Limerick City Council

Biodiversity Plan

Protecting Our Natural Heritage

©John Murphy - Dragon fly emerging
Libellula quadrimaculata

Contents

Introduction

What is Biodiversity and why it is important?

The word Biodiversity is a shortened from 'biological diversity'.

- It is the variety of all life forms on Earth, from the tiniest bugs living in the soil, to the butterflies in your garden, the plants they feed from, and the biggest whales in the sea.
- Biodiversity includes the diversity of:
  - Individuals within a species (genetic diversity),
  - Species within an ecosystem or habitat (species diversity) and
  - Ecosystems or habitats (habitat diversity).
- It is the result of millions of years of evolution.
- Biodiversity changes constantly and evolves as some species adapt to new surroundings, become extinct, and others, over time, evolve into new species.
- Human beings are an integral part of biodiversity and we can influence it in a positive or negative way.

Why does Limerick City need a Local Biodiversity Plan?

Global biodiversity is under threat. Action is required at local, national and global levels to protect our natural heritage.

The main government agency responsible for the conservation of habitat and species in Ireland is the National Parks and Wildlife Service, Department of Arts and the Gaeltacht. Ireland's National Biodiversity Plan 2002 highlights the role that Local Authorities have in promoting local nature heritage. Limerick City Council recognises its responsibility to protect and promote local biodiversity and natural heritage in conjunction with relevant stakeholders.

The EU introduced the Birds Directive[1](1979) and the Habitats Directive (1992) to tackle loss of species and habitat that have contributed to an overall decline in European biodiversity. The aim of both directives is to maintain, and where necessary restore, the conservation status of natural habitats and species across Europe ensuring the maintenance of Europe's biodiversity. This led to the establishment of Europe's most important wildlife sites as ***Natura 2000 sites.***

©John Murphy - Oak Egar Moth Caterpillar/*lasiocampa quercus*

1 Council Directive 79/409/EEC on the conservation of wild birds. See http://ec.europa.eu/environment/nature/legislation/birdsdirective/index_en.htm

Everyone living, running a business, visiting or active in development with the City has a role in protecting local biodiversity.

There are strong measures in place to protect Natura 2000 sites through policy requirements on development plans and development projects. The legislation requiring the preservation of biodiversity in Ireland and Europe are outlined in Appendix 1. These include:

- ***EC (Birds and Natural Habitat) Regulations*** *2011* S.I. No. 477 of 2011
- ***EU Habitats Directive (92/43/EEC***) forming the legislation behind Special Areas of Conservation ***(SAC)*** prime wildlife areas designated for habitats and species.
- ***EU Birds Directive (79/409/EEC)*** forming the legislation behind Special Protection Areas ***(SPA)*** - sites of international conservation importance for birds.
- ***The Wildlife Act, 1976*** (as amended by the ***Wildlife (Amendment) Act, 2000)*** which directly relates to the protection of biodiversity through Natural Heritage Areas ***(NHA).***

Limerick City's main areas of natural habitats containing significant biodiversity are based around the larger network of rivers (Shannon, Abbey, Ballynaclough), wetlands, grasslands and established woodlands. Additional areas of semi-natural habitat or 'urban' green spaces, including gardens, are home to a range of flora and fauna.

Natural Heritage Areas (NHA), Special Areas of Conservation (SAC) Special Protection Areas (SPA) must be protected. In this plan, Limerick City Council also recognizes the importance of 'undesignated areas' for local wildlife and biodiversity and the importance of maintaining a mosaic of natural habitats and wildlife corridors across the city.

Important biodiversity areas in the city include parks, wildflower meadows, green spaces, private gardens, hedgerows, trees, vacant and derelict sites and graveyards. Built areas also provide habitats for flora and fauna including species such as bats, insects, birds and invertebrates, flowering plants, mosses, and lichens.

Bats

Pippestrelle bats eat over 3,000 midges a night

The Limerick City Biodiversity Plan is the first step in:

- Developing an overall biodiversity aim and objectives for the city.
- Highlighting what we can do to help maintain biodiversity for future generations.
- Identifying where we can **find key habitats** containing biodiversity within Limerick City.
- How we can **improve the understanding and appreciation** of Limerick City's Biodiversity.

The Limerick City Biodiversity Plan aims to pool knowledge and resources of stakeholders to identify and understand local biodiversity and how we can best conserve it for future generations.

This Biodiversity Plan will be reviewed following the revision of Limerick City Development Plan 2011-2016.

©John Murphy - Cowslip/*Primula veris*

©Diarmuid Neilan - Limerick City Biodiversity Network

Who is involved in protecting local Biodiversity?

Everyone living or running a business in, visiting or active in development with the City has a role in protecting local biodiversity.

The City Council acknowledges the work being carried out by many organisations, community groups and individuals who are involved in biodiversity projects across the city. The Limerick City Biodiversity Plan will add value to, and support this work.

This Biodiversity Plan recognises that cooperation and partnership between all stakeholders is essential to preserve local biodiversity.

Biodiversity Indicators

Nationally it is recognised that there are five key biodiversity indicators – Air, climate change, flood risk, soil protection and landscape (built and natural). Limerick City Council adheres to national guidelines in relation to biodiversity indicators. The Limerick City Council Development Plan 2010-2016 addresses each of these indicators. Limerick City Council also acknowledges the national commitment to halt the loss of biodiversity by 2020 as per the EC Biodiversity S**trategy to 2020.**

What about Biodiversity outside our administrative boundaries?

This Plan highlights the significant habitats and species that are currently known to exist within Limerick City.

Nature does not recognise administrative boundaries and links between wildlife corridors extend into areas beyond Limerick City. Consider the scale of the Shannon River Basin and the relatively small length that runs through Limerick City or the rookery near Parteen Bridge, in County Clare. This site has a significant number of rooks and other members of the crow family roosting and nesting there. It is likely that birds from the surrounding lands including land within the Limerick City boundary make use of this site The relationship between Limerick City Council and its neighbouring local authorities is important to preserve and maintain biodiversity and to effectively manage and control environmental pollution incidences which could impact on biodiversity within the catchment area. Both Clare County Council and Limerick County Council will be consulted through the draft plan process.

