this provides a microhabitat that insects can live in. A 'Managed for Wildlife' sign can be provided.

Important considerations

Please note, it is illegal under the Wildlife Act to cut hedgerows in the bird nesting season – March 1st to September 1st. If you have any queries, please get in touch with Irish Water's ecologists at biodiversity@water.ie.

Example of a managed hedgerow at Waterford Wastewater Treatment Plant



Appendix D – Tree Management

The following management options shall be considered when planting trees on any Irish Water site:

- When planting trees, use native trees, as these can support the greatest amount of biodiversity.
- Young trees may need protection from grazers – rabbits and hares can make short work of saplings.
- Use specially designed tree supports – cable ties are unsuitable.
- Be careful when strimming around trees – strimmers can damage and even kill trees.

Native Species:

Any new landscaping carried out at a site should always use native species of trees and shrubs of local provenance (see Table 2).

Plant nectar- and pollen-rich trees and shrubs: good native species are willow, hazel, hawthorn and blackthorn. Fruit trees are also a great food source.

If possible, consider replacing non-native hedging (e.g. leylandii) with native species. Native species are suited to the Irish environment and provide higher-quality habitat for wildlife.

Common Name	Latin Name
Alder	<i>Alnus glutinosa</i>
Ash	<i>Fraxinus excelsior</i>
Crab apple	<i>Malus sylvestris</i>
Dog rose	<i>Rosa canina</i>
Downy birch	<i>Betula pubescens</i>
Hawthorn	<i>Crataegus monogyna</i>
Hazel	<i>Corylus avellana</i>
Holly	<i>Ilex aquifolium</i>
Juniper	<i>Juniperus communis</i>
Privet	<i>Ligustrum vulgare</i>
Rowan/Mountain ash	<i>Sorbus aucuparia</i>
Scots pine	<i>Pinus sylvestris</i>
Silver birch	<i>Betula pendula</i>
Blackthorn	<i>Prunus spinosa</i>
Spindle	<i>Euonymus europaeus</i>
Whitebeam	<i>Sorbus aria</i>
Wild cherry	<i>Prunus avium</i>
Wych elm	<i>Ulmus glabra</i>
Yew	<i>Taxus baccata</i>

Example of native trees planted at Waterford Wastewater Treatment Plant.



Table 2: Some common native tree and shrub species



If you have any queries, please get in touch with Irish Water's ecologists at biodiversity@water.ie.

Appendix E – Legislation on Biodiversity Protection

EU Habitats and Birds 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 that are rare and threatened throughout Europe. The Habitats Directive requires member states to designate Special Areas of Conservation (SACs) for several habitat types and species in need of 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 separate legislation: the EU Birds Directive. The Birds Directive requires member states to designate Special Protection Areas (SPAs) to protect the most important bird areas in the country.

There are 583 sites throughout Ireland which have been designated as either SAC, SPA or both, and Ireland has an international responsibility for looking after these sites.

The areas chosen as SACs in Ireland cover an area of approximately 13,500 sq. km. Roughly 53% is land, the remainder being marine, large lakes and inland watercourses. The 25 Irish species that must be afforded protection include salmon, otter, freshwater pearl mussel, and bottlenose dolphin, which are found along our inland waterways and coastal environment.

Ireland's SPA network encompasses over 570,000 hectares of marine and terrestrial habitats. The marine areas include some of the productive intertidal zones of our bays and estuaries that provide vital food resources for several wintering wader species such as dunlin, knot and bar-tailed godwit. Marine waters adjacent to the breeding seabird colonies and other important areas for sea ducks, divers and grebes are included in the network. Other important areas of the SPA network include inland lakes and wetland sites, which are important for wintering water birds.

Through the provision of water services in Ireland, Irish Water abstracts or discharges directly to a number of these SACs and SPAs throughout the country, or near these sites with direct hydrological connectivity. As part of our environmental obligations, Irish Water is obligated to ensure that our abstractions and/or discharges do not impact on these sites and their nature conservation interests.

EU Water Framework Directive

This directive provides a framework for the protection and improvement of all our waters – rivers, lakes, marine and groundwaters – and of our water-dependent habitats. The aim of the Water Framework Directive (WFD) is to prevent any deterioration in the existing status of our waters, including the protection of good and high status where it exists. Implementation of this directive will have a positive impact on biodiversity in aquatic habitats by improving water quality in areas where it has deteriorated.

Under the WFD, we must control all impacts, be they physical, polluting or otherwise, on our water resource. Irish Water is committed to the principles and objectives of the WFD and we recognise that its implementation presents both opportunities and challenges for Irish Water.

A key objective of the WFD is the protection of drinking water sources, and this will assist Irish Water in providing a safe and secure supply of drinking water. However, there is clearly much to be done in improving the level of wastewater treatment in place in some parts of the country to meet WFD objectives, and this will require significant investment. Irish Water will work with all stakeholders involved in the WFD process to ensure that the investment that we make delivers the maximum environmental benefit possible within financial budgetary constraints.

EU Urban Wastewater Treatment Directive

The objective of the Urban Wastewater Treatment Directive (UWWTD) is to protect the environment from the adverse impacts of discharges of urban wastewater (e.g. effluent from houses and businesses) from population centres. Urban wastewater must be treated prior to being released back into the natural environment, to remove contaminants that could pose an environmental risk. Achieving the UWWTD objective will go a long way to meeting the objectives of the Water Framework Directive.

At present there are discharges from several wastewater treatment plants that are impacting on the water quality, species and habitats of the receiving waters. While Irish Water continues to improve the provision of treatment for wastewater, in some cases these do not meet with the requirements of the UWWTD and the Water Framework Directive.

Irish Water recognises that the implementation of the UWWTD requires one of the most substantial investments in the environmental sector. The benefits, though, extend far beyond water quality and the species and habitats it supports, as clean water is a prerequisite for ecosystem services, healthy tourism, food and manufacturing industries, and for the general well-being of our communities.

Wildlife Act

The Wildlife Act is Ireland's primary national legislation for the protection of wild flora and fauna. Under the Wildlife Act, Natural Heritage Areas, Statutory Nature Reserves, and Refuges for Fauna are being designated to conserve species and habitats of national importance. These are areas where nature conservation is the primary objective and takes precedence over all other activities.

Flora Protection Order, 2015

In accordance with Section 21 of the Wildlife Act, the current list of protected plant species in Ireland is set out in the Flora Protection Order, 2015. 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; it is not confined to sites designated for nature conservation. The Flora Protection Order includes 68 vascular plants, 65 bryophytes (40 mosses and 25 liverworts), 1 lichen and 2 stonewort species.

