Dublin City Biodiversity Action Plan 2015-2020

Comhairle Cathrach Bhaile Átha Cliath
Dublin City Council


Biodiversity

Table of Contents

View across coastal wetland habitats at North Bull Island.
Photo by Brendan Norris

Introduction

Biodiversity is defined by the Convention on Biological Diversity (1992), as the 'variability among living organisms from all sources', and includes 'diversity within species, between species, and of ecosystems'. The biodiversity of Dublin City includes the wildlife and habitats found at North Bull Island and along the City's coastline; Phoenix Park and all public parks; the rivers, canals, and their riparian zones, which traverse the City; open spaces linked to historic, educational and other public buildings; roadsides, railway tracks and footpaths; and within residential 'greens', private gardens, walls and buildings. Dublin City supports numerous legally-protected habitats, particularly along its coastline, and several legally-protected species, particularly along its waterways and within larger public parks. This is further illustrated in the 'Overview of Biodiversity in Dublin City'.

However, there are also a number of threats to the City's biodiversity. These include Invasive Species (due to the number of pathways by which they can enter and spread throughout the City); climate change (such as changes in the habitat range of species, and species composition of habitats); habitat loss (due to the continuous changes in the City's urban fabric, or insensitive management within open spaces); pollution (particularly within watercourses); and human behaviour (such as dumping garden waste in vulnerable habitats, damaging trees, or allowing pets to chase or disturb wildlife).

Map of Dublin City Council Administrative Area (Shaded Area)

National and international guidance indicate that successful biodiversity conservation requires actions to be taken at a local level. Ireland's National Biodiversity Plan (Actions for Biodiversity 2011-2016) requires 'each local authority to publish a Local Biodiversity Action Plan, or review existing plans'. The Dublin City Biodiversity Action Plan 2015-2020 is the second such plan for the City, and its preparation has been informed by:

- Current knowledge and lessons learned from the Dublin City Biodiversity Action Plan 2008-2012
- Guidance from key stakeholders influencing biodiversity conservation in Dublin City (See Appendix 1).
- Legislation and policy at Local, National, European, and International level, for the preparation and implementation of Local Biodiversity Action Plans (See Appendix 4)

The overarching aim of the Dublin City Biodiversity Action Plan 2015-2020, is the conservation of biodiversity within the City. This will rely on a combination of different approaches, including direct and appropriate management of biodiversity at local and regional level, identification and protection of important conservation value areas, enhancing biodiversity conservation within the green infrastructure network, raising awareness and understanding among decision-makers, provision of appropriate guidance to landowners, and changing behaviour among the public towards the protection and appreciation of biodiversity.

In this regard, the Dublin City Biodiversity Action Plan 2015-2020 contains four Themes, which reflect the Strategic Objectives of Ireland's National Biodiversity Plan (Actions for Biodiversity 2011-2016). The four Themes of the Dublin City Biodiversity Action Plan 2015-2020 are underpinned by twenty-nine Actions, and will continue to build on progress achieved during Dublin City's first Biodiversity Action Plan. The four Themes are set out above.

Theme 1:

Strengthen the knowledge base of decision-makers for the conservation and management of biodiversity, and protect species and habitats of conservation value within Dublin City

Theme 2:

Strengthen the effectiveness of collaboration between all stakeholders for the conservation of biodiversity in the greater Dublin region

Theme 3:

Enhance opportunities for biodiversity conservation through green infrastructure, and promote ecosystem services in appropriate locations throughout the City

Theme 4:

Develop greater awareness and understanding of biodiversity, and identify opportunities for engagement with communities and interest groups

Dublin City Council will be the lead authority for the implementation of the Dublin City Biodiversity Action Plan 2015-2020. Dublin City Council's Biodiversity Unit sits within Parks and Landscape Services, and is complemented by the other work programmes operating within this section, including the management of public parks, open spaces, street trees, green infrastructure, and Dublin City Council's role within the Dublin Bay Biosphere Partnership and Dublin Mountains Partnership.

There are a number of policies which guide the daily operations of Dublin City Council, and which will be important for the successful implementation of this Biodiversity Action Plan. These policies are set out below.

1. To ensure that all plans, programmes, strategies, works, and permissions within Dublin City, comply with biodiversity legislation, and incorporate biodiversity conservation at the earliest possible stages.
2. To strive for the highest standards in biodiversity conservation, and to adopt and evaluate best practice management from successful national and international examples.
3. To work collaboratively with all stakeholders for the benefit of biodiversity conservation within Dublin City and the greater Dublin region.
4. To promote and support biodiversity research within Dublin City.

Successful management of this Biodiversity Action Plan will also require regular review and monitoring of the implementation of Actions. As such, the first Action of the Biodiversity Action Plan will be an annual review of the implementation of all Actions.

Action 1: Undertake an annual review of the implementation of all Actions contained within this Biodiversity Action Plan

Small Blue Butterfly: Considered endangered in Ireland, but occasionally recorded from North Bull Island.
Photo by Anthony Woods

Overview of Biodiversity in Dublin City

Biodiversity refers to the variety of all living things in a particular place. Dublin City supports a wide range of biodiversity, owing to its geographical location, topography, waterways, proximity to the sea, and long history of urban development and land management. There is a distinct urban component within the City's biodiversity, most notably plant species which are adventives (a species which has arrived in a specific geographic area from a different region), and which can tolerate shallow soil or higher levels of atmospheric pollution. However, there are also non-urban, semi-natural components, such as North Bull Island, parts of Phoenix Park, and the City's rivers, canals, and larger public parks.

Some of the City's biodiversity are locally, nationally and internationally rare, and some, though not all, are legally-protected under Irish and/or European legislation. It is important to note that different legislation confers different levels of protection on habitats and species. For example, otters and bats are protected from being deliberately killed (except under special licenses) under the Wildlife Act, however, their breeding and resting places are also protected from destruction under the EU Habitats Directive. The level of protection afforded to each species has not been set out in this Plan, but the implementation of Actions will have regard to same. An overview of Dublin City's biodiversity is set out below.

On the east side of the City is North Bull Island. A Management Plan for this area has been in place since 1995, however, it requires updating. The Island is designated as a Special Area of Conservation, and supports nine habitats listed under Annex I of the EU Habitats Directive. Of particular note is the characteristic zonation between these habitats, including a rare, unmodified natural transition between an intertidal saltmarsh and a terrestrial sand-dune at the northern tip of North Bull Island. The Island also supports a range of legally-protected species under the EU Habitats Directive, including Petalwort (a species of liverwort), Marsh Fritillary Butterfly, two species of seal (Common and Grey), and three species of bat (Common Pipistrelle, Soprano Pipistrelle, and Leisler's).

The Island is also designated as a Special Protection Area under the EU Birds Directive, primarily due to the regular occurrence of nationally and internationally-important numbers of twenty-six species of bird. In addition, six plant species, (Many-seasoned Thread-moss, Cernuous Thread-moss, Warne's Thread-moss, Lesser Centaury, Red Hemp-nettle and Meadow Saxifrage), which are legally-protected under the Flora Protection Order, have previously been recorded on the Island.

Speckled Wood: A widespread butterfly found in the City's woodlands, and along shady hedgerows

Grey Wagtail: A common river bird in Dublin City

As a result of this, Dublin Bay and North Bull Island are among the most highly designated locations in the country for biodiversity. The designated sites which lie within the administrative area of Dublin City Council are set out in the table below.

Table 1: Nature Conservation Designations within Dublin Bay and North Bull Island (Dublin City Council's administrative area only)

North Dublin Bay Special Area of Conservation	North Bull Island National Special Amenity Area
South Dublin Bay Special Area of Conservation	North Dublin Bay Proposed Natural Heritage Area
North Bull Island Special Protection Area	South Dublin Bay Proposed Natural Heritage Area
South Dublin Bay and River Tolka Estuary Special Protection Area	Dolphins, Dublin Docks Proposed Natural Heritage Area
Dublin Bay Biosphere	North Bull Island Wild-bird Sanctuary
North Bull Island Ramsar wetland site	North Bull Island National Nature Reserve
Sandymount Strand/ Tolka Estuary Ramsar wetland site	

On the west side of the City is Phoenix Park. A Conservation Management Plan for this area has been in place since 2011. The Park extends to over 700 hectares, and supports several habitats, including species-rich calcareous grassland, wet grassland, semi-natural woodland, and fringing wetland vegetation. Many species have been recorded within the Park, including 351 different plant species (most notably Hairy St. John's-wort, Hairy Violet, and Meadow Barley, which are legally-protected under the Flora Protection Order), sixteen mammal species (including six species of bats, which are legally-protected under the EU Habitats Directive), and seventy-two bird species.

Traversing the City, and linking west to east, are the River's Liffey, Tolka and Dodder, which are highly significant regional salmonid catchments (for species of salmon and trout). The River Liffey, in particular, supports Atlantic Salmon, Brook Lamprey, River Lamprey and Freshwater Crayfish, which are legally-protected under the EU Habitats Directive. Fish surveys, carried out as part of the requirements of the Water Framework Directive, also recorded nine fish

Aerial view of Phoenix Park, from Heuston Station

Moorhen Nest: One of Ireland's most common river birds, and nests along river banks.
Photo by Anthony Woods

Banded Demoiselle Damselfly: Found along rivers where the bed is muddy or silty, and there are stands of riparian plants.
Photo by Anthony Woods

species between Islandbridge Weir and Talbot Memorial Bridge and the Bull Wall. Further upstream, a small section of the Liffey Valley proposed Natural Heritage Area also lies within the administrative area of Dublin City Council.

In contrast to the rivers, the City's canals (the Royal and the Grand) support coarse fish species, including Pike, Rudd, Bream and Tench. Both canals are also important in supporting Opposite-leaved Pondweed, a species legally-protected under the Flora Protection Order, and Glutinous Snail. The latter is a very rare freshwater snail, which requires pollution-free, extremely clear, calm, and calcium-rich water. Both canals are proposed Natural Heritage Areas.

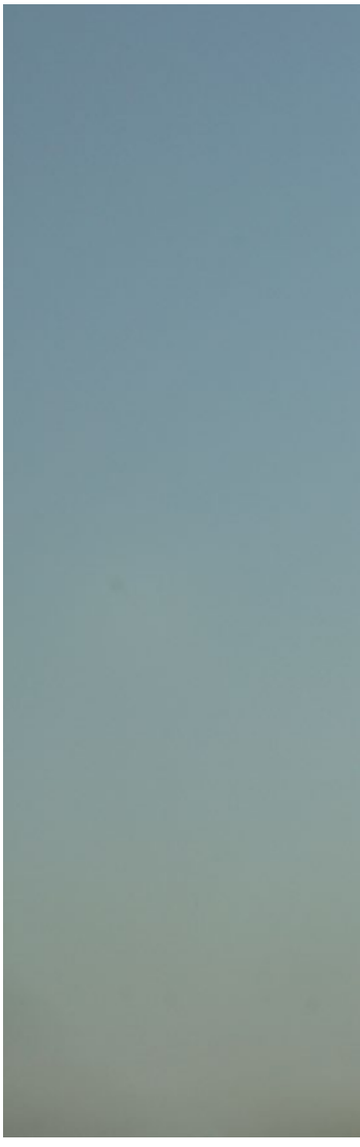
The riparian zones, including the walls and bridges, of the City's watercourses are equally important for biodiversity, supporting fringing wetland habitats, such as marsh, tall herb swamp, riparian woodland, and semi-natural grasslands. They also support a number of legally-protected species, including Otters, Daubenton Bats and Kingfishers. In addition, they support species which are rare, but not legally-protected, such as Green Figwort.

Dublin City has a network of over 300 public parks, including North Bull Island and Phoenix Park, which cover an area of approximately 2,000ha. Many of these are multifunctional, and have historical, recreational and amenity uses. However, a number of public parks are important for supporting the City's biodiversity, due to their size, management, mixture of habitat types, or location adjacent to water courses.

These parks support a mixture of legally-protected, rare, and common species. Examples include St Anne's Park (supports Sparrowhawk, Bee Orchid, and a heronry now used by Little Egret and Grey Heron), Bushy Park (supports a heronry, Kingfisher nest sites, Broad-leaved Helleborine, and Moorhen), Tolka Valley Park (supports Reed Bunting, Common Frog, and Banded Demoiselle Damselfly) Liffey Valley Park (supports Flowering Rush, Rigid Hornwort, and Ivy Broomrape), Poppintree Park (supports Delicate Stonewort, Linnet, and Coot) and Irishtown Nature Park (supports Pyramidal Orchid, Red-tailed Bumblebee, and a rare beetle, Oedemera lurida).

Dublin City also has a network of over eighty graveyards, which support a range of habitats and species, most notably, ferns, mosses, lichens and fungi. Dublin has a long history of importing different building materials, many of which act as substrates for lichen growth, however, lichen diversity is likely to be under-recorded in Dublin City. In addition, almost one-quarter of Dublin City's land-cover is accounted for by private gardens. These areas can support a variety of wildlife species, including birds, mammals, amphibians, insects, and native plants. The majority of these species are not legally-protected, and are not rare. However, they constitute a large and important part of the City's biodiversity resource.