Swifts

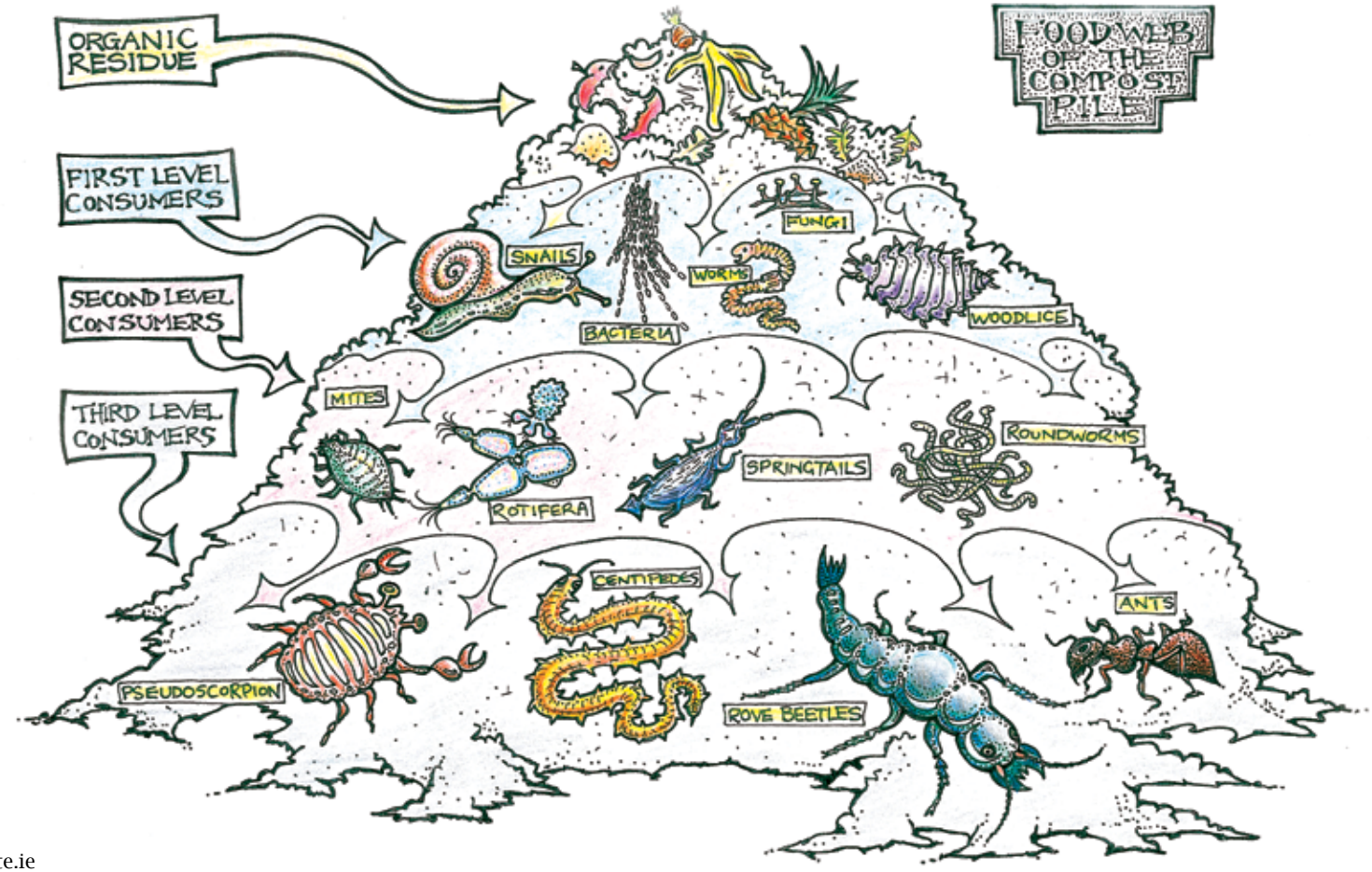
Swifts fly at least 560 miles per day during the nesting season. They also mate and forage in the air. Their specially adapted grasping feet allow them to occupy vertical surfaces.

©John Murphy - Swift / *Apus apus*

Ecosystems

An Essential Element of Biodiversity

An ecosystem is an interdependent, functioning system of plants, animals (including humans) and micro organisms. An ecosystem can be as large as the Shannon River Basin, or as small as a local patch of wildflowers in your back garden. Without the support of the other organisms within an ecosystem, life forms would not survive, much less thrive. This support requires that predators, prey, water, food, shelter, clean air and space remain in balance with each other and with the environment around them.



Limerick City Biodiversity Overall Aim and Objectives

Limerick City Biodiversity Aim:

The overall aim of the Limerick City Biodiversity Plan is:

To maintain, protect and enhance the biodiversity of Limerick City for future generations and to educate and promote the importance of Limerick City's biodiversity for all.

©John Murphy - Elephant Hawk Moth/ *Deilephila elpenor*

Limerick City Biodiversity Objectives:

The following table outlines the main objectives of the Limerick City Biodiversity Plan. These policies will guide Limerick City Council and stakeholder groups in managing the enhancement of local biodiversity throughout the city.

PLANTING AND MAINTENANCE OF BIODIVERSITY:

- Reduce the use of chemical pesticides and herbicides to a practicable minimum in green areas and open spaces.
- Reduce the use of chemical fertilizers to a practicable minimum.
- Introduce indigenous planting schemes in parks and open spaces. Prioritizing species which provide foods for a variety of mammals, birds and insects.
- Introduce a seed saving programme for indigenous planting schemes within the City.
- Introduce grass cutting regimes that enhance local biodiversity e.g. infrequently mow along edges connecting to shrubs.
- Develop an awareness campaign to prevent the dumping of general and garden waste.
- Recognise that even in areas with existing low maintenance regimes that some intervention may be required to maintain and enhance the biodiversity of the area.
- Create additional wilflowers meadows in appropriate locations.

Be nice to nettles. Nettles are home to at least 40 species of insects, especially butterflies. They are an indicator that soil is rich in nitrogen and phosphates, essential for healthy plants.

Butterflies

Live just 2-4 weeks, usually. Once it emerges from its chrysalis as an adult, a butterfly has just a few short weeks to live. During that time, it focuses on two tasks – eating and mating. Some of the smallest butterflies, may only survive a few days. Butterflies that over-winter as adults can live as long as 9 months.

Japanesse Knotweed *roots, also known as rhizomes, can grow up to seven meters from the main stem and can grow three meters into the ground.*

LOCAL HABITAT ENHANCEMENT AND WILDLIFE CORRIDORS:

- Recognise the importance of green wildlife corridors and expand / link connections through maintenance of natural features particularly trees and hedgerows.
- Recognise the importance of wetlands in flood prevention.
- Safeguard native species particularly those of national and local significance such as opposite leaved pondweed, triangular club rush, meadow barley etc and where practicable reintroduce lost native species Canal and Meadow Barley.
- Facilitate the construction of additional roosting platforms, bat and a variety of bird nest boxes and insect 'hotels' throughout the City.
- Where possible facilitate local interest groups in developing species specific initiatives.
- Identify areas within Limerick City which would benefit from wild bird sanctuary status to prohibit shooting and disturbance of bird populations.
- Encourage planting of wildflower areas in appropriate locations e.g. refrain from cutting predefined areas of open space grass areas using clear demarcation to allow species rich wildflower meadows develop instead.
- Recognise the significance of graveyards and cemeteries to local wildlife populations.
- Work with owners of vacant and derelict sites to provide opportunities for local wildlife enhancement on a temporary basis while sites await development.
- Develope a register of the trees in public ownership.
- Develope a demonstration 'wild life garden'.
- Maintain the existing winter bird feeding scheme in Parks and Cemeteries across the city.
- Where possible facilitate the development of green and brown roof top schemes within the City.

INVASIVE SPECIES

- Develop an awareness campaign of how invasive species spread.
- Develop a policy with guidelines to prevent the spread of invasive species by any means – (Biosecurity Policy and Guidelines)
- Identify and control invasive species in Limerick City as prioritised by the National Biodiversity Data Centre.
- Log invasive species identified locally on National Biodiversity Data Centre data base of invasive species http://invasives.biodiversityireland.ie/
- Encourage and develope volunteerism on reducing invasive species.

©John Murphy - Japanese Knotweed/*Fallopia japonica*

INFORMATION AND RECORDS:

- Promote the Heritage Council's Biodiversity Watch Project (www.biology.ie) to allow residents to enter sightings of the plants and animals seen to collect information on rare and specifically identified species within Limerick City.
- Support National Programmes of recognised Wildlife Groups in Bird, mammal and invertebrate surveys to ascertain clearer information on wildlife populations in Limerick.
- Support national programme to record invasive species national data base of invasive species http://invasives.biodiversityireland.ie/

COMMUNITY APPRECIATION AND EDUCATION:

- Encourage communities, businesses and local residents to enhance biodiversity in built up areas through wildlife encouragement initiatives and native planting and seed saving schemes.
- Enhance public access and viewing areas to wildlife areas and where necessary provide interpretative signage.
- Promote general interest and knowledge of biodiversity through a variety of media.
- Raise awareness of good practice on protection of wildlife areas in urban areas.
- Promote use of the City Parks and open spaces as recreational and wildlife amenity areas.
- Encourage communities to participate in the national Tidy Towns initiative especially the Biodiversity category.
- Encourage increased knowledge of ecosystems, species recognition and the interdependence between species.

Anthony Fulong - Blackthorn/*Prunus spinosa*

Hedgerow

Hawthorn and blackthorn were very popular as hedgerow plants and have become the adopted habitat of lots of different plants and animals. Hedgerows are one of the most important habitats in Ireland!

What you can do to help?

©John Murphy - Birdbox surrounded by Ivy

Businesses, landowners, developers and home owners, anyone with a little land, can provide container garden or window boxes to help preserve existing habitats and create new opportunities for biodiversity in the city.

AT HOME: Create a wildlife friendly garden

- Use natural methods of pest and weed control as opposed to chemicals
- Plant a native tree and shrub species e.g. Hawthorn to provide berries for birds.
- Learn about ecosystems – understand food webs and how dependent organisms (flora and fauna) are on each other.
- Erect bird and bat boxes or insect hotels in suitable places.
- Put up a bird table and feed the birds in the winter.
- Make a log pile in a secluded corner - this may attract hedgehogs, ladybirds and other wildlife.
- Create a wildflower patch using native species.
- Create a pond or wetland area
- Don't be too tidy - leave a few unmown or unmanaged areas - you may be surprised what turns up there.
- Cherish those nettles as they are food for butterfly caterpillars.
- If you have a wildlife area over your back fence, don't tip your domestic and garden cuttings over there! Some plants don't mix! Compost them instead!
- Have a native hedgerow as a boundary rather than a wall or a fence.
- Learn about seed saving and save your own seeds for planting the following year.
- Grow your own food – consider using indigenous Irish plant seed.
- No garden? Plant wildflowers and native plants in containers and window boxes. Even a container of herbs will provide food for bees and other insects.
- Compost your garden waste. Gather your leaves and make a simple leaf mould compost.
- Do not dispose of household chemicals (e.g. herbicides or pesticides), medicines etc down the sink.
- Dandelion flowers are one of the favoured flowers of honey bees – please leave a few to flourish in your garden.
- Get your children involved with nature - play spot the garden wildlife with them.
- Don't pave all your garden surfaces. Permeable surfaces are good for soaking water and help prevent flooding.
- Visiting a city park or wildlife area? Remember the code, 'Take only memories. Leave only footprints.'

GET INVOLVED:

- Check out Notice Nature - Ireland's first public awareness campaign on biodiversity. See www.noticenature.ie
- Join a local interest group, for example, Birdwatch Ireland. The Limerick County Bat Group or the Irish Wildlife Trust (see Appendix).
- Record your wildlife data online: e.g. the Heritage Council's Biodiversity Watch Programme www.biology.ie
- Take part in the An Taisce Spring Clean programme.

SCHOOLS:

- Check out the Green-Schools Programme. www.greenschoolsireland.org
- Learn about biodiversity - check out the INTO/Heritage Council Heritage in Schools Programme which brings heritage specialists into primary schools to raise awareness of local heritage including biodiversity
- Facilitate the setting up of ECO Unesco youth clubs.
- Teachers consider availing of the city parks as an education resource when teaching classes about nature.

©John Murphy - Brown Long Eared Bat/*Plecotus auritus*

IDEAS FOR LOCAL RESIDENTS ASSOCIATIONS:

- Undertake your own biodiversity audit - record species and habitats within your local area.
- Record your wildlife data online: e.g. the Heritage Council's Biodiversity Watch Programme www.biology.ie
- Record invasive species on http://invasives.biodiversityireland.ie/
- Put up bird and bat boxes in your local area especially during spring clean.
- Leave that local nettle bank
- Clean litter out of that local green area and participate in Spring Clean.
- Encourage the reduction of chemical use and herbicides in homes and businesses.
- Plant native trees, shrubs and plants that attract wildlife.
- Avoid planting invasive species in planting schemes.
- Encourage composting in your area. Organise a talk on composting for your residents association. Limerick City Council has a group of trained Master Composters who can assist you.

THINKING OF DEVELOPING A GREEN OR BROWNFIELD SITE?

- For any development proposal the Planning Department should be consulted. EU legislation and the amended Planning and Development Act require strict consideration of any impact on the environment specifically where in proximity to a designated site (SAC, NHA, and SPA).
- Where there is no impact on designated sites (always refer to Planning section) other considerations should be:
- Retain all vegetation (trees and hedgerows) on sites to protect local biodiversity. Just replanting with replacement juvenile trees results in loss to established habitat.
- Land raising or filling in low lying areas can impact on drainage channels and localised flooding areas.
- Minimise stripping topsoil and grass cover.
- Avoid hard impermeable surfaces where possible.
- Landscape with indigenous trees, shrubs and wildflowers.

Earthworms

There can be more than one million earthworms in just one acre of land. This is something to consider the next time you take a look out across your garden.

What are Limerick's Major Habitat types?

The 'Guide to Habitats in Ireland' Heritage Council (2000) has been used as a guideline to outline areas of key biodiversity significance in the City.

Ireland supports 60 different habitat types that require special conservation measures (referred to as Annex I from the Habitats Directive 92/43/EEC, amended by Directive 97/62/EC). Of these 16 are priority types that are considered to be in danger of disappearance. It is important, that attention be drawn to all Annex I habitats within Limerick City because of their significance for nature conservation at national and European level.

The Shannon River gets its name from one of Ireland's many Celtic Goddesses of Knowledge, 'Sionna'. It is 240 miles long and is shallow, not rising more than 250 feet above sea level at it's highest point.

Freshwater – The River Shannon

Fresh water is naturally occurring water on the Earth's surface in ice sheets, ice caps, glaciers, bogs, ponds, lakes, rivers and streams, and underground as groundwater in aquifers and underground streams.

The Shannon River flowing through Limerick City is predominantly freshwater with some saline incursions. It is the main natural habitat in our City's landscape and is home for many of our aquatic plants and animals. In Limerick City the Shannon is also valued as a public amenity for fishing, rowing and boating etc.

The Limerick City Main Drainage Scheme (2001-2006) ensures that all sewage and waste water is treated prior to being discharged into the Shannon. This scheme is essential to maintaining the quality of River Shannon.

Wetlands

Wetlands are considered the most biologically diverse of all ecosystems. A wetland is an area of land whose soil is saturated with moisture either permanently or seasonally. Such areas may also be covered partially or completely by shallow pools of water. Wetlands include swamps, marshes, and bogs, among others and water found in wetlands can be saltwater, freshwater, or brackish.
Natural and constructed wetlands provide a valuable flood control function and are effective at filtering and cleaning water pollution removing pollutants and sediments from stormwater or agricultural runoff.

©John Murphy - Aerial view of the Park Canel

©John Murphy - White tailed bumble bee/*Bombus lucorum*

Grasslands and Agricultural lands

Grass is the dominant plant of our grasslands. Sprinkled throughout the grasslands are our wild flowers such as Lady's bedstraw, dandelions, thistles, orchids and plantains. The more "natural" the grassland the greater its biodiversity. Throughout Limerick City there are wildflower meadows and wild grasslands.

The seeds and insects in grassland habitats supply food for birds and other wildlife.

Farmland is man-managed grassland that is home to many species of plant and animal found in natural grassland.

Woodlands, Specimen Trees and Hedgerows

Woodland habitats are composed of trees, shrubs, ferns, mosses and lichens and all the associated birds, insects and animals. The main types of woodland in Ireland are Oak Woodland, Willow-Ash-Alder Woodlands and woodlands made of a mixture of these trees.