Garden Tiger Moth Caterpillar: Found in many gardens throughout Dublin City.
Photo by Anthony Woods



Kingfisher: Found on the R. Liffey, R. Tolka, R. Dodder and R. Santry in Dublin City.
Photo by Anthony Woods

Red Hemp-nettle: Very rare plant in Ireland, which was previously recorded on North Bull Island.
Photo by Declan Doogue

Common Newt: Recorded in garden ponds and wetlands throughout Dublin City.
Photo by H. Krisp,
via Wikimedia Commons

Theme 1:

Strengthen the knowledge base of decision-makers for the conservation and management of biodiversity, and protect species and habitats of conservation value within Dublin City

Atlantic Salmon Parr: Found in the R. Liffey, R. Tolka and R. Dodder.
Photo by Peter Steenstra,
via Wikimedia Commons

The first step in conserving Dublin City's biodiversity is to establish its current extent, distribution, character, and conservation status. This provides the living evidence of how the City's biodiversity has come about, and should subsequently direct and inform its ongoing management. This is particularly important for rare and sedentary species which are not able to colonise new ground, or which have specific habitat requirements.

The recording of biodiversity in Dublin City can be traced back over three hundred years, most notably by the Dublin Naturalists' Field Club, which was founded in 1886. A number of organisations continue to actively record biodiversity within Dublin City, including the National Parks and Wildlife Service, Inland Fisheries Ireland, Waterways Ireland, Birdwatch Ireland, Bat Conservation Ireland, Coastwatch Ireland, and the National Biodiversity Data Centre. In addition, there are several third-level institutions involved in biodiversity research within Dublin City, including University College Dublin, Dublin City University, Trinity College Dublin, and National University of Ireland Maynooth.

Dublin City Council, through the Dublin City Heritage Plan (2002) and the Dublin City Biodiversity Action Plan (2008), has also contributed to this, with over thirty surveys and studies on the City's biodiversity over the last decade. Similarly, the Office of Public Works has undertaken habitat mapping for a number of their parks and gardens, in addition to surveys for bats, birds, mammals, and aquatic invertebrates. However, the extent, distribution

Common Lizard: Ireland's only native species of reptile.
Photo by Anthony Woods

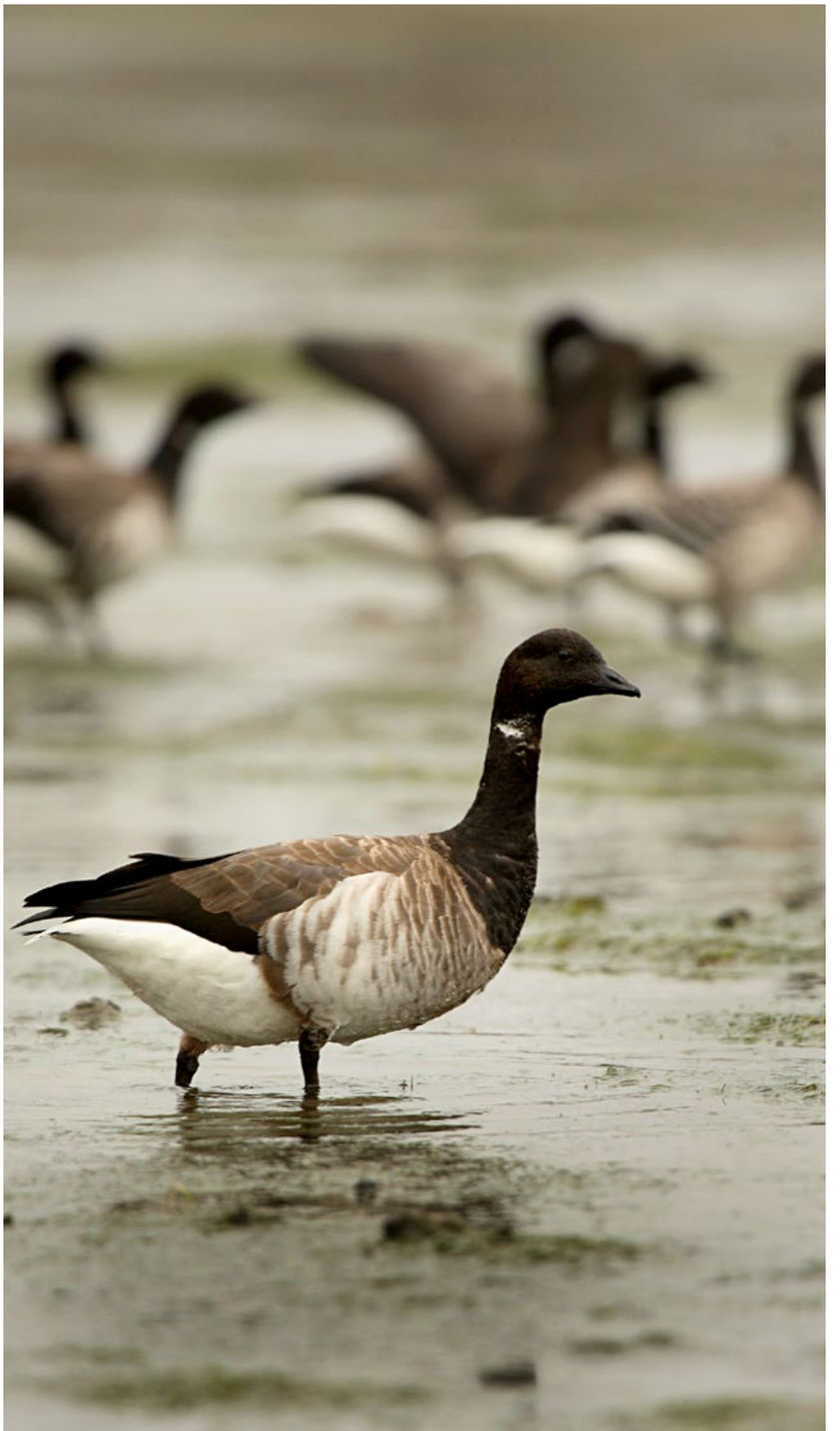
Leisler's Bat: Ireland's largest species of bat.
Photo by Austin Hopkirk

and conservation status of the City's biodiversity is continually changing, most notably as a consequence of changes in the City's urban landscape. As such, it is important to continue to increase knowledge on the City's biodiversity, with a particular focus on rare, locally scarce, and legally-protected species, and areas of conservation value.

It is also important to strengthen the ways in which this knowledge is used and shared. The collection of biological records is a valuable exercise in its own right. However, by strengthening measures through which decision-makers can access this knowledge, it becomes invaluable to the on-going conservation of the City's biodiversity. Another essential component of biodiversity recording and research is publication. Publications, particularly peer-reviewed publications, provide a definitive view of the state of a particular site at a point in time. They can also be referenced at a later date to evaluate the changes that have taken place and to assess the effectiveness of otherwise of any consequent protection measures.

Conservation of biodiversity in Dublin City is reliant on a strong knowledge base to inform ongoing management, and a key target of the Dublin City Biodiversity Action Plan 2015-2020, is to strengthen this knowledge base.

Light-Bellied Brent Goose: Annual visitor to North bull Island from Canada, and regularly seen on green areas throughout Dublin City.
Photo by Anthony Woods



Lesser Centaury: Very rare plant in Ireland, but found on North Bull Island.
Photo by Christian Fischer, via Wikimedia Commons

1.1 Legally-Protected Species

Dublin City supports a range of flora and fauna, which is afforded legal protection under Irish and European legislation. The known or previously recorded locations of legally-protected species within Dublin City are set out in Appendix 2. Under European legislation, Dublin City supports seventeen species of mammal, insect, fish and plant, which are listed under Annex II, IV, or V of the EU Habitats Directive. These are set out in the first column of Table 2 below. It is noted that Petalwort is a Qualifying Interest of the North Dublin Bay Special Area of Conservation.

Under the EU Birds Directive, there are twenty-one bird species identified as Special Conservation Interests (species for which the sites have been designated) of the North Bull Island SPA and South Dublin Bay and River Tolka Estuary SPA. These are set out in the second column of Table 2 below. There are six additional bird species, which regularly occur in Dublin City, and which are listed under Annex 1 of the EU Birds Directive. These are set out in the third column of Table 2 below.

However, it is also noted that there are other species legally-protected by the EU Birds Directive, such as Ruff, which occur as occasional visitors to North Bull Island and the City's coastline.

Table 2: Species protected by both European and Irish Legislation

Species listed under Annex II, IV, or V of the EU Habitats Directive found in Dublin City	Species protected as Special Conservation Interests of Dublin City's SPAs	Species listed under Annex 1 of the EU Birds Directive found in Dublin City
Common Pipistrelle Bat	Light-Bellied Brent Goose	Kingfisher
Soprano Pipistrelle Bat	Shelduck	Little Egret
Nathusius's Pipistrelle Bat	Teal	Merlin
Brown Long-Eared Bat	Pintail	Peregrine Falcon
Leisler's Bat	Shoveler	Short-Eared Owl
Daubenton's Bat	Oystercatcher	Mediterranean Gull
Whiskered Bat	Golden Plover	
Natterer's Bat	Grey Plover	
Grey Seal	Knot	
Common Seal	Sanderling	
Brook Lamprey	Dunlin	
River Lamprey	Black-Tailed Godwit	
Otter	Bar-Tailed Godwit	
Marsh Fritillary Butterfly	Curlew	
Petalwort	Redshank	
Atlantic Salmon	Turnstone	
Freshwater Crayfish	Ringed Plover	
	Black-Headed Gull	
	Roseate Tern	
	Common Tern	
	Arctic Tern	

Hedgehog: Familiar nocturnal visitor to many Dublin gardens.
Photo by Anthony Woods

The species set out in Table 2 above are also legally-protected under Irish legislation through the Wildlife Act and, in the case of Petalwort, the Flora Protection Order. The Wildlife Act affords protection to an additional eight species of fauna. These are set out in the first column of Table 3 below. The Flora Protection Order affords protection to an additional ten plant species, which have previously been recorded in Dublin City. These species are considered rare in a national context, and are set out in the second column of Table 3 below. It is noted that the Bohernabreena Reservoirs and its surrounding landscape, which are managed by Dublin City Council, supports additional legally-protected species, such as Pine Marten, Stoat, Red Squirrel, and Sika Deer.

Table 3: Species protected by Irish Legislation in addition to those in Table 2 above

Species legally-protected by the Wildlife Act	Species legally-protected by the Flora Protection Order
Hedgehog	Hairy St. John's-wort
Pygmy Shrew	Hairy Violet
Badger	Meadow Barley
Fallow Deer	Lesser Centaury
Irish Hare	Red Hemp-nettle
Common Frog	Meadow Saxifrage
Common Newt	Opposite-leaved Pondweed
Common Lizard	Many-seasoned Thread-moss
	Cernuous Thread-moss
	Warne's Thread-moss

Birdwatch Ireland has developed national action plans for different groups of birds, including Urban and Suburban Birds, Riparian Birds, Shore and Lagoon Birds, and Marine and Sea-Cliff Birds. Dublin City supports many of the bird species identified in these groups, including all sixteen species identified as part of the Urban and Suburban Birds group. In response to these action plans, Dublin City Council and BirdWatch Ireland have developed the 'Dublin City Urban Birds Project', which aims to develop baseline information on key bird species, and increase education and awareness of birds within the City.

Peregrine Falcon: A bird of prey, feeding mainly on the City's pigeon population.
Photo by Anthony Woods

Action 2: Continue to map the distribution, and assess the abundance and conservation status of legally protected species within Dublin City

Focus:

- Plants: A survey of all previously recorded sites will be a priority of this Action.
- Marsh Fritillary Butterfly: Survey extent on North Bull Island
- Otters: Survey of River Tolka and River Dodder undertaken in 2010-2012. Focus on Rivers Liffey, Camac, Santry, and Mayne
- Frog, Newt, Lizard: To be surveyed as part of Action 6
- Hedgehog, Pygmy Shrew, Badger: Focus on St Anne's Park, Bushy Park, Lansdowne Valley Park and Tolka Valley Park
- Special Conservation Interests of SPAs: Monitored by Birdwatch Ireland as part of Irish Wetland Birds Survey

Action 3: Develop, in co-operation with the National Parks and Wildlife Service, the Dublin Naturalists' Field Club, Birdwatch Ireland, Inland Fisheries Ireland, Waterways Ireland, and other partners as appropriate, site-specific best management guidelines for legally protected species within Dublin City, and communicate with landowners and users

Focus:

- Best management guidelines for sites supporting legally-protected plants will be a priority of this Action
- Marsh Fritillary Butterfly on North Bull Island
- Management of disturbance to Seals and Special Conservation Interests of SPAs

Action 4: Continue to map the distribution and abundance of species identified under the Dublin City Urban Birds Project, and promote best practice guidance to maintain their favourable conservation status

Focus:

- A survey of species nesting along the City's waterways, and nesting gulls, will be a priority of this Action

1.2 Areas of Conservation Value

There are habitats which occur in Dublin City, that are listed under Annex I of the EU Habitats Directive. These are largely confined to the Special Areas of Conservation and the Special Protection Areas at North Bull Island and along the City's coastline and estuaries. These habitats are identified as Qualifying Interests (habitats for which the sites have been designated) of the North Dublin Bay and South Dublin Bay Special Areas of Conservation, and are set out in Table 4 below. There are also other habitats that occur in these areas, which are not listed under the Annexes of the EU Habitats Directive. However, all habitats occurring within the Special Areas of Conservation, both Annex and non-Annex, are protected.