Woodland habitats are rich in biodiversity, particularly if they are made up largely of native Irish trees. While Conifer plantations, provide shelter, they do not provide the same level of habitat for indigenous Irish wildlife as native woodlands. There are few native woodlands left in Ireland and in Limerick. Woodlands highlighted in this Plan have a special significance in the City.

Hedgerows are typically a rural feature although there are areas of hedgerows scattered throughout Limerick City. These act as 'habitat corridor links' for birds, bats, insects and other invertebrates. Stand alone trees are also important to local biodiversity. Hedgerow and tree habitats are currently the most threatened of all in Ireland they are removed to facilitate development and replaced with something much less valuable to development.

Urban Habitats

Important areas for wildlife in cities include private gardens, municipal parks, cemeteries, the grounds of institutions, railway embankments, canals, canal banks and walls and urban wildflower meadows, bridges and old walls. Derelict sites although transient in nature can also provide valuable natural habitats.

The buildings of towns act as a roost for birds and bats, old walls are homes to mosses, lichens, ferns and many tiny insects. Parks are often open and spacious enough for large deciduous trees and graveyards can play host to a range of plants and animals.

Urban habitats are often characterised by a component of invasive plants, including those that have been cultivated and those that have escaped from gardens and become naturalized.

Dandelions and Bees

Dandelions are an early source of nectar and pollen for bees, but dandelions do not need the bees to reproduce. They can reproduce by a process called apomixis, the seeds developing without pollination. Each new dandelion is genetically identical to the parent plant

Where Are Limerick's Key Habitat Areas?

From the time a dragonfly egg hatches, it can live anywhere from six months to six years, but only about two months as an actual dragonfly. Most of the time is spent as a nymph in the water before the dragonfly's metamorphosis into a full grown dragonfly.

(1) The Shannon River

The Lower River Shannon SAC in Limerick City takes in several unique habitats including the

- **Park Canal,**
- **Lands adjoining the Shannon Fields, in Corbally feeding into Lucas Lough wetland,**
- **Shoreline between Athlunkard Bridge and the Limerick – Galway Railway bridge ("Shannon (Rail) Bridge").**

The Shannon flows through the City Centre, with the Abbey River forming a loop around King's Island on the left, meeting the Park Canal en-route and rejoining the main river at Hellsgate Island.

The river is partly confined by quay walls as it passes through the City Centre.

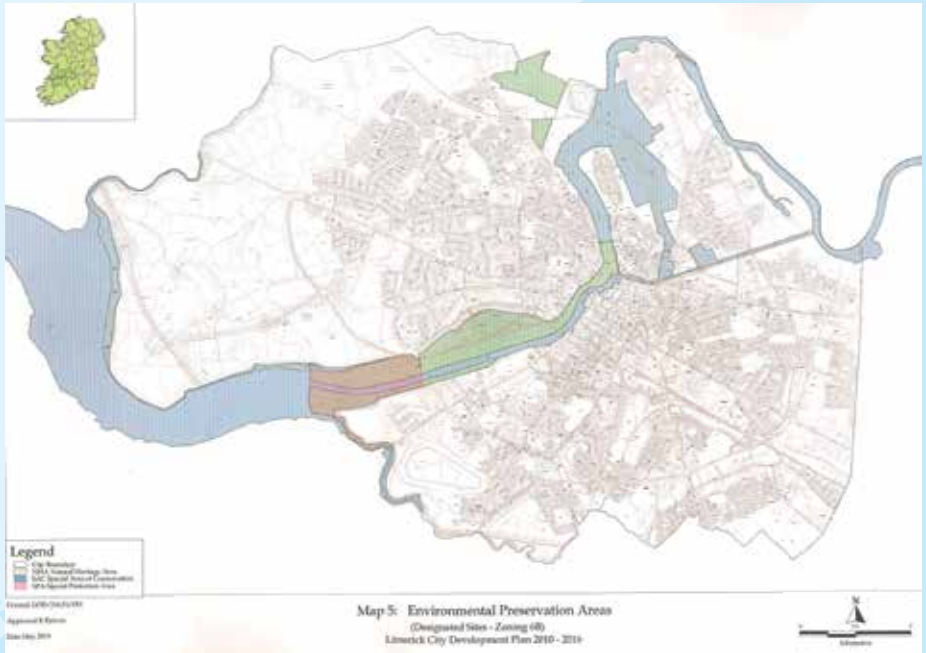
It then heads south-west passing Limerick Docks on the left hand side and Westfields Wetlands on the right hand side, extending down to the Ballinacurra Stream tributary which forms the boundary with Co. Limerick on the left hand side.

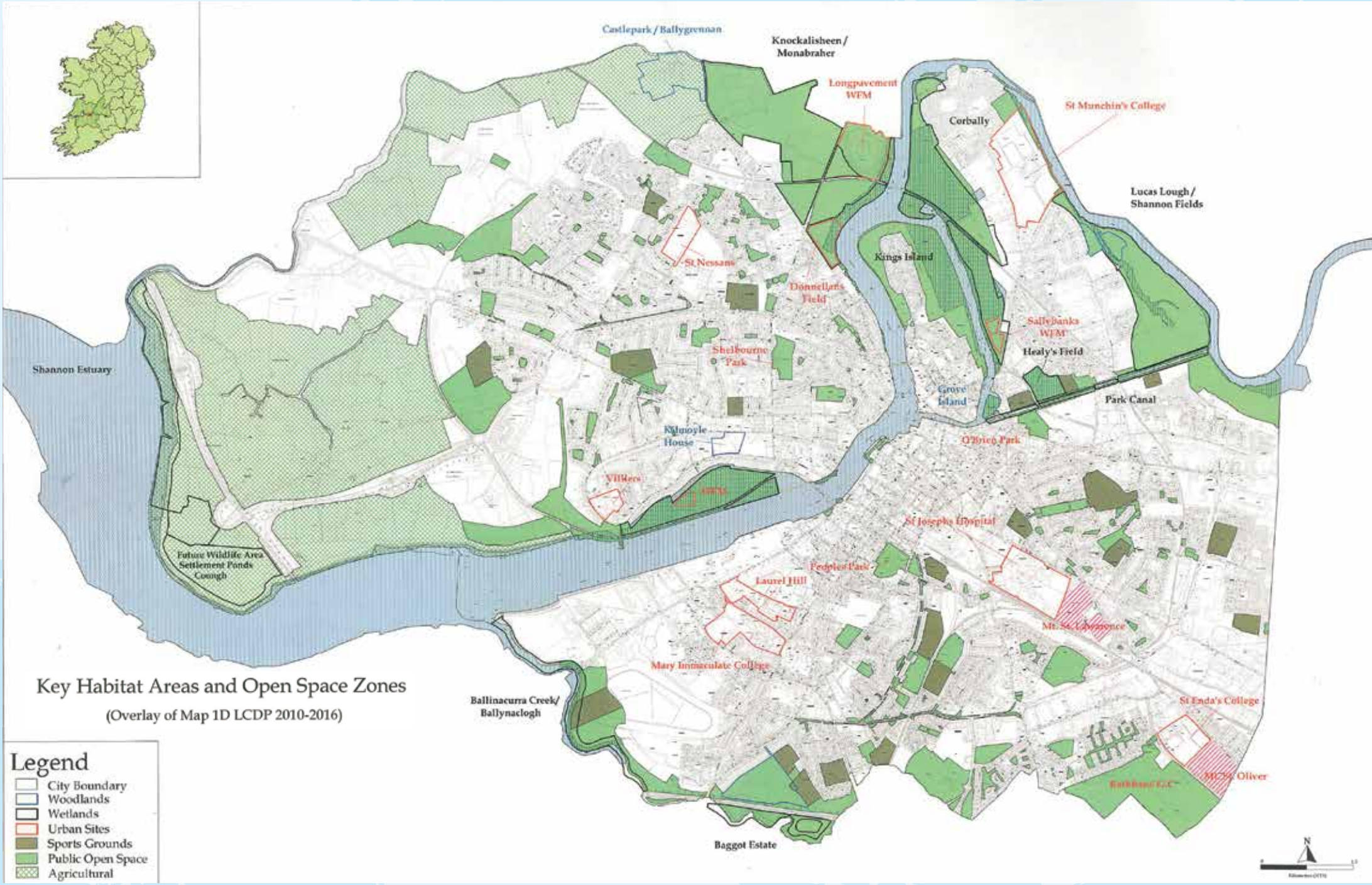
The Southern Ring Road (Limerick Tunnel) passes beneath the river before rising to surface level and sweeping northwards.

On the right hand side, the river passes the Coonagh Sedimentation ponds before reaching the boundary with Co. Clare at the Meelick Creek.

Limerick City Development Plan 2010-2016 Table 11.1 Designated Sites along the River Shannon

- **SAC Special Area of Conservation Ref:** 002165: Lower River Shannon (see Map 5 LCDP 2010).
- **NHA: Natural Heritage Areas, Ref: 002048:** Fergus Estuary and Inner Shannon, North Shore, and Ref: 000435: Inner Shannon Estuary - South Shore
- **SPA: Special Protection Area Ref:** 004077 River Shannon and River Fergus Estuaries




Castlepark / Ballygrennan
Knockalisheen / Monabraher
Longpavement WFM
Corbally
St Munchin's College
Lucas Lough / Shannon Fields
Kings Island
St Nessans
Donnellans Field
Sallybanks WFM
Healy's Field
Shelbourne Park
Shannon Estuary
Grove Island
Park Canal
Kilmoyle House
O'Brien Park
Villiers
WFM
St Josephs Hospital
Future Wildlife Area Settlement Ponds Coough
Peoples Park
Laurel Hill
Mt St Lawrence
Mary Immaculate College
Ballinacurra Creek/ Ballynaclogh
St Enda's College
Baggot Estate
Key Habitat Areas and Open Space Zones
(Overlay of Map 1D LCDP 2010-2016)
Legend
City Boundary
Woodlands
Wetlands
Urban Sites
Sports Grounds
Public Open Space
Agricultural
N

(2) Wetlands

Some of the wetlands sites in Limerick City are identified at a European or National level through a SAC, NHA (Natura 2000) or SPA designations. There are additional sites that are locally important to Limerick City's 'Network' of biodiversity sites. These sites are listed below.

- Park Canal
- Healy's Field
- Kings Island (St Mary's Park)
- Monabraher / Longpavement Moyross
- Lucas Lough/Shannon Fields (Athlunkard)
- Corbally Wetlands
- Westfields, Condell Road
- Coonagh Settelment Ponds. Future Wildlife Area
- Shannon Tidal Flats
- Ballinacurra Creek – Racecourse lands
- Ballinacurra Creek - Baggot Estate Ballynaclough River
- Longpavement Constucted Wetland

Grey Heron

Plastic decoy herons are more likely to lure birds to a pond than frighten them away from it. It's quite normal for herons, disturbed at their nest, to regurgitate their last half-digested meal, an unpleasant experience for anyone unfortunate enough to be underneath the nest

©John Murphy - Grey Heron/ *Ardea cinerea*

Park Canal

Brief description:
Part of the lower River Shannon SAC. The canal was built in the late 18th Century to transport goods to and from Limerick City. Now closed to navigation it provides a valuable walking amenity area as well as a wildlife habitat. Zoned for Public Open Space in the Limerick City Development Plan 2010-16.

Healy's Field

Brief description:
This area part of the lower River Shannon SAC lying immediately north of the Park Canal and adjoining the newly constructed Pa Healy Road. The site consists of an acre of open water fed by springs and surrounded by bulrush and sedge marsh with reclaimed land on both sides for playing fields. The open water area and associated wetland is important locally for wildlife such as mute swan, coot, mallard and moor hen. Insects such as dragon and damsel fly would also be seen here. Zoned Public Open Space in the Limerick City Development Plan 2010-16.

Kings Island (St Mary's Park) Wetlands

Brief description:
Part of the lower River Shannon SAC, open grassland subject to grazing and partially developed for recreation. Area partially flooded in the winter months becoming habitat for wildfowl. Pathways along the River Shannon. Habitats consist of willow, alder trees, scrubland and open wet grassland. Zoned for Open Space in the Limerick City Development Plan 2010-16.

Knockalisheen / Monabraher Wetlands

Brief description:
Knockalisheen Marsh is a designated cSAC (part of the Lower River Shannon SAC (2165) and a Natural Heritage Area (NHA) under the Wildlife (Amendment) Act 2000 as seen in the figure below (Map 5 LCDP 2010-2016). The site is zoned 6A: Public Open Space in the LCDP (2011-2016). The habitat is made up of marsh, and wetland areas the west bank of the Shannon bisected by Rail line & R646 adjoining halting site contains an open water area of marsh & willows and a riverside natural habitat. A second open water area fringed with bulrush south of the railline (NHA). The third is the largest area of open water with reedbeds, unimproved damp grassland species with low intensity grazing (NHA). This area is north of the rail line and crosses into County Clare.

Lucas Lough / Shannon Fields

Brief description:
Part of the Lower River Shannon SAC the site consists of low-lying grasslands that partially floods in winter. Lucas Lough has partially dried over the last century open water still exists at the southern end. The northern part of the site has an 'urban' forest. This large site is zoned for Open Space in the Limerick City Development Plan 2011-16.

Corbally Wetlands

Brief description:
A semi-natural freshwater marsh, bisected by the rail line. This area floods in winter and provides habitat to wildfowl. There is a footpath running along the top of the Abbey River embankment. Vegetation is mainly marsh vegetation of sedge and reed grasses. The southern portion is also referred to locally a Goosers Neck and Sallybank, which is a planted low lying wildflower area.

©John Murphy - Otter/*Lutra lutra*

Westfields, Condell Road

Brief description:
Westfields is part of the Special Area of Conservation (SAC). It is separated from the Shannon river by an embankment and surrounded on its northern side by private housing. The area contains a diverse range of wetland habitats and species and is of special note for its wintering population of water birds.

Coonagh Settlement Ponds, Future Wildlife Area.

Brief description:
The Southern Ring Road Phase II (Limerick Tunnel project) resulted in the creation of sedimentation ponds near Coonagh Point. The overall site is zoned for Agriculture in the LCDP (2010-2016). The habitat in this area is varied going from open water areas, reeds; sedge wet grassland scrub and newly planted trees.

Shannon Tidal Flats

Brief description:
Identified as a significant part of the Lower River Shannon SAC and proposed amended SPA (Special Protection Area) where the Meelick Stream meets the river corridor. These tidal mudflats support a diverse wetland ecosystem and represent a significant area of biodiversity adjoining the Shannon.

Otter

Otters communicate using vocal expression such as whistles, birdlike twittering, spitting and spraints (droppings)!

The holly tree was considered one of the most sacred trees by the druids in Ireland. The evergreen holly was the ruler of the dark winter months, while the oak was the ruler of the lighter summer months. It produces a very hard, white wood that is used to make the white pieces for the game of chess.