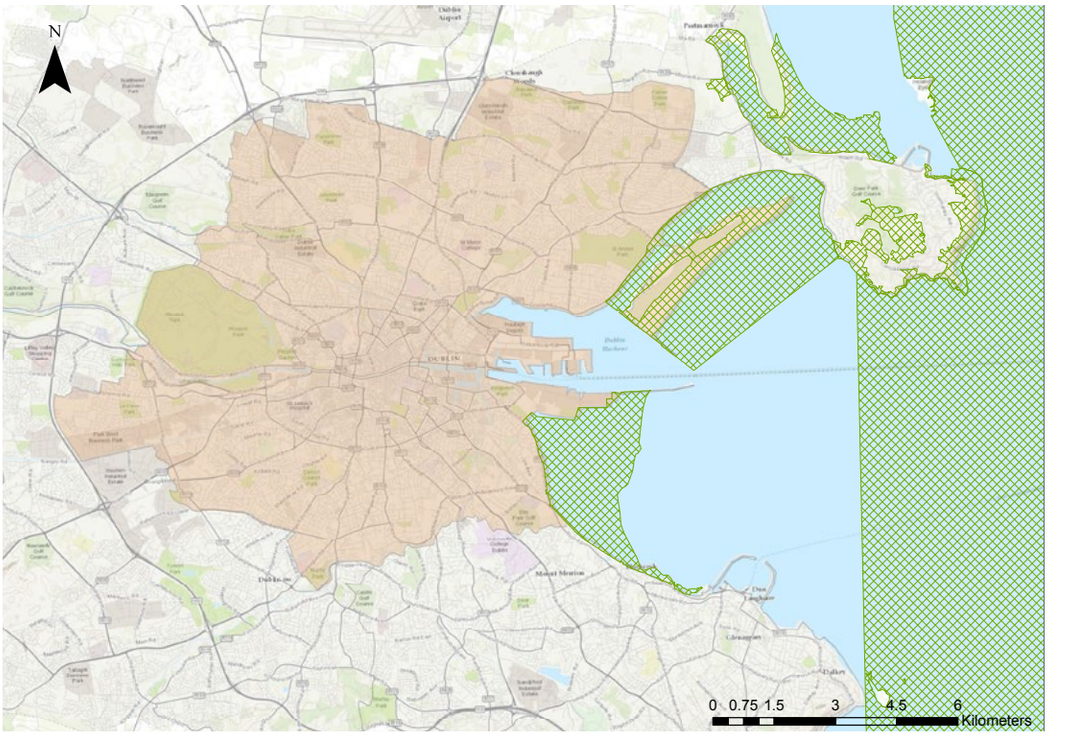
In addition, these habitats support nationally and internationally-important numbers of bird species listed under the Annexes of the EU Birds Directive. Twenty-one of these species are identified as Special Conservation Interests of the designated sites as set out in Table 2 above. However, these habitats also support many other bird species which occur in these areas. As such, all habitats occurring within the Special Protection Areas are protected for the numbers, and species, of bird they support.

Table 4: Habitats identified as Qualifying Interests of Dublin City's SAC's

Mudflats and sandflats not covered by seawater at low tide
Annual vegetation of drift lines
Salicornia and other annuals colonising mud and sand
Atlantic salt meadows (Glauco-Puccinellietalia maritimae)
Mediterranean salt meadows (Juncetalia maritimi)
Embryonic shifting dunes
Shifting dunes along the shoreline with Ammophila arenaria (white dunes)
Fixed coastal dunes with herbaceous vegetation (grey dunes)
Humid dune slacks

The location and extent of these habitats have been mapped by the National Parks and Wildlife Service, and used to inform the Conservation Objectives of the designated sites. In addition, the Royal Canal, Grand Canal, and a small section of the River Liffey, are protected as proposed Natural Heritage Areas under the Wildlife Act.

There are other habitats within Dublin City which are not legally-protected, but which are of conservation value for the species they support. Many of these have been mapped as part of the Dublin City Habitat Map, including semi-natural grasslands, woodlands, and freshwater wetlands. However, there are other habitats which support rare species, but which would not typically be recognised as a 'valuable' wildlife habitat, for example, the vertical faces of walls, or vacant brown field sites.



It is important therefore, to identify and map all areas of conservation value within Dublin City. A number of surveys and studies carried out as part of the Dublin City Biodiversity Action Plan and the Dublin City Heritage Plan will provide a baseline for this, including the Habitat Survey of Dublin City's Strategic Green Network (2010), Survey of Semi-Natural Grasslands in Dublin City (2007), Survey of Ancient and Species Rich Hedgerows in Dublin City (2006), and Habitat Survey of High Biodiversity Value Areas in Dublin City (2006).

Action 5: Identify and map all areas of conservation value within Dublin City, in conjunction with the National Parks and Wildlife Service, the Dublin Naturalists' Field Club, and other partners as appropriate

Focus:

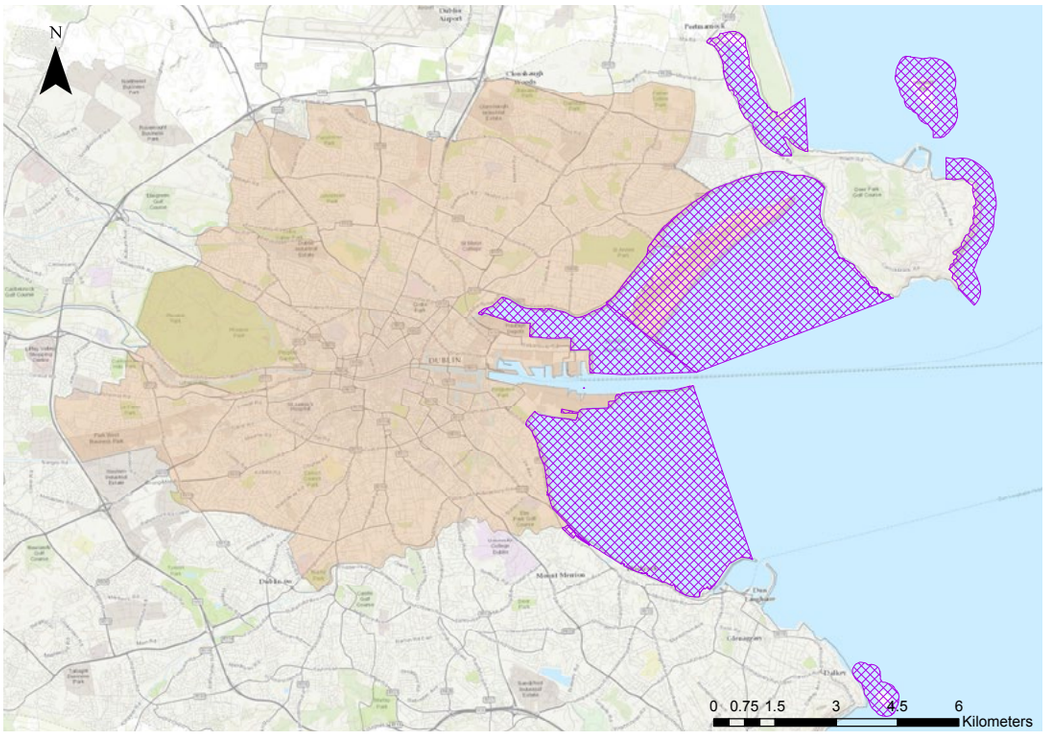
- Existing designated sites for nature conservation, i.e. SAC, SPA, pNHA, Nature Reserve, will automatically be included
- Areas supporting legally-protected plant species
- Areas of conservation value identified in surveys set out above, and in other surveys as relevant, e.g. Irish Semi-Natural Grasslands Survey, National Survey of Native Woodlands, River Liffey Ecological Survey, Royal Canal Ecological Baseline Survey, etc
- Areas identified through consultation with National Parks and Wildlife Service, the Dublin Naturalists' Field Club, and other partners as appropriate

Action 6: Establish the current conservation status of all semi-natural grasslands identified by the Dublin City Semi-Natural Grasslands Survey (2007), wetlands identified by the Dublin City Habitat Map (2006), and hedgerows identified by the Dublin City Hedgerow Survey (2006)

Action 7: Develop, in co-operation with the National Parks and Wildlife Service, the Dublin Naturalists' Field Club, Birdwatch Ireland, Inland Fisheries Ireland, and other partners as appropriate, site-specific best management guidelines for Areas identified under Action 5, and communicate with landowners and users

Focus:

- Areas supporting legally-protected plant species
- Areas of conservation value identified in surveys set out above, and other surveys as relevant, e.g. Irish Semi-Natural Grasslands Survey, National Survey of Native Woodlands, River Liffey Ecological Survey, Royal Canal Ecological Baseline Survey, etc



Map of Nature Designated Sites within Dublin City Council Administrative Area (Special Areas of Conservation hatched in Green, Special Protection Areas hatched in Purple)

Merrion Square: Public parks have many amenity, recreational and historical uses in Dublin City, in addition to supporting biodiversity.
Photo by Melanie van der Linde

1.3 Public Parks

Approximately 17% of Dublin City's land-cover is accounted for by public parks. The Office of Public Works manages Phoenix Park, St Stephen's Green, Iveagh Gardens, the National War Memorial Gardens, and a number of smaller parks, cemeteries, and designed landscapes throughout the City. The remaining public parks, including North Bull Island, St Anne's Park, Bushy Park, Tolka Valley Park and Lansdowne Valley Park, are managed by Dublin City Council. As outlined earlier, many public parks support rare and legally-protected species, and elements of semi-natural habitats. However, they are also multifunctional, and have historical, recreational and amenity uses. This presents both challenges and opportunities for the conservation of biodiversity.

In 2004, habitat management plans were prepared for five public parks, including Bushy Park, Le Fanu Park, Springdale Park, St Anne's Park, and St Kevin's Park. In 2007, an ecological assessment with management recommendations for Lansdowne Valley Park was undertaken. In 2009, a biodiversity management plan for Irishtown Nature Park, and a grassland management schedule for Liffey Valley Park were prepared. In 2010, a management plan for Tolka Valley Park and Cardiffsbridge Nature Park was prepared. In 2011, a management plan for Poppintree Park was prepared, and in 2012 a biodiversity study was undertaken at the Park. Conservation management plans are currently being prepared and implemented for other public parks within the City.

A biodiversity manual, similar to Dún Laoghaire-Rathdown County Council's Parklife (2010) document, will be prepared for Dublin City Council parks to address opportunities and challenges which are common across many of the City's parks. This will include guidance on mowing regimes, developing and enhancing opportunities for individual species or groups of species, management of existing park habitats, and the management and control of noxious and invasive species.

In particular, the use of herbicides and pesticides by Dublin City Council will be examined, with a view to minimizing, and where possible, eliminating their use. This will require a clear and well-thought out series of actions, which does not entail an overnight switch to a new regime, but rather a structured step-by-step approach. In this regard, there are a number of well documented international case studies. For example, in the US City of Lawrence, Kansas, each park, athletic complex, and cemetery was individually separated into zones which were labelled either green or yellow, with a green zone indicating park-land where pesticides were not to be applied, and a yellow zone indicating park-land where pesticides could be used as a maintenance tool to manage the park. Within Dublin City, there will be situations where pesticides are appropriate to use, such as for fine turf areas, the rose gardens, to eliminate invasive species, or for human health reasons. However, as part of the Dublin City Biodiversity Action Plan 2015-2020, Dublin City Council will develop a transparent strategy for minimizing pesticide use, which will be an exemplar for other organizations and authorities within the City.