Ballinacurra Creek – Racecourse lands

Brief description:
Ballinacurra Creek is part of the SAC and SPA adjoining the former Race Course lands taking in the tidal mudflats and a stretch upstream to 'Vance's lands'. The Race course area is open unmanaged grassland, hedgerows tress and scrub which provide valuable and varied habitat for wildlife. Zoned Public Open Space in the Limerick City Development Plan 2010-16

Ballinacurra Creek - Baggot Estate Ballynaclough River

Brief description:
Although not part of the SAC the Ballinaclough River, and this purpose built wetland area provide important biodiversity habitat locally. The area is characterised by slow moving and still freshwater, wetlands, wet grassland and willow and alder trees. There is a conifer plantation and a recently planted indigenous wooded area of oak, ash, alder, hazel, holly, rowan and hawthorn. This area has been separated from existing Baggot Estate/Portland Park woodland by the southern link road. Zoned Public Open Space in the Limerick City Development Plan 2010-16

Longpavement – Constructed Wetland

Brief description:
A constructed wetland was installed to filter storm water from the landfill cap. And this provides additional wetland habitat in the area.

©John Murphy - Little Egret/ *Egretta garzetta*

(3) Woodlands, Specimen Trees and Hedgerows

Trees make a valuable contribution to the landscape, local visual amenity and biodiversity of Limerick City. They also have an educational and scientific value. Trees can help to absorb pollutants, filter dust, reduce noise, produce oxygen and reduce carbon dioxide as well as enhancing the aesthetics of the built environment and public realm thus benefiting Limerick City's environmental and economic wellbeing.

The features identified in the Biodiversity Plan are known areas of Woodlands, clusters of or individual Specimen Trees and hedgerows which are considered worthy of protection as they enhance biodiversity at a local level. These are:

- Citywide Specimen Trees.
- Grove Island
- Baggot Estate
- Castlepark Demesne
- North Circular Road: Kilmoyle House (See Planning Ref: 09/45)
- Citywide Hedgerows
- Banks of River Shannon.

Citywide Specimen Trees

Brief description:
Trees ccontribute to biodiversity by improving air quality, enhancing our cityscape, providing shelter from wind, rain and sun and providing habitats for wildlife – animals, birds and insects. Trees can also be used to screen eyesores and noise pollution and provide a valuable educational resource.

Where appropriate individual specimen trees may be nominated to the Planning Department for consideration of a Tree Preservation Order (TPO) for inclusion in the register. TPO's are considered under S.205 of the Planning and Development Act where it is considered appropriate under that Act.

Grove Island

Brief description:
This remnant of alluvial woodland is part of the lower river Shannon SAC. Once an island within the channel of the Abbey River adjoining the Park Canal this wildlife area with open water to the west only is located within the Lower River Shannon SAC. The site is an inner-city haven for diversity with a mix of low lying scrub and significant tree cover providing habitat for waterfowl. The site is zoned Open Space in the LCDP 2010-2016.

Baggot Estate / Portland Park

Brief description:
An extensive area of Woodlands on the grounds of the former site of Baggot Estate House with specimen trees on the tree lined avenue with protected by TPO. Site contains a mosaic of habitats including semi natural woodland, containing a mix of Alder, Ash, Oak, Hawthorn and associated scrub, unmanaged grassland. Zoned for Public Open Space in the LCDP 2010-16. There is additional woodland near the newly created wetland south of the southern ring road.

©John Murphy - Oak leaves/*Quercus*

Oak

A mature Oak tree can support over 300 different species of wildlife

Yew

The yew tree is one of Ireland's very few native evergreen trees, and one of the oldest trees growing in Northern Europe. Remember all parts of the Yew tree, including the berries, are extremely poisonous if eaten.

Castlepark Demense

Brief description:
An extensive area of Woodland on the grounds of the former Castle Demesne, also known as Ballygrennan House. This is a Protected Structure ref: RPS307 and is now derelict. The site is zoned Agricultural in the LCDP 2010-2016. A tree survey carried out in 2008 identified 353 significant mature trees on the 80 acre site including specimen Ash, Beech, Chestnut, Sycamore, Oak and Lime, most of which exceed 12-20m in height. The trees are afforded protected within the setting and curtilage of the Protected Structure, although TPO may be considered. Provides significant natural habitat for roosting birds and bats.

Kilmoyle House, North Circular Road

Brief description:
This area of mature specimen trees is located between the upper and lower North Circular Road on the grounds of Kilmoyle House c. 1845. The house is a candidate protected structure, NIAH reference 21511009. The site is zoned for Residential use in the LCDP 2010-16 and Planning Permission for a retirement village has been granted on the site reference P09/45 with retention of many of the trees required by condition. The area is a known habitat for bat species and supports extensive bird populations.

Citywide Hedgerows

Brief description:
Rows of hawthorn, blackthorn interspersed with Blackberry Elder Berry, and associated wildflowers and plants are located throughout the city. May or may not be interspersed with Specimen Trees such as oak ash silver birch etc. Developers and landowners are encouraged to retain these natural features where possible through planning applications

Banks of River Shannon

Brief description:
Riparian trees and wet woodland associated with the River Shannon is an important and diverse habitat. It is present in several locations along the River Shannon including: South of the Clondell Road, around Kings Island, around Corbally

(4) Urban Habitats: Parks / Graveyards / other Species Rich Grasslands / Sites in Private Ownership:

- Urban Parks & Sports Grounds in Council Ownership:
  Includes: Peoples Park, Shelbourne Park, O'Brien Park, Rathbane Golf Course (58ha),
- Longpavement (former landfill site)
- Wildflower Meadows
- Donnellans Field
- Other Maintained Grasslands (see Development Plan Zone 6A & 6B)
- Graveyards

Urban Parks & Sports Grounds in Council Ownership:

Brief description:
Sites including Peoples Park, Shelbourne Park, O'Brien Park, Rathbane Golf Course are urban amenity areas all contain a mix of habitats from specimen trees, open managed grassland, unmanaged grassland, hedgerows. Appropriate management can assist in local enhancement of biodiversity. Areas zoned 6A; Public Open Space or 6B: Sports Grounds in the LCDP 2010-16. See Habitats maps for all areas.

Longpavement (former landfill site)

Brief description:
The former landfill site restored under EPA licence 76-1. Bordering onto the River Shannon SAC and Knockalisheen Marsh NHA the site has been enhanced from a biodiversity perspective by the creation of a mosaic of habitats including wildflower meadows, constructed and existing wetlands. Zoned Open Space in the LCDP 2010-16.

Kingfisher / *Alcedo Atthis*

Sallybank Wildflower Meadow

Brief description:
On the banks of the River Shannon SAC (not included in the SAC) this area adds great variety to the existing freshwater wetland habitat in the area. Managed as a wildflower meadow with a diverse variety of indigenous wildflowers.

Donnellans Field

This area of managed grassland and scrubland borders the Lower River Shannon SAC. It is an important area locally for wildlife and as an amenity area.

Other Maintained Grasslands (see Development Plan Zone 6A & 6B)

Brief description:
Within the city other sites of managed grasslands exist that are in private ownership. This can include other areas of Open areas in housing estates, road verges, sports grounds, private gardens, lawns which may be maintained by grass cutting. These areas can contain natural habitats to support biodiversity in all forms. Open managed grassland areas and verges.

Graveyards
Graveyards across the city can act as havens for wildlife providing often habitat for flora and fauna enhancing local biodiversity. Habitats include managed grasslands, specimen trees, old walls hedgerows, flowering plants.

Kingfisher

Before swallowing a fish a kingfisher usually swings it against a perch to knock it out. They then manouvre it so it can be swallowed head first.

Mute Swan

The Mute Swan is perhaps the noisiest of all swans having eight different sounds in its repertoire They can fly as fast as 50 to 60 miles per hour and have a wing span of up to 10 feet

(5) Wild Grasslands and Agriculture:

Wild grasslands

Brief description:
Variety of habitats including open grassland usually managed with grazing, or left wild, with hedgerows and specimen trees. In some cases these areas border SACs.

Agricultural Lands.

Brief description:
Variety of habitats including open grassland usually managed with grazing, hedgerows, specimen trees. In some cases border SACs. See Map 1D of the LCDP for areas zoned for agriculture.

©John Murphy - Mute Swan/*Cygnus olor*

Conclusion

Biodiversity is constantly changing and evolving. Those of us living, working, running a business, taking part in the development of or just visiting the city need to recognise that we can influence biodiversity in a positive or negative way. We must realise the interdependence between plants, animals, microorganism necessary for healthy ecosytems.

Limerick City Council considers biodiversity to be an important factor in the overall life and development of Limerick City.

This plan aims to raise awareness of what each individual can do to maintain biodiversity in their local area. The plan outlines how, in partnership with stakeholders, the City Council aims to conserve and enhance the biodiversity of the city generally. Important local habitats are listed for protection. It is hoped that by protecting habitats we will allow biodiversity to continue to flourish in Limerick City for the benefit of future generations of wildlife and humans.

Appendices

STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) & APPROPRIATE (HABITATS)

Assessment (AA) Screening Report for the Limerick City Council Biodiversity Plan

Reference Documents

Reference Web Sites

EC Biodiversity Strategy to 2020

International and National Legislative Background

SPECIES LISTS

- Mammals
- Birds
- Fish
- Amphibians
- Dirty Dozen Invasive Species
- Insects
- Bumblebees
- Moths
- Butterflies
- Dragonflies
- Indigenous Trees
- Indigenous Plants
- Known Endagered Species

LIMERICK CITY COUNCIL OPERATIONAL TREE POLICY DOCUMENT

LIST OF KNOWN COMMUNITY GARDENS AND ALLOTMENT SITES WITHIN LIMERICK CITY.

- List of Stakeholders for Consultation
- Useful Contacts
- Report on Submissions
- Photos & Maps

Strategic Environmental Assessment (SEA) & Appropriate (Habitats) Assessment (AA) Screening Report for the Limerick City Council Biodiversity Plan

PART ONE: SEA SCREENING IN LINE WITH THE REQUIREMENTS OF ARTICLE 14A (2) OF THE PLANNING AND DEVELOPMENT (STRATEGIC ENVIRONMENTAL ASSESSMENT) REGULATIONS 2011 (SI 436 2004) AND (SI 435 2004)

INTRODUCTION

SEA is a key process that promotes sustainable development and highlights significant environmental issues within the planning regime. In Ireland, the SEA Directive is transposed into law by the Planning and Development (Strategic Environmental Assessment) Regulations 2004 (SI 436 2004) and (SI 435 2004). The following is a preliminary report prepared by the Planning Department of Limerick City Council and is produced for the purpose of furnishing information to the designated Environmental Authorities regarding the proposed Biodiversity Plan, in accordance with the SEA screening process. The SEA process can be divided into a number of steps:

1. Screening – Article 14A (2) of the Planning and Development (Strategic Environmental Assessment) Regulations 2004 states under the provisions of article 13K that, as an initial step, it is mandatory to undertake the screening process to determine whether or a particular plan would be likely to have significant environmental effects. This would then lead to the necessity to carry out a full Strategic Environmental Assessment (SEA) as set out in the regulations. An assessment of the proposed Biodiversity Plan is set out below. Some plans such as City or County Development Plans automatically require a SEA. ***This report concludes through screening that full SEA assessment is not necessary for the Biodiversity Action Plan.***

2. Scoping – This step helps to identify the range of environmental issues and the level of detail to be included in the Environmental Report should an SEA be required as a result of the screening process.

3. Preparation of the Environmental Report - The Environmental Report describes and assesses the likely significant effects on the environment of Limerick City of implementing the proposed plan. The Biodiversity Action Plan does not necessitate a full SEA Environmental Report.

ASSESSMENT:

An assessment of the Biodiversity Plan in terms of the criteria set out in schedule 2A of The Planning and Development (Strategic Environmental Assessment) Regulations 2004 is detailed below. The assessment has been carried out in the order in which the criteria have been laid out in above mentioned schedule 2A.

1. The characteristics of the plan having regard to:

- **The degree to which the plan sets a framework for projects and other activities, either with regard to the location, nature, size and operation conditions or by allocating resources.**

  The main government agency responsible for the conservation of habitat and species in Ireland is the National Parks and Wildlife Service being part of the Department of the Environment, Heritage and Local Government. However Ireland's National Biodiversity Plan 2002 highlights the key role that Local Authorities can play in promoting local nature heritage. As such Limerick City Council has a responsibility in local biodiversity and promoting local nature heritage through the preparation a Biodiversity Plan in consultation with relevant stakeholders.

  In 1979 the EU introduced the Birds Directive and the Habitats Directive in 1992 to tackle the long-term declines in European biodiversity that were attributed to habitat destruction and degradation, the loss of some species, and the unsustainable exploitation of wildlife resources. The aim of both directives is to maintain, and where necessary restore, the conservation status of natural habitats and species across Europe ensuring the maintenance of Europe's biodiversity.

  This resulted in the establishment of Europe's most important wildlife sites as Natura 2000 sites and strong measures to protect those sites through policy requirements on all types of development plans and development projects. All of the underpinning legislation requiring the preservation of biodiversity in Ireland and within Europe are outlined in Appendix 1. Broadly these include:

- EU Habitats Directive (92/43/EEC) forming the legislation behind Special Areas of Conservation (SAC) prime wildlife areas designated for habitats and species.
- EU Birds Directive (79/409/EEC) forming the legislation behind Special Protection Areas (SPA) - sites of international conservation importance for birds.
- The Wildlife Act, 1976 (as amended by the Wildlife (Amendment) Act, 2000) which directly relates to the protection of biodiversity through Natural Heritage Areas (NHA).
- **The degree to which the plan influences other plans, including those in a hierarchy.**

The Biodiversity Plan is supported within the adopted Limerick City Development Plan under Policy LBR.7 (page 101) which states: 'It is the policy of Limerick City Council to adopt and implement a Limerick City Biodiversity Plan within the lifetime of this Draft Development Plan providing scope for all designated areas and Protected Species within Limerick City and any relevant additional actions relating to natural heritage in the Heritage Plan'.

- **The relevance of the plan for the integration of environmental considerations, in particular with a view to promoting sustainable development.**

  The Biodiversity Action Plan is informed and influenced by the Limerick City Development Plan of which forms part of the Regional Planning Guidelines. Each of these has been the subject of the mandatory SEA process. The Biodiversity Plan is therefore underpinned by and relates to the proper planning and sustainable development of the city. The

explicit integration of environmental considerations in particular with a view to the reinforcement of sustainable development, will be achieved through the implementation of all relevant development plan policies and objectives in consultation with the relevant authorities.

- **Environmental problems relative to the plan.**

  There are a number of habitats, flora and fauna within Limerick City's boundary which are protected under national and international legislation. These include the national and EU designations of Natural Heritage Areas (NHA), Special Areas of Conservation (SAC) and Special Protection Areas (SPA). These land areas are zoned 'Preservation Areas' of Open Space within the Development Plan Landuse Zoning Plan, Objectives and Matrix. The following list outlines all designated or proposed designated sites within Limerick City.