In 2015, the Green Flag Award Scheme was introduced in Ireland. Within Dublin City, Bushy Park, Poppintree Park, St Stephen's Green, and Grangegorman Military Cemetery, were awarded Green Flags. The Green Flag Award Scheme provides an international benchmark against which public parks and green spaces are measured, and is seen as a way of encouraging high environmental standards. Public parks are judged against eight key criteria, which include the conservation and appropriate management of biodiversity. The biodiversity potential of public parks participating in the Green Flag Award Scheme will be evaluated as part of the Dublin City Biodiversity Action Plan 2015-2020

Dublin City has an abundant, but species-poor (8 species) bumblebee population.
Photo by Anthony Woods

Action 8: Prepare and implement, in co-operation with the Office of Public Works, a manual of best practice management techniques for the conservation of biodiversity within Public Parks

Focus:

- Incorporation of best practice identified under Action 3 and Action 7
- Habitat management which benefits pollinators, in line with All-Ireland Pollinator Plan 2015-2020
- Tailoring of existing management for the benefit of site-specific biodiversity
- Control of noxious and invasive species

Japanese Knotweed: Invasive Species can impact on human health and physical infrastructure, in addition to biodiversity.
Photo by Japanese Knotweed Solutions Limited at www.jksl.com

Action 9: Prepare and implement a pesticide reduction strategy within Dublin City Council

Focus:

- Map a sample of public parks to establish the extent of pesticide use (rationale for their use above alternative methods, volume, and application method)
- Identify four case-study public parks, and implement a 50% reduction in pesticide use (based on use during 2014-2015)

Action 10: Evaluate the biodiversity potential of public parks participating in the Green Flag Award Scheme

Focus:

- Identify demonstration sites for the implementation of Action 8 and Action 9
- Establish current ecological status of sites to use as a baseline for measuring change

1.4 Invasive Species

One of the greatest threats to the City's biodiversity is from Invasive Species. They also significantly impact on human health and physical infrastructure. Invasive Species are plants and animals which have been introduced, either accidentally or deliberately, into natural environments where they are not normally found, and which cause serious negative impacts to their new environment. For example, during the preparation of the Dublin City Biodiversity Action Plan 2015-2020, mink were recorded within the River Dodder, River Liffey, and River Tolka catchments. Mink attack the nest sites of river bird species, and thereby reduce recruitment to the population. If left unchecked, the spread of mink can result in the collapse of local populations of river birds, and in particular, the legally protected kingfisher.

The European Communities (Birds and Natural Habitats) Regulations, 2011, provide a list of Invasive Alien Species in Ireland. Eighteen of these species have been recorded in Dublin City. These are Japanese Knotweed, Giant Knotweed, Giant Hogweed, Himalayan Balsam, Giant Rhubarb, Cord-Grass, Curly Waterweed, New Zealand Pigmyweed, Parrots Feather, Rhododendron, Sea Buckthorn, Spanish Bluebell, Water Fern, Canadian Waterweed, Nuttall's Waterweed, Mink, Grey Squirrel, and Roach.

However, there are other species present, which, under the right ecological conditions, are potentially invasive, and could have an impact on the conservation objectives of a site, or prevent a water body from achieving high ecological status under the Water Framework Directive. Examples of these species, which have been recorded in Dublin City, include Common Evening Primrose, Reed Canary-Grass, Sycamore, Montbretia, Snowberry, Perch, and Yellow-Bellied Slider.

Mink: These Invasive Species attack the nest sites of vulnerable river bird species, including the kingfisher. Photo by qmnonic, via Wikimedia Commons

Control of Curly Waterweed at Darndale Park by staff of Dublin City Council and Inland Fisheries Ireland. Photo by Maryann Harris

In 2015, the EU regulations on the 'Prevention and Management of the Introduction and Spread of Invasive Alien Species' came into force. This will strengthen controls and enforcement with regard to the management of Invasive Alien Species over the course of the plan period, however, there is an immediate requirement for clarity on roles, responsibilities and best practice for recording, controlling and monitoring Invasive Alien Species.

Invasive Alien Species (IAS) spread, or are transported from, a source population to their receiving environment. Dublin City is particularly susceptible to Invasive Alien Species due to the number of pathways into the City. For example, Dublin Airport and Dublin Port are potential pathways for IAS from other countries; the City's rivers and canals, including their recreational use, are pathways for aquatic IAS from the wider catchment areas; the movement of soil and other materials between construction sites are pathways for the spread of IAS into, around, and out of the City, and the dumping of garden waste from private gardens and ponds are pathways for garden escape IAS.

Dublin City Council monitors and controls Invasive Alien Species on public lands within the City. However, in the absence of controlling either the source population, or the pathway of an Invasive Alien Species, they will never be successfully eradicated. In this regard, the successful control of Invasive Alien Species in Dublin City is reliant on regional co-operation to identify and eradicate source populations and pathways.

In addition, bio-security guidance is available in the form of 'Codes of Practice' for key activities that are known to facilitate the introduction of Invasive Alien Species. The mainstreaming of these codes of practice among all sectors will be central to the on-going control of Invasive Alien Species in Dublin City.

Action 11: Prepare and implement an Invasive Species Action Plan for Dublin City

Action 12: Continue to work with all stakeholders to manage source populations and pathways of Invasive Alien Species in the greater Dublin area

Focus:

- Management of Invasive Species on River Dodder Catchment

1.5 Data Sharing and Publication

As set out earlier, it is important to strengthen the ways in which biodiversity data are used and shared. Dublin City Council is the main local government agency and consent authority for Dublin City, and as such, it is critical that its officials have access to the most up-to-date biodiversity data available. In this regard, it is important to continue to populate Dublin City Council's Geographical Information Systems with up-to-date and reliable biodiversity data, and ensure that all departments and decision-makers have access to same.

Dublin City is fortunate to have a number of biodiversity experts who are very familiar with the important biodiversity sites within the City. Many of these experts have a long-term perspective of the conservation status of these sites, and can make recommendations relevant to the achievement of these sites in a favourable conservation condition. The facilitation of a workshop or seminar, where information can be exchanged between biodiversity experts, Dublin City Council, and other stakeholders, would further enhance the relationship of co-operation between the local authority and biodiversity experts.

The National Biodiversity Data Centre (NBDC) is the national organisation that collates, manages, analyses and disseminates data on Ireland's biodiversity. The NBDC holds many records for different taxonomic groups within Dublin City. The publication of maps and inventories of these taxonomic groups has the potential to provide baseline data for assessing information gaps, establishing conservation status, and developing management guidelines. In addition, the NBDC is developing a suite of national indicators that will quantify Ireland's progress towards achieving the targets set down by the Convention on Biological Diversity, also known as the Aichi Targets. Data gathered as part of the Dublin City Biodiversity Action Plan 2015-2020 will contribute to the assessment of these indicators.

Angle Shades Moth: A common species found in most habitats.
Photo by Anthony Woods

The 17th Century herbalist, Culpeper, recommended the use of Eyebright as an aid to eyesight and memory.
Photo by Anthony Woods

Bluebell: A much loved woodland species.
Photo by Anthony Woods

A Flora of Inner Dublin (the area between the Royal Canal and the Grand Canal) was published in 1984. This publication not only provided an important reference on the distribution and abundance of plant species within the City, but also identified sites of botanical interest. In the intervening period, there has been significant changes to the City's landscape. However, there has been no published revision of this flora, and as such, information on the changes which have occurred, and the current distribution and abundance of many species, requires updating. A revised publication will provide an important reference for monitoring the effectiveness of the management of the City's flora.

Action 13: Continue to populate Dublin City Council's Geographical Information Systems with up-to-date biodiversity data, and ensure all departments and decision-makers have access to same

Focus:

- Ensure data collected as part of Actions 2, 4, and 5, are uploaded to Dublin City Council's Geographical Information Systems within six weeks of collection
- Communicate the availability and significance of new information to all Dublin City Council departments within six weeks of uploading data

Action 14: Facilitate an annual workshop/seminar for information exchange between biodiversity experts, Dublin City Council, and other relevant bodies

Focus:

- Extent, distribution, and best practice management of legally-protected species, habitats, and areas of conservation value in Dublin City
- Management of threats to Dublin City's biodiversity, i.e. Invasive Species, Habitat Change, Impacts of Climate Change

Action 15: Work with the National Biodiversity Data Centre, Dublin Bay Biosphere Partnership, and others, to publish annual up-to-date maps and inventories of taxonomic groups within Dublin City

Action 16: Revise and publish 'The Flora of Inner Dublin', with an additional focus on the botanical history and significance of the Royal Canal and Grand Canal, in collaboration with the Dublin Naturalists' Field Club and Waterways Ireland

Action 17: Publish 'The Flora of North Bull Island' in collaboration with the Dublin Naturalists' Field Club and Dublin Bay Biosphere Partnership

Theme 2:

Strengthen the effectiveness of collaboration between all stakeholders for the conservation of biodiversity in the greater Dublin region

As outlined above, Dublin City Council is the sole local authority for Dublin City, and has responsibility for a wide range of services, including business, community, housing, planning, roads, transport, recreation, culture, waste, water and environmental services. As such, Dublin City Council must continue to create opportunities for communication and co-operation across its departments, and ensure that all decision-makers take cognisance, in the first instance, of the City's biodiversity, and the statutory requirements for its protection.

There are three local authorities, which border Dublin City Council, namely Fingal County Council, South Dublin County Council, and Dún Laoghaire-Rathdown County Council. These local authorities have also produced Biodiversity Action Plans and Heritage Plans for their respective areas, and have similar obligations for the protection of biodiversity as Dublin City Council. These Plans have also identified the requirement for co-operation between local authorities, particularly in relation to the management of Invasive Species, and trans-boundary sites of conservation value such as the River Mayne and River Dodder which form part of the City Council's administrative boundaries, the River Tolka and River Liffey valleys, and the Dublin Bay coastline. Additionally, opportunities exist for co-operation in the implementation of actions for education, awareness, and community engagement.

Photo by Anthony Woods

In addition to local authorities, there are a number of government agencies operating within Dublin City who have responsibility for biodiversity conservation in the City. These are set out in Table 3 below. Action 1.1 of Ireland's National Biodiversity Plan requires 'relevant Government Departments and State agencies to prepare sectoral Biodiversity Action Plans in line with the National Biodiversity Plan to ensure and promote the conservation and sustainable use of biodiversity'. Relevant departments and agencies include those involved in transport, regional policy and planning, tourism, enterprise and employment, health, research, education, and fisheries.

Table 5

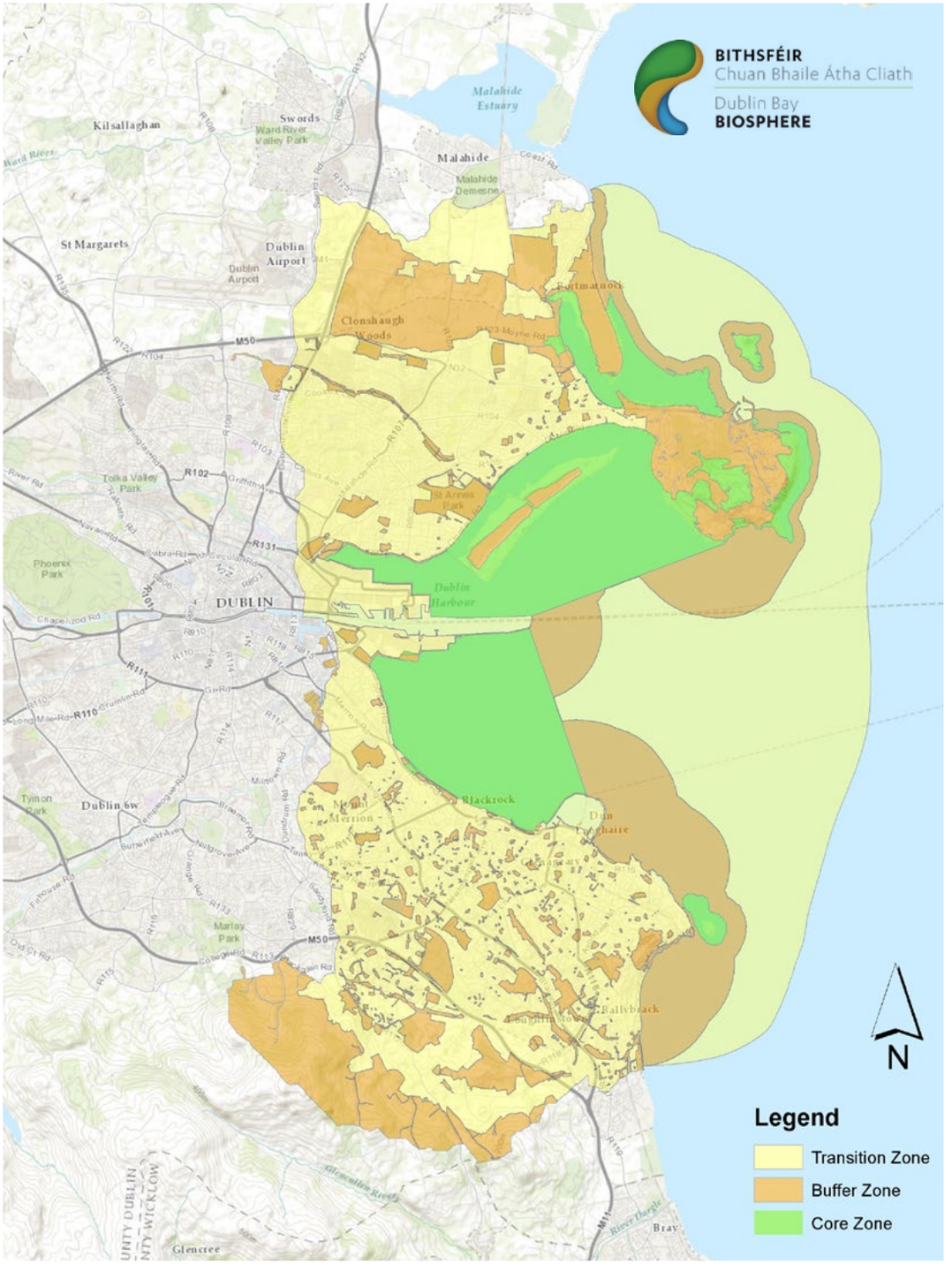
Government Agency	Role/ Responsibility
Office of Public Works	Manage Phoenix Park, St. Stephen's Green, National Botanic Gardens, the National War Memorial Gardens, and a number of smaller parks, cemeteries, and designed landscapes throughout the City
Department of Arts, Heritage and the Gaeltacht	Implementation and enforcement of Wildlife Acts and Regulations which bring the Habitats and Birds Directives into force
Environmental Protection Agency	Environmental licensing, regulation, enforcement, planning, and monitoring
Dublin Port Company	Management, control, operation and development of Dublin port
Inland Fisheries Ireland	Conservation, protection, management, development and improvement of inland fisheries, including the Liffey, Tolka, and Dodder river systems
Waterways Ireland	Management, maintenance, development and restoration of the Royal Canal and the Grand Canal
Transport Infrastructure Ireland, Iarnród Éireann, Electricity Supply Board, Ervia	Management of lands in their ownership, and to ensure that regular activities, or specific projects, do not have a negative impact on biodiversity conservation.
Heritage Council	Provides policy advice and grant funding for heritage and biodiversity initiatives, including biodiversity management, research and education

Common Seal: Both Common Seals and Grey Seals haul-out on North Bull Island.
Photo by Anthony Woods

Many non-governmental organisations also operate within Dublin City. These include, but are not limited to, An Taisce, Birdwatch Ireland, the Dublin Naturalists' Field Club, Eco-Unesco, Coastwatch Ireland, Herpetological Society of Ireland, Dublin Community Growers, Bat Conservation Ireland, Irish Wildlife Trust, and the Irish Seal Sanctuary. These organisations are involved, to varying degrees, in biodiversity recording, education and awareness-raising.

Conservation of biodiversity in Dublin City is reliant on collaboration between all these organisations, and a key target of the Dublin City Biodiversity Action Plan 2015-2020, is to continue to develop and strengthen this collaboration.

Map of Dublin Bay Biosphere



2.1 Dublin Bay Biosphere

During 2012 - 2014, a periodic review of the UNESCO Biosphere Reserve at North Bull Island was undertaken by Dublin City Council on behalf of the Irish State. A recommendation of this review was to extend the Biosphere Reserve designation to cover the wider Dublin Bay area. This was a reflection of the need to manage North Bull Island as part of a wider ecosystem, and not in isolation. It was also a reflection of the many legal and social changes which have occurred within Dublin Bay since the island was designated in 1981, and in particular, the need for integrated management of two nature reserves, two Special Amenity Area Orders, six Special Areas of Conservation, six Special Protection Areas, and three Ramsar wetland sites. The designation of the Dublin Bay Biosphere Reserve was achieved in 2015.

In addition, a new partnership, the Dublin Bay Biosphere Partnership, was established in 2014 for the management of the Dublin Bay Biosphere Reserve. The partnership includes Dublin City Council, Fingal County Council, Dún Laoghaire – Rathdown County Council, Dublin Port Company, and the National Parks and Wildlife Service. A Memorandum of Understanding between the partners gives a commitment, inter alia, to develop and implement a 5-year conservation programme for key sites and species within the Biosphere Reserve, and to improve education and awareness of the significance of Dublin Bay in terms of natural heritage.

Action 18: Implement and promote the objectives of the Dublin Bay Biosphere Partnership

Focus:

- Actions 3, 15, and 17, in addition to Actions under Theme 4, complement the objectives of the Dublin Bay Biosphere Partnership

Map of Rivers and Canals within Dublin City

2.2 Water Framework Directive

The purpose of the Water Framework Directive (2000) is to establish a framework for the protection of inland surface waters, transitional waters, coastal waters, and groundwater. Dublin City has approximately 70km of inland waterways (rivers and canals), which includes the transitional waters of the Liffey and Tolka estuaries, and 23km of coastline, which includes the transitional waters around North Bull Island. The majority of these water-bodies are regarded as heavily modified, due to the physical changes which have taken place for flood defence and navigation. There are no lakes in Dublin City, however, a number of public parks support ponds and constructed wetlands, including Phoenix Park, Tolka Valley Park, Bushy Park and Poppintree Park.

Ducklings on the Tolka River.
Photo by Anthony Woods

The Water Framework Directive requires the adoption of a catchment-based approach for managing water, and for Management Plans to be prepared and renewed in six year cycles. In Ireland, the Environmental Protection Agency advocates the Integrated Catchment Management (ICM) approach in which everybody has a part to play, i.e., the top-down approach guides the overall direction of the management plans, while the bottom-up approach is critical to deliver improvements in water quality at the local level. ICM is a way of achieving several objectives, including resource management, flood management, land use planning, biodiversity goals, landscape/ environmental enhancement, etc, as well as the basic goal of the Water Framework Directive, which is to achieve good ecological status in all water bodies. Good ecological status is a combination of physicochemical, ecological and hyrdomorphological qualities.

Under the first cycle of Management Plans, Dublin City was part of the Eastern River Basin District, and Dublin City Council acted as the coordinating authority. Consultation on the 'Timetable and Work Programme for the Development of the Second Cycle River Basin Management Plans' and the 'Significant Water Management Issues in Ireland for the Development of the Second Cycle River Basin Management Plans' has been underway during the preparation of the Dublin City Biodiversity Action Plan 2015-2020, and a draft Management Plan is expected to be published in 2016.

Dublin City is downstream of a number of river catchments, i.e. the Rivers Liffey, Tolka, Dodder, Camac, Santry and Naniken, which means its waterways are at the receiving end of any accumulated pollution from the lands upstream. These waterways ultimately discharge into Dublin Bay, and as such, the implementation of a second cycle river basin management plan will be central to the management of protected areas under the Water Framework Directive, and to achieving the aim of the Dublin City Biodiversity Action Plan 2015-2020.

The Dublin City Biodiversity Action Plan 2015-2020 will support the implementation of the management plan through a series of awareness, education, and volunteering events around the City's rivers and canals. These will form part of an annual programme of events to raise awareness of biodiversity in the City (see Section 4.2).

Action 19: Co-ordinate a series of awareness, education, and volunteering events around the City's rivers and canals as part of an annual biodiversity awareness programme, which contributes to the achievement of objectives under the Water Framework Directive

Bohernabreena Reservoir: These reservoirs are managed by Dublin City Council within the Glenasmole Valley SAC.
Photo by Dublin Mountains Partnership

View of Dublin City from Dublin Mountains.
Photo by Dublin Mountains Partnership

2.3 Dublin Mountains Partnership

Dublin City Council does not own lands within the Dublin Mountains area, however, it does manage lands at the Bohernabreena Reservoir within the Glenasmole Valley, through a Service Level Agreement with Irish Water. The Bohernabreena Reservoirs lie within the Glenasmole Valley Special Area of Conservation.

Notwithstanding this, the Dublin Mountains are an important recreational and amenity resource for Dublin City, catering for both residents and visitors. As such, Dublin City Council is a partner organisation to the Dublin Mountains Partnership. The other partner organizations include Coillte, South Dublin County Council, Dún Laoghaire – Rathdown County Council, National Parks and Wildlife Service, and the Dublin Mountains Initiative, which is an umbrella group representing the recreation users of the Dublin Mountains.

While the primary aim of the Dublin Mountains Partnership is to improve the recreational experience for users of the Dublin Mountains, by linking existing and potential outdoor recreation components, it also provides the platform to ensure that biodiversity conservation is incorporated into an integrated plan for the area.

Action 20: Continue to work with the Dublin Mountains Partnership to ensure that biodiversity conservation is incorporated into an integrated plan for the area

Focus:

- Control of Invasive Species within the Dublin Mountains
- Management of recreational impacts to sensitive habitats
- Investigate opportunities to develop mixed-broadleaved woodland adjacent to recreation trails

Rowan: A mistle thrush will defend a rowan tree as its territory, not for nesting, but throughout the winter as its feeding territory.
Photo by Anthony Woods

Theme 3:

Enhance opportunities for biodiversity conservation through green infrastructure, and promote ecosystem services in appropriate locations throughout the City

Green Infrastructure is identified by the European Commission as contributing to all the targets of the EU Biodiversity strategy to 2020, and it has adopted a Green Infrastructure Strategy 'to promote the deployment of green infrastructure in the EU in urban and rural areas'. The Regional Planning Guidelines for the Greater Dublin Area recommends that each local authority 'prepare a county based Green Infrastructure Strategy linking to adjoining areas and following regional connections'.

Green Infrastructure is defined by the European Commission as 'a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services'. Ecosystem Services are the benefits which healthy ecosystems can provide to human society, and are typically used as a way of measuring the economic value of biodiversity to society. The underlying principle of Green Infrastructure is that the same area of land can often provide multiple ecosystem services, if its ecosystems are in a healthy state. The National Biodiversity Plan has adopted four main categories of ecosystem services, as identified by the Millennium Ecosystem Assessment, namely provisioning services, regulating services, supporting services, and cultural services.

Provisioning services refer to products obtained from ecosystems, such as food, fibre, fuel, clean water, medicines and genetic resources. Regulating services refer to the benefits of managing ecosystem processes, such as carbon sequestration, flood control, water

purification, waste decomposition, and pest control. Supporting services are those which are necessary for the production of all other ecosystem services, and include soil fertility and crop pollination. Cultural services are the non-material benefits people obtain from ecosystems through cognitive development, inspiration, recreation, and aesthetic experiences.

Some ecosystem services have the potential to conflict with the conservation of biodiversity. For example, recreational infrastructure, such as walkways and cycle-ways can, if insensitively designed, lead to habitat loss or fragmentation in sensitive areas, such as riparian zones, or result in disturbance to sensitive species, such as otters and bats, through light pollution or increased human access to breeding or resting places. As such, the prioritisation of ecosystem services over biodiversity conservation, in particular situations, has the potential to negatively impact on sensitive habitats and species or cause loss of biodiversity.

A key target of the Dublin City Biodiversity Action Plan 2015-2020 is to promote opportunities for biodiversity conservation through green infrastructure planning, while directing ecosystem services to areas where they will not have a negative impact on sensitive species or habitats.

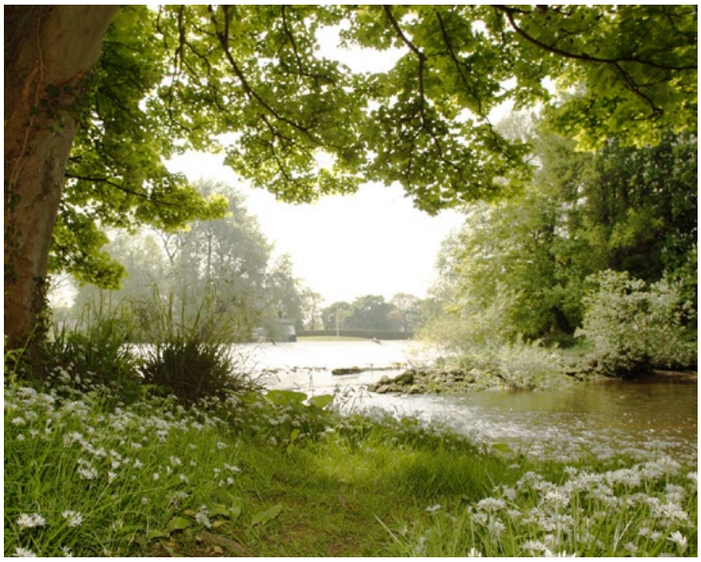
Rivers, canals, riparian habitats, hedgerows and tree lines are important components of Green Infrastructure.
Photo by Anthony Woods

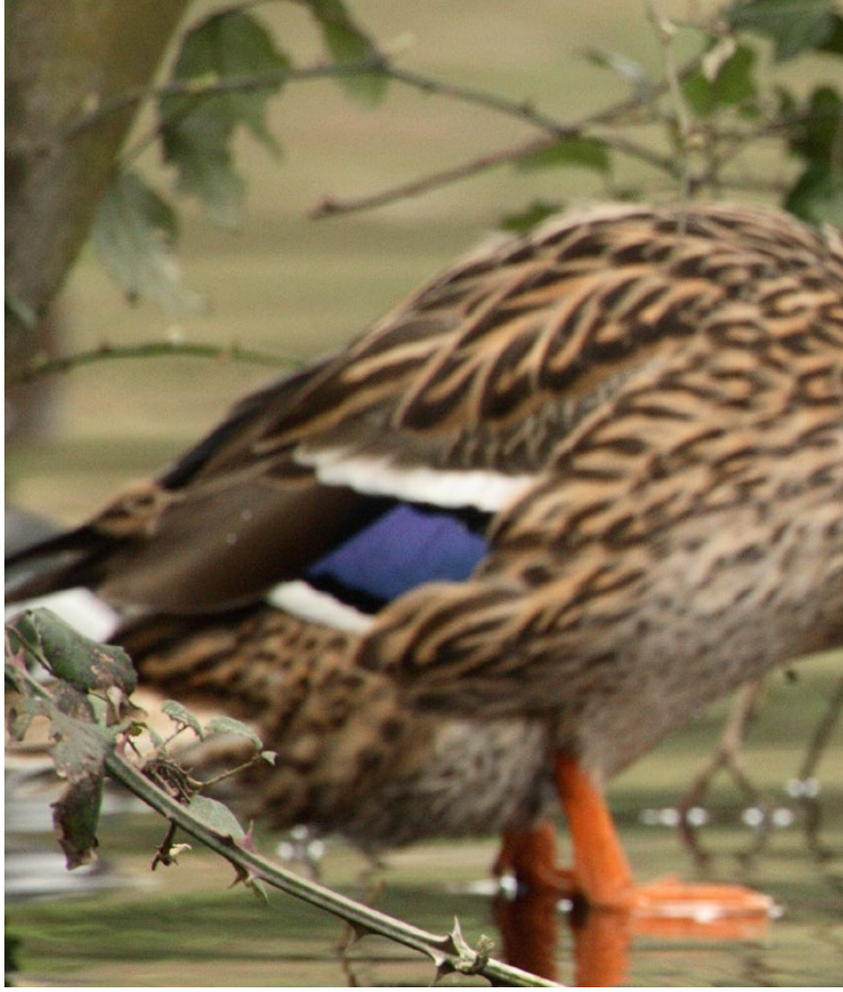
3.1 Dublin City's Green Infrastructure Network

Dublin City's Green Infrastructure Network is based on three main areas, which have sufficient size and scale to support natural and semi-natural habitats, and which are connected to each other, and to the Green Infrastructure Networks of neighbouring local authorities, by the City's waterways and associated public parks and open spaces. Two of these areas lie within the administrative boundary of Dublin City Council. These are Dublin Bay and its associated terrestrial, estuarine and marine ecosystems, and Phoenix Park. The third area is the Bohernabreena reservoirs, which are managed by Dublin City Council, and are connected to the City via the River Dodder.

The City's Green Infrastructure Network supports a number of regional connections, including the Royal Canal, Grand Canal, and the Rivers Liffey, Tolka, Dodder, Mayne, and Santry. The Royal Canal and the Grand Canal are the City's largest regional connections, linking the River Shannon to Dublin Bay.

Black Guillemot: Nest in the quay walls of the River Liffey and the piers of Dublin Port.
Photo by Anthony Woods





Ramsons (wild garlic) on the riverbank at Islandbridge.
Photo by Anthony Woods

The River Liffey, Dublin City's principal river, rises in County Wicklow, and flows through County Kildare and part of South Dublin County Council's administrative area and Fingal County Council's administrative area, before it enters the City Centre, and links the southern part of Phoenix Park to Dublin Bay. A number of public parks and open spaces contribute to this regional connection, including Liffey Valley Park, the War Memorial Gardens, the River Camac (which is a tributary of the River Liffey) and Lansdowne Valley Park.

The River Tolka, Dublin City's second largest river, rises in County Meath and flows through part of Fingal County Council's administrative area, before it enters Dublin City, and flows into Dublin Bay. The public parks and open spaces within Dublin City, which contribute to this regional connection, include Tolka Valley Park, Glasnevin Cemetery, National Botanic Gardens, Griffith Park, Fairview Park, and Alfie Byrne Road Park. There are also natural and semi-natural habitats on either side of the administrative boundaries of Dublin City Council and Fingal County Council, which link the River Tolka to the Royal Canal, and the northern part of Phoenix Park.

The River Dodder is Dublin City's third largest river, and forms part of Dublin City Council's boundary with Dún Laoghaire – Rathdown County Council. The river rises in Co. Wicklow, and flows through part of South Dublin County Council's administrative area, before it enters Dublin City, linking the Bohernabreena reservoirs within the Glenasmole Valley, to Dublin Bay. The public parks and open spaces within Dublin City, which contribute to this regional connection, include Bushy Park, Orwell Park, Dartry Park, and Herbert Park.

The River Santry rises within Fingal County Council's administrative area, before it enters Dublin City, and flows into Dublin Bay. The public parks and open spaces which contribute to this regional connection include Silloge Park Golf Club, which is owned and managed by Dublin City Council, Oscar Traynor Road Park, Stardust Memorial Park, Springdale Road Park, and St Anne's Park. There are parts of the River Santry corridor which have been heavily modified, and where opportunities for rehabilitation exist. This would likely provide several benefits, including an enhancement of the river's biodiversity potential.

The River Mayne forms part of Dublin City Council's boundary with Fingal County Council, and flows into Baldoyle Bay, which is designated as a Special Area of Conservation and a Special Protection Area. The public parks linked to the River Mayne include the River Mayne Linear Park and Fr Collins Park. There are also significant areas of natural and semi-natural habitats on either side of the administrative boundaries of Dublin City Council and Fingal County Council, with much potential for the development of riparian parks.

The Green Infrastructure Network has multifunctional uses, and as such, it is important to map the distribution and extent of legally-protected species and areas of conservation value within the network, so that they can be managed appropriately for the benefit of biodiversity conservation. In this regard, the Habitat Survey of Dublin City's Strategic Green Network, undertaken in 2010, provides an initial baseline for this.

Mallard Duck and Moorhen.
Photo by Anthony Woods

Street trees also play a particular role in Green Infrastructure Networks. They are often placed along roadsides and in the median strip of busy streets, and as such, they regulate access to sunshine, restrict airflow, provide shelter, scavenge air pollutants and manage noise at the street level. The Dublin City Tree Strategy (2016) will seek to provide a co-ordinated approach to the management of public trees according to a long term plan. Trees, hedges, and woodlands will be managed to ensure healthy growth and to enhance their role as wildlife corridors within the City's Green Infrastructure Network.

Action 21: Prioritise the implementation of Actions 2, 3, 5, and 7 within Dublin City's Green Infrastructure Network

Action 22: Continue to co-operate with neighbouring Local Authorities, and the Office of Public Works, on Green Infrastructure Planning to protect, and where possible enhance, the connectivity of biodiversity across County Dublin

Focus:

- Ensure the management of the River Dodder and River Mayne riparian zones by Dublin City Council complements the management of the opposite riparian zones by neighbouring local authorities
- Ensure the management of the River Liffey Valley and River Tolka Valley by Dublin City Council complements the management within neighbouring local authorities

Action 23: Investigate the opportunities for rehabilitating the Santry River corridor

Discovering Marine Biodiversity
Photo by Marine Dimensions

Theme 4:

Develop greater awareness and understanding of biodiversity, and identify opportunities for engagement with communities and interest groups

One of the main functions of a biodiversity action plan, according to the national guidance on the production of such plans, is 'to raise public awareness of, and involvement in, the conservation of biodiversity'. This is distinct from raising awareness among decision- and policy-makers, which is addressed by Action 14 (Facilitate an annual workshop/seminar for information exchange between biodiversity experts, Dublin City Council, and other relevant bodies) under Section 1.0 above.

Raising awareness among the public has the potential to result in positive changes to behaviour, which will ultimately benefit biodiversity conservation, for example, by understanding the impacts of dumping garden waste in sensitive habitats, planting invasive, or potentially invasive, species in gardens, and particularly aquatic species, causing damage to trees, or allowing pets to chase or disturb wildlife. Other types of awareness, such as the provision of guidance on wildlife gardening, can increase the biodiversity potential of gardens and school grounds. While this type of guidance is typically of most benefit to species with wider environmental tolerances, and not rare or legally-protected species, it does help engender an appreciation of biodiversity.

Similar to raising awareness, the facilitation of volunteering and engagement can have benefits for biodiversity conservation, however, it is important that this engagement is managed, and that there are realistic expectations with regard to outcomes. For example, Dublin City has many non-consultant scientists, with extensive expertise and local knowledge. As

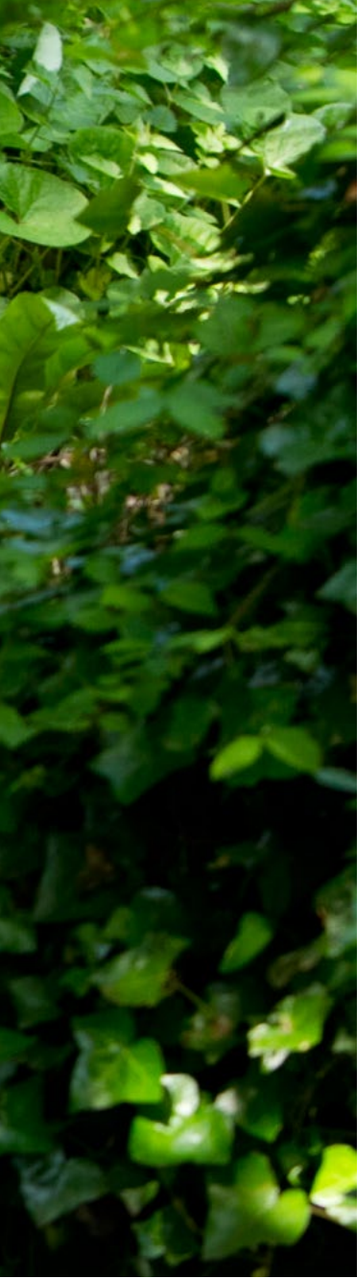

Marine

Collecting Water Invertebrates: Invertebrates are used to monitor water quality.
Photo by Colm Mahady

Identifying Butterflies
Photo by Marine Dimensions

such, the concept of citizen recording has the potential to provide a strong baseline to direct further research. However, not all participants involved in citizen recording will have the relevant expertise required to provide robust data, particularly with regard to rare species, and so this data may require verification, and must be used appropriately.

It is important that the Dublin City Biodiversity Action Plan 2015-2020 consolidates the messages which will benefit biodiversity awareness and conservation within the City, and broadens the opportunities for volunteering and engagement in biodiversity conservation.



4.1 Recognising Dublin City as a place full of biodiversity

Anecdotal evidence suggests that, despite increasing awareness and understanding of biodiversity generally, there is still a low recognition of the extent and distribution of biodiversity throughout the City, and the importance of many of the City's features, such as its coastline, waterways, and public parks, for rare and legally-protected habitats and species. As such, it is considered that the communication of basic messages about the importance of the City's features for biodiversity, will engender a greater appreciation, and desire to conserve these features. These messages are set out in Table 6 below:

Table 6: Biodiversity Messages

1. Wildlife is found throughout Dublin City, including the coastline, public parks, graveyards, rivers, canals and their riparian zones, open spaces linked to historic, educational and other public buildings, along roadsides, railway tracks and footpaths, and within residential 'greens', private gardens, walls and buildings
2. North Bull Island and Dublin Bay are among the best places in Dublin City to experience wildlife, and particularly the nationally and internationally important flocks of wildfowl and wading birds.
3. Dublin City's waterways (rivers and canals) and their riparian zones (river banks and towpaths) are important wildlife habitats, supporting fish, rare plants, river birds, mammals, and invertebrates, in addition to their function as corridors for connecting wildlife throughout the City.
4. Public parks, such as St Anne's, Bushy, Tolka Valley, Lansdowne Valley, Liffey Valley, Poppintree, Irishtown, and Phoenix Park, support many examples of semi-natural habitats, and rare or legally-protected species of plants and animals.
5. Dublin City's street trees provide important nesting, roosting, feeding, and commuting opportunities for many wildlife species, such as birds and bats, and are an important component of the City's Green Infrastructure Network.
6. Private gardens provide important resources for Dublin City's wildlife, such as food and shelter, and can often present people with opportunities to interact with nature

Action 24: Communicate biodiversity messages set out in Table 6 through all available channels, and as a feature of all biodiversity initiatives within Dublin City

Focus:

- Communicate messages through Dublin City Council's communication channels, i.e. Website, Social Media, Firstpost, LiveDrive, and Classmate
- Communicate messages, as relevant to the event, on all promotional material and media releases undertaken as part of Action 25

Lords and Ladies: Also known as Cuckoo-Pint, and common in shady hedgerows and woodlands.
Photo by Anthony Woods

4.2 Biodiversity Awareness Programme

There are many types of activities and initiatives which can help to raise awareness of biodiversity within Dublin City, however, to maximise awareness, and to consolidate the content of the messages being communicated, there is a need to develop and manage these activities and initiatives in a co-ordinated manner, rather than on an ad hoc basis. The preparation of a biodiversity awareness programme on an annual basis will help to achieve this, while also allowing for different and innovative awareness projects to be developed.

There are a number of national and international biodiversity-themed 'days' and 'weeks' which are held annually, and which provide opportunities for raising awareness at a local level. The most important of these, in the context of the Dublin City Biodiversity Action Plan 2015-2020, are World Wetlands Day (February), National Tree Week (March), International Biodiversity Day (May), St Anne's Park Rose Festival (July), National Heritage Week (August), World Parks Day (September), and Science Week (November).

Birdwatching.
Photo by Colm Mahady

During the preparation of the Dublin City Biodiversity Action Plan 2015-2020, there has been an increased focus for biodiversity awareness to 'fringe' on other events, as a means of reaching audiences that would not typically attend a dedicated biodiversity event. This type of activity has been well received by event-goers, and is perceived by event-organisers as adding value to the event.

Action 25: Prepare and implement an annual biodiversity awareness programme

Focus:

- Communication of the biodiversity messages set out in Table 6 above
- Education on human behaviours that impact on the City's biodiversity
- Education of the species outlined in Section 1.1
- Education on Areas of conservation value identified under Section 1.2

4.3 Education and Awareness Resources

As part of the Dublin City Biodiversity Action Plan 2008-2012, a number of resources were produced to aid biodiversity education and awareness. Native tree trails, audio podcast tours, and wildlife signage were developed for public parks. Teacher handbooks, class activity sheets, information leaflets and posters were produced for schools. Guidance notes were developed for enhancing biodiversity in buildings, gardens and neighbourhoods. A Dublin City biodiversity logo, exhibition stand, flags, and information displays were produced for use at public events. Biodiversity information and resources were made available online through the Dublin City Council website, and social media pages were developed to aid communication and awareness.

The information contained within some of these resources has become outdated, and some of the resources themselves have gone out of print, or gone beyond their life expectancy. As such, these resources will be reviewed in the context of Actions 24 and 25, and updated where appropriate. They will also be supplemented on an ongoing basis with new resources which contribute to Actions 24 and 25, and by a 'frequently asked questions' document for biodiversity matters in Dublin City.

Art is increasingly viewed as a resource for raising awareness of biodiversity. Biodiversity acts as an inspiration within many art forms, and is linked to cultural expression. However, art itself can also help communicate the importance of conserving biodiversity within the City. As part of the Dublin City Biodiversity Action Plan 2015-2020, an art and ecology strategy will be implemented.

Action 26: Review all Dublin City biodiversity resources, update where appropriate, and develop a 'frequently asked questions' document for biodiversity matters in Dublin City

Focus:

- Online resources available through Dublin City Council's website
- Develop an FAQ document for biodiversity matters in Dublin City

Action 27: Work with City Arts Office to devise and implement an art and ecology strategy

4.4 Facilitating Public Engagement and Volunteering

During the preparation of the Dublin City Biodiversity Action Plan 2015-2020, there has been an increased focus on public engagement and volunteering. A number of local groups are very active in this area, including the Dodder Action Group, Bull Island Action Group, and Conservation Volunteers Ireland. The response to these activities indicates that there is a growing interest for engagement among a number of different sectors in Dublin City, including corporate organisations, schools, educational clubs and societies, health groups, and local community groups. There are many opportunities for practical conservation work, which will benefit biodiversity within the City, from litter clean-ups to managing Invasive Alien Species. However, it is important that any engagement is managed, and in particular, any volunteering event should be in line with the best management practice of the habitat being worked in.

Similarly, it is important that there are realistic expectations with regard to the outcomes of public engagement. For example, activities such as citizen recording have the potential to provide good baseline data. However, not all participants involved in citizen recording will have the relevant expertise required to provide robust data, and so collected data may require verification, and must be used appropriately. In addition, training courses and guidance on biological recording, which were facilitated during the preparation of the Dublin City Biodiversity Action Plan 2015-2020, have proved popular, and suggest that there is a strong interest among the public to build their capacity for recording the City's biodiversity.

As part of the Dublin City Biodiversity Action Plan 2015-2020, a Volunteer Ranger Programme for North Bull Island will also be developed. This will operate in a similar model to the Ranger Service of the Dublin Mountains Partnership, and will aim to assist the public in appreciating North Bull Island through education and communication, increase community involvement in, and awareness of, the management of dune and wetland habitats, develop the volunteers' personal understanding, knowledge and sense of belonging to North Bull Island, promote the principles of Leave No Trace, and assist in practical conservation tasks.

Action 28: Work with NGOs to develop opportunities for conservation volunteering within Dublin City, and to facilitate training and guidance for biological recording

Focus:

- Facilitate four volunteer activities annually with Conservation Volunteers Ireland
- Facilitate Daubenton Bat Surveying with Bat Conservation Ireland
- Facilitate Coastwatch Survey with Coastwatch Ireland

Action 29: Develop a Conservation Ranger Programme for North Bull Island

Implementation Strategy

Theme 1: Strengthen the knowledge base of decision-makers for the conservation and management of biodiversity, and protect species and habitats of conservation value within Dublin City

Abbreviations as set out in Appendix 1*

Action		Lead Agency	Supporting Agencies*	Timeframe
Action 1:	Undertake an annual review of the implementation of all Actions contained within this Biodiversity Action Plan	DCC	All Agencies	Annually
Action 2:	Continue to map the distribution, and assess the abundance and conservation status of legally protected species within Dublin City	DCC	NPWS, DNFC, BCI, BWI, IFI, NBDC	Flora - 2016 Fauna - 2018
Action 3:	Develop, in co-operation with the National Parks and Wildlife Service, the Dublin Naturalists' Field Club, Birdwatch Ireland, Inland Fisheries Ireland, Waterways Ireland, and other partners as appropriate, site-specific best management guidelines for legally protected species within Dublin City, and communicate with landowners and users	DCC	NPWS, DNFC, BCI, BWI, IFI, NBDC	As part of Action 2
Action 4:	Continue to map the distribution and abundance of species identified under the Dublin City Urban Birds Project, and promote best practice guidance to maintain their favourable conservation status	BWI	DCC, NPWS, NBDC	Annually
Action 5:	Identify and map all areas of conservation value within Dublin City, in conjunction with the National Parks and Wildlife Service, the Dublin Naturalists' Field Club, and other partners as appropriate	DCC	NPWS, DNFC, OPW, NBDC	2016
Action 6:	Establish the current conservation status of all semi-natural grasslands identified by the Dublin City Semi-Natural Grasslands Survey (2007), wetlands identified by the Dublin City Habitat Map (2006), and hedgerows identified by the Dublin City Hedgerow Survey (2006)	DCC	NPWS, DNFC, OPW	2019
Action 7:	Develop, in co-operation with the National Parks and Wildlife Service, the Dublin Naturalists' Field Club, Birdwatch Ireland, Inland Fisheries Ireland, and other partners as appropriate, site-specific best management guidelines for Areas identified under Action 5, and communicate with landowners and users	DCC	NPWS, DNFC, BWI, IFI	2017
Action 8:	Prepare and implement, in co-operation with the Office of Public Works, a manual of best practice management techniques for the conservation of biodiversity within Public Parks	DCC	OPW, NPWS, DNFC, BCI, BWI, IFI	2016
Action 9:	Prepare and implement a pesticide reduction strategy within Dublin City Council	DCC		2016
Action 10:	Evaluate the biodiversity potential of public parks participating in the Green Flag Award Scheme	DCC	OPW, DNFC, BCI, BWI, IFI	Annually
Action 11:	Prepare and implement an Invasive Species Action Plan for Dublin City	DCC	NPWS, NBDC, IFI, WI	2016
Action 12:	Continue to work with all stakeholders to manage source populations and pathways of Invasive Alien Species in the greater Dublin area	DCC	FCC, SDCC, DLRCC, NPWS, NBDC, IFI, WI	Annually
Action 13:	Continue to populate Dublin City Council's Geographical Information Systems with up-to-date biodiversity data, and ensure all departments and decision-makers have access to same	DCC	NBDC	Annually

Action	Lead Agency	Supporting Agencies*	Timeframe
Action 14: Facilitate an annual workshop/seminar for information exchange between biodiversity experts, Dublin City Council, and other relevant bodies	DCC	All	Annually
Action 15: Work with the National Biodiversity Data Centre, Dublin Bay Biosphere Partnership, and others, to publish annual up-to-date maps and inventories of taxonomic groups within Dublin City	DCC	NBDC, DNFC, BWI, BCI	Annually
Action 16: Revise and publish 'The Flora of Inner Dublin', with an additional focus on the botanical history and significance of the Royal Canal and Grand Canal, in collaboration with the Dublin Naturalists' Field Club and Waterways Ireland	DNFC	DCC, WI	2019
Action 17: Publish 'The Flora of North Bull Island' in collaboration with the Dublin Naturalists' Field Club and Dublin Bay Biosphere Partnership	DNFC	DCC, DBBP	2019

Theme 2: Strengthen the effectiveness of collaboration between all stakeholders for the conservation of biodiversity in the greater Dublin region

Abbreviations as set out in Appendix 1*

Action	Lead Agency	Supporting Agencies	Timeframe
Action 18: Implement and promote the objectives of the Dublin Bay Biosphere Partnership	DBBP	DCC, DPC, DLRCC, FCC, NPWS	Annually
Action 19: Co-ordinate a series of awareness, education, and volunteering events around the City's rivers and canals as part of an annual biodiversity awareness programme, which contributes to the achievement of objectives under the Water Framework Directive	DCC	IFI, WI, DPC, CWI, Eco-UNESCO, BWI, Dodder Action Group	Annually
Action 20: Continue to work with the Dublin Mountains Partnership to ensure that biodiversity conservation is incorporated into an integrated plan for the area	DMP		Annually

Theme 3: Enhance opportunities for biodiversity conservation through green infrastructure, and promote ecosystem services in appropriate locations throughout the City

Abbreviations as set out in Appendix 1*

Action	Lead Agency	Supporting Agencies	Timeframe
Action 21: Prioritise the implementation of Actions 2, 3, 5, and 7 within Dublin City's Green Infrastructure Network	DCC	NPWS, DNFC, BCI, BWI, IFI, NBDC	Annually
Action 22: Continue to co-operate with neighbouring Local Authorities, and the Office of Public Works, on Green Infrastructure Planning to protect, and where possible enhance, the connectivity of biodiversity across County Dublin	DCC	FCC, SDCC, DLRCC	Annually
Action 23: Investigate the opportunities for rehabilitating the Santry River corridor	DCC	NPWS, IFI, DNFC, BWI	2020

Theme 4: Develop greater awareness and understanding of biodiversity, and identify opportunities for engagement with communities and interest groups

Abbreviations as set out in Appendix 1*

Action	Lead Agency	Supporting Agencies	Timeframe
Action 24: Communicate biodiversity messages set out in Table 6 through all available channels, and as a feature of all biodiversity initiatives within Dublin City	DCC	All	Annually
Action 25: Prepare and implement an annual biodiversity awareness programme	DCC	BWI, Eco-Unesco, BCI, CWI, OPW, AT	Annually
Action 26: Review all Dublin City biodiversity resources, update where appropriate, and develop a 'frequently asked questions' document for biodiversity matters in Dublin City	DCC		2017
Action 27: Work with City Arts Office to devise and implement an art and ecology strategy	DCC		Annually
Action 28: Work with NGOs to develop opportunities for conservation volunteering within Dublin City, and to facilitate training and guidance for biological recording	DCC	Conservation Volunteers Ireland, DCG, CWI, AT, Dodder Action Group, Bull Island Action Group, IWT	Annually
Action 29: Develop a Conservation Ranger Programme for North Bull Island	DCC	DBBP, DMP, Bull Island Action Group, CWI, Conservation Volunteers Ireland	2017

Appendix 1:
Stakeholders consulted during the preparation of the Dublin City Biodiversity Action Plan 2015-2020

Stakeholder	Abbreviation
Dublin City Council	DCC
National Parks and Wildlife Service	NPWS
Heritage Council	HC
Office of Public Works	OPW
Dublin Port Company	DPC
Inland Fisheries Ireland	IFI
Waterways Ireland	WI
Environmental Protection Agency	EPA
National Biodiversity Data Centre	NBDC
Fingal County Council	FCC
South Dublin County Council	SDCC
Dún Laoghaire-Rathdown County Council	DLRCC
National Botanic Gardens	NBG
Birdwatch Ireland	BWI
The Dublin Naturalists' Field Club	DNFC
Bat Conservation Ireland	BCI
Irish Ramsar Wetland Committee	IRWC
Coastwatch Ireland	CWI
Herpetological Society of Ireland	HSI
Eco-UNESCO	Eco-Unesco
An Taisce	AT
Irish Wildlife Trust	IWT
Irish Seal Sanctuary	ISS
Dublin Community Growers	DCG
Conservation Volunteers Ireland	CVI
University College Dublin, School of Biology & Environment Science	UCD
Trinity College Dublin, Centre for Biodiversity Research	TCD
Dublin City University, Water Institute	DCU
Dublin Bay Biosphere Partnership	DBBP
Dublin Mountains Partnership	DMP

Appendix 2: Known or Previously Recorded Locations of Legally-Protected Species within Dublin City

Legally-Protected Species	Known/ Previously Recorded Locations
Common Pipistrelle Bat	Widespread
Soprano Pipistrelle Bat	Widespread
Nathusius's Pipistrelle Bat	River Liffey, River Dodder
Brown Long-Eared Bat	Widespread
Leisler's Bat	Widespread
Daubenton's Bat	Along River Corridors
Whiskered Bat	Phoenix Park, Liffey Valley
Natterer's Bat	Liffey Valley
Grey Seal	North Bull Island, River Liffey
Common Seal	North Bull Island, River Liffey
Brook Lamprey	River Liffey, River Dodder
River Lamprey	River Liffey, River Dodder
Sea Lamprey	River Liffey, River Dodder
Otter	River Liffey, River Tolka, River Dodder
Marsh Fritillary Butterfly	North Bull Island
Petalwort	North Bull Island
Atlantic Salmon	River Liffey, River Tolka, River Dodder
Freshwater Crayfish	River Liffey
Hedgehog	Widespread
Pygmy Shrew	Widespread
Badger	Widespread
Fallow Deer	Phoenix Park
Irish Hare	North Bull Island
Common Frog	Recorded in garden ponds and wetlands throughout the City
Common Newt	Recorded in garden ponds and wetlands throughout the City
Common Lizard	North Bull Island
Pine Marten	Bohernabreena
Stoat	Bohernabreena
Red Squirrel	Bohernabreena
Sika Deer	Bohernabreena
Hairy St. John's-wort	Phoenix Park, Liffey valley
Hairy Violet	Phoenix Park

Legally-Protected Species	Known/ Previously Recorded Locations
Meadow Barley	Phoenix Park
Lesser Centaury	North Bull Island
Red Hemp-nettle	North Bull Island
Meadow Saxifrage	North Bull Island
Opposite-leaved Pondweed	Royal and Grand Canals
Many-seasoned Thread-moss	North Bull Island
Cernuous Thread-moss	North Bull Island
Warne's Thread-moss	North Bull Island
Kingfisher	Rivers Liffey, Tolka, Dodder, and Santry
Little Egret	All waterways
Merlin	Widespread
Peregrine Falcon	Widespread
Short-Eared Owl	North Bull Island, Dodder Valley
Mediterranean Gull	North Bull Island

Appendix 3: Common and Scientific Names of Flora Species referred to in the Dublin City Biodiversity Action Plan 2015-2020

Common Name	Scientific Name	Section Reference
Bee Orchid	Ophrys apifera	Overview of Biodiversity in Dublin City
Broad-leaved Helleborine	Epipactis helleborine	Overview of Biodiversity in Dublin City
Canadian Waterweed	Elodea canadensis	Section 1.4: Invasive Species
Cernuous Thread-moss	Bryum uliginosum	Overview of Biodiversity in Dublin City, and Section 1.1: Legally-Protected Species
Common Evening Primrose	Oenothera biennis	Section 1.4: Invasive Species
Cord-Grass	Spartina spp.	Section 1.4: Invasive Species
Curly Waterweed	Lagarosiphon major	Section 1.4: Invasive Species
Delicate Stonewort	Chara virgata	Overview of Biodiversity in Dublin City
Flowering Rush	Butomus umbellatus	Overview of Biodiversity in Dublin City
Giant Hogweed	Heracleum mantegazzianum	Section 1.4: Invasive Species
Giant Knotweed	Fallopia sachalinensis	Section 1.4: Invasive Species
Giant Rhubarb	Gunnera tinctoria	Section 1.4: Invasive Species
Green Figwort	Scrophularia umbrosa	Overview of Biodiversity in Dublin City
Hairy St. John's-wort	Hypericum hirsutum	Overview of Biodiversity in Dublin City, and Section 1.1: Legally-Protected Species
Hairy Violet	Viola hirta	Overview of Biodiversity in Dublin City, and Section 1.1: Legally-Protected Species
Himalayan Balsam	Impatiens glandulifera	Section 1.4: Invasive Species
Ivy Broomrape	Orobanche hederae	Overview of Biodiversity in Dublin City
Japanese Knotweed	Fallopia japonica	Section 1.4: Invasive Species
Lesser Centaury	Centaurium pulchellum	Overview of Biodiversity in Dublin City, and Section 1.1: Legally-Protected Species
Many-seasoned Thread-moss	Bryum intermedium	Overview of Biodiversity in Dublin City, and Section 1.1: Legally-Protected Species
Meadow Barley	Hordeum secalinum	Overview of Biodiversity in Dublin City, and Section 1.1: Legally-Protected Species
Meadow Saxifrage	Sanguisorba officinalis	Overview of Biodiversity in Dublin City, and Section 1.1: Legally-Protected Species
Montbretia	Crocosmia × crocosmiiflora	Section 1.4: Invasive Species
New Zealand Pigmyweed	Crassula helmsii	Section 1.4: Invasive Species
Nuttall's Waterweed	Elodea nuttallii	Section 1.4: Invasive Species
Opposite-leaved Pondweed	Groenlandia densa	Overview of Biodiversity in Dublin City, and Section 1.1: Legally-Protected Species
Parrots Feather	Myriophyllum aquaticum	Section 1.4: Invasive Species
Petalwort	Petalophyllum ralfsii	Overview of Biodiversity in Dublin City, and Section 1.1: Legally-Protected Species
Pyramidal Orchid	Anacamptis pyramidalis	Overview of Biodiversity in Dublin City

Common Name	Scientific Name	Section Reference
Red Hemp-nettle	Galeopsis angustifolia	Overview of Biodiversity in Dublin City, and Section 1.1: Legally-Protected Species
Reed Canary-Grass	Phalaris arundinacea	Section 1.4: Invasive Species
Rhododendron	Rhododendron ponticum	Section 1.4: Invasive Species
Rigid Hornwort	Ceratophyllum demersum	Overview of Biodiversity in Dublin City
Sea Buckthorn	Hippophae rhamnoides	Section 1.4: Invasive Species
Snowberry	Symphoricarpos albus	Section 1.4: Invasive Species
Spanish Bluebell	Hyacinthoides hispanica	Section 1.4: Invasive Species
Sycamore	Acer pseudoplatanus	Section 1.4: Invasive Species
Warne's Thread-moss	Bryum warneum	Overview of Biodiversity in Dublin City, and Section 1.1: Legally-Protected Species
Water Fern	Azolla filiculoides	Section 1.4: Invasive Species

Appendix 4: Policy History and Legislative Context of the Dublin City Biodiversity Action Plan

The Dublin City Biodiversity Action Plan does not operate in isolation for the protection of biodiversity in Dublin City. There are other policies and legislation, operating locally, which contribute to the protection of biodiversity. Significantly, however, the Dublin City Biodiversity Action Plan forms part of a global objective to protect biodiversity.

Ireland is a contracting party to a number of international biodiversity-related conventions, which the Dublin City Biodiversity Action Plan 2015 – 2020 must have regard to, including, the Convention on Wetlands of International Importance (**Ramsar Convention**, 1971), the Convention on the Conservation of European Wildlife and Natural Habitats (**Bern Convention**, 1979), the Convention on the Conservation of Migratory Species of Wild Animals (**Bonn Convention**, 1979), the Convention for the Protection of the Marine Environment of the North-East Atlantic (**OSPAR Convention**, 1992), and the Convention on International Trade in Endangered Species of Wild Fauna and Flora **(CITES**, 1975). However, the most relevant international convention, in the context of the Dublin City Biodiversity Action Plan 2015 – 2020, is the **Convention on Biological Diversity**.

The **Convention on Biological Diversity**, signed by Ireland in 1992, is an agreement between 193 countries for the conservation of global biodiversity. As a contractual party under the Convention, Ireland was obliged to prepare a **National Biodiversity Plan** (achieved in 2002) and to submit **National Reports to the Convention on Biological Diversity** (four National Reports were submitted between 1998 and 2010). An action of the National Biodiversity Plan was for each Local Authority to prepare a Local Biodiversity Action Plan, and the **Dublin City Biodiversity Action Plan 2008 – 2012** was produced within this policy framework.

In 2010, the Third Global Biodiversity Outlook, (the flagship publication of the Convention on Biological Diversity), noted that the Convention's target (to halt biodiversity loss by 2010), had not been achieved. As a result, the Parties to the Convention (at the tenth meeting of the Conference of the Parties in Nagoya) adopted a Strategic Plan for the period 2011 to 2020, which included twenty biodiversity targets (referred to as the Aichi Biodiversity Targets). Significantly, the plan provided an overarching framework on biodiversity, not only for the biodiversity-related conventions, but for the entire United Nations system, and all other partners engaged in biodiversity management and policy development.

As part of the implementation of this Strategic Plan, Ireland was required to review, revise and update its National Biodiversity Plan, and to ensure that it was mainstreamed across all sectors whose activities impact (positively and negatively) on biodiversity. Ireland produced its second National Biodiversity Plan in 2011 (**Actions for Biodiversity 2011-2016**), and submitted its **5th National Report to the Convention on Biological Diversity** in October 2014. An action of this National Biodiversity Action Plan is for each Local Authority to review their Local Biodiversity Action Plan, and the **Dublin City Biodiversity Action Plan 2015 – 2020** has been produced within this policy framework.

The European Union, of which Ireland is a member state, is also a contracting party to the Convention on Biological Diversity. In 2012, as part of the implementation of the Strategic Plan for the period 2011 to 2020, the European Union adopted an **EU Biodiversity Strategy to 2020**. In the context of Ireland and Dublin City, this strategy provides some of the strongest links between policy and legislation. It contains six targets, including the full implementation of **EU nature legislation**, better protection for ecosystems and use of green infrastructure, more sustainable agriculture and forestry, better management of fish stocks, and tighter controls on invasive alien species. The EU nature legislation refers to the **EU Habitats Directive (1992)** and the **EU Birds Directive (codified version, 2009)**. These are the cornerstones of nature conservation across the EU, and the

two main pillars of these Directives are the management of the '**Natura 2000 Network**' and the protection of '**Annex Habitats** (Annex I) and **Species**' (Annex II, IV, and V).

The Natura 2000 Network is an EU wide network of areas designated for nature conservation, and includes Special Areas of Conservation (for Annex I habitats and Annex II species, referred to as Qualifying Interests), and Special Protection Areas (for birds and wetlands, referred to as Special Conservation Interests). Annex IV species are legally-protected wherever they occur. Dublin City Council has two Special Areas of Conservation, two Special Protection Areas, seven Annex II species (not protected by the Natura 2000 Network), and nine Annex IV Species occurring within its administrative area. The Habitats and Birds Directives are transposed into Irish law by the European Communities (Birds and Natural Habitats) Regulations 2011, the Wildlife Acts 1976 to 2012 and, in part, by the Planning and Development Act 2000, as amended. The Dublin City Biodiversity Action Plan 2015 – 2020 must comply with this legislation, but is not a mechanism for implementing or enforcing it.

In addition to the transposition of European directives into Irish law, the Wildlife Acts, 1976 to 2012, also provide mechanisms to give statutory protection to **Natural Heritage Areas**, the **protection of wild fauna and flora**, the conservation of a representative sample of important ecosystems, and the services necessary to accomplish such aims. **Natural Heritage Areas are those** considered important for the habitats present, or which hold species of plants and animals whose habitat needs protection. Dublin City Council has five proposed Natural Heritage Areas within its administrative area, eight legally-protected animal species (in addition to those legally-protected under the Habitats Directive), and ten legally-protected plant species (under the **Flora Protection Order, 2015**). Almost all bird species found within Dublin City are also legally-protected under this legislation.

The EU Water Framework Directive (2000) identifies the supply of water as a 'service of general interest' in Europe. Its purpose is to establish a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater, in order to achieve 'good' status (both ecologically and chemically). The Directive identifies '**River Basin Districts**' (areas of land and sea, made up of one or more neighbouring river basins, together with their associated groundwaters and coastal waters) as the main unit for management of the water resource, and requires that Management Plans be prepared and renewed in six year cycles. Ireland's second cycle management plans are expected to be published in 2016.

Notwithstanding that the protection of these water resources are central to the conservation of aquatic biodiversity, the EU Biodiversity Strategy to 2020 does not prioritise the implementation of the Water Framework Directive as a mechanism for achieving its aims. However, given the geographical location of Dublin City (at the downstream end of the River Basin District, and the conflux of several waterbodies), the implementation of a second cycle river basin management plan is at the core of achieving the aims of the Dublin City Biodiversity Action Plan 2015-2020.

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