Reference:	Name:
SAC: Ref: 002165	Lower River Shannon
SPA: Ref: 004077	River Shannon and River Fergus Estuaries
NHAs	
002001	Knockalisheen Marsh
002048	Fergus Estuary and Inner Shannon, North Shore
000435	Inner Shannon Estuary - South Shore

The Biodiversity Plan does not include any policies and / or objectives which will conflict with the Limerick City Development Plan with regard to environmental decisions. The Biodiversity Plan is wholly consistent with the policies and objectives of the city development which has been the subject of a mandatory SEA process.

2. Characteristics of the effects and of the area likely to be affected, having regard, in particular to:

- **The probability, duration, frequency and reversibility of the effects and the cumulative nature of the effects.**
  The Biodiversity Plan relates to the entire city. All the lands which are subject to the Biodiversity Plan are already zoned. The proposed Draft Biodiversity Action Plan does not zone any additional lands and has no new policies or objectives beyond those already incorporated in the Limerick City Development Plan. In respect of habitat loss it should be noted that the Limerick City Development Plan was the subject of a mandatory SEA process and Habitats Directive Appropriate Assessment and recommended alterations were incorporated into the Limerick City Development Plan.

- **The transboundary nature of the effects.**
  The Biodiversity Action Plan will have no national, regional or intercounty transboundary effects.

- **The risk to human health or the environment.**
  The implementation of the Biodiversity Plan will not result in any risk to human health, and are positive in terms of benefits to the environment.

- **The magnitude and spatial extent of the effects.**
  The Biodiversity Plan encompasses the entire city has not influence of the existing residential land zonings as set out in the Limerick City Development Plan 2010-2016.

- **The value and vulnerability of the area likely to be affected due to:**

  Special natural characteristics or cultural heritage; The extent of designated sites within the city is set out above. In addition the city contains a significant cultural heritage in the form of recorded monuments, Architectural Conservation Areas and Protected Structures which are listed in the Limerick City Development Plan. It is the explicit policy of Limerick City Council as expressed in the Limerick City Development Plan to preserve and/or enhance those buildings, structures, open spaces, archaeological remains and other elements which contribute to the heritage of the city. All planning applications will be referred to the relevant bodies for comment and will be dealt with in accordance with best practice.

Exceeding environmental quality standards or limit values; It is anticipated that the environmental quality standards will not be exceeded and the value of the area will not be limited as a consequence of the implementation of the proposed draft core strategy.

Intensive landuse; The overall strategy incorporated in the Limerick City Development Plan is a response to the policy recommendations of the National Spatial Strategy and the Mid- West RPGs through the promotion of sustainable development.

- **The effects on areas or landscapes which have a recognised national, European Union or international protection status.**

  The extent of designated areas is outlined in this report. The Limerick City Development Plan recognises the importance of these sites and sets out a comprehensive range of policies to protect these areas. It is not anticipated that the implementation of the proposed Draft Biodiversity Action Plan will have any significant adverse impacts on these sites, and enhances awareness through identification through this plan.

INITIAL DETERMINATION OF LIMERICK CITY COUNCIL

On the basis of the above assessment and consideration of the criteria as set out in Schedule 2A of the Regulations, it is the opinion of the Planning Authority that the proposed Draft Biodiversity Action Plan will not have any significant likely effects on the environment and therefore, does not require an SEA. The Planning Authority is satisfied that the content of the Limerick City Development Plan 2010 -2016 fully endorses the principles of sustainability and the commitment to the enhancement of the natural and manmade environment of the city. The Limerick City Development Plan was subject top the full rigours of the mandatory SEA process. The proposed Draft Biodiversity Action Plan proposes no additional zonings nor does it introduce any additional policies or objectives. It simply indicates the capacity of the city to provide sufficient residential to meet the projected needs of its targeted population.

PART TWO: APPROPRIATE ASSESSMENT SCREENING IN LINE WITH THE REQUIREMENTS OF ARTICLE 6(3) OF THE EU HABITATS DIRECTIVE

INTRODUCTION

This is an Appropriate Assessment Screening - in line with the requirements of Article 6(3) of the EU Habitats Directive (Directive 92/43/EEC) - of the Draft Limerick City Biodiversity Plan. The Draft Limerick City Biodiversity Plan has been evaluated to see if it needs to be subject to an appropriate assessment. In accordance with the Methodological guidance on the provision of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, a screening matrix and a Finding of no significant effects matrix have been completed. They find that the Draft Plan does not require an appropriate assessment. Copies of both follow in Sections 2 and 3 of this report.

The principal trigger for an appropriate assessment would be if the Plan were likely to have significant effects on a Natura 2000 site. SACs and SPAs are Natura 2000 sites. The Plan has been formulated to ensure that uses, developments and effects arising from permissions based upon this Plan (either individually or in combination with other plans or projects) shall not give rise to impacts on any Natura 2000 sites. Except as provided for in Section 6(4) of the Habitats Directive, viz .There must be: (a) no alternative solution available, (b) imperative reasons of overriding public interest for the plan to proceed; and (c) adequate compensatory measures in place.

ASSESSMENT (SCREENING MATRIX)

Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the Natura 2000 sites.
The Biodiversity Plan has been formulated inline with the policies and / objectives within the Limerick City Development Plan with regard to environmental decisions. The Biodiversity Plan is wholly consistent with the policies and objectives of the City Development plan which has been the subject of a mandatory AA process which to ensure that uses, developments and effects arising from permissions based upon City Development Plan (either individually or in combination with other plans or projects) shall not give rise to impacts on Natura 2000 sites as identified above.

Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the Natura 2000 sites by virtue of:

- **size and scale;** Not applicable as not within the scope and purpose of the Biodiversity Plan (see above).
- **land-take;** Not applicable as not within the scope and purpose of the Biodiversity Plan (see above).
- **distance from the Natura 2000 site or key features of the site;** The Biodiversity Plan highlights all Natura 2000 sites within Limerick City but no policy contained within the plan shall give rise to significant adverse direct, indirect or secondary impacts on Natura 2000 sites or their key features arising from their proximity (either individually or in combination with other plans or projects).
- **resource requirements (water abstraction etc.);** Not applicable as not within the scope and purpose of the Biodiversity Plan (see above).
- **emissions (disposal to land, water or air);** Not applicable as not within the scope and purpose of the Biodiversity Plan.
- **excavation requirements;** Not applicable as not within the scope and purpose of the Biodiversity Plan.
- **transportation requirements;** Not applicable as not within the scope and purpose of the Biodiversity Plan.
- **duration of construction, operation, decommissioning, etc.;** Not applicable as not within the scope and purpose of the Biodiversity Plan.
- **other;**

Describe any likely changes to the sites arising as a result of:

- **reduction of habitat area:** The Biodiversity Plan has been formulated inline with the policies and / objectives within the Limerick City Development Plan with regard to environmental decisions. The Biodiversity Plan is wholly consistent with the policies and objectives of the City Development plan which contains strict policy regarding developments which have the potential to read to reduction in habitat area.
- **disturbance to key species;** As above.
- **habitat or species fragmentation;** As above.
- **reduction in species density;** As above.
- **changes in key indicators of conservation value (water quality etc.);** As above.
- **climate change.** As above.

Provide indicators of significance as a result of the identification of effects set out above in terms of:

- **loss;** The Biodiversity Plan has been formulated inline with the policies and / objectives within the Limerick City Development Plan with regard to environmental decisions. The Biodiversity Plan is wholly consistent with the policies and objectives of the City Development plan which contains strict policy regarding developments which have the potential to read to reduction in habitat area.
- **fragmentation;** As above.
- **disruption;** As above.
- **disturbance;** As above.
- **change to key elements of the sites (e.g. water quality etc.).** As above.

Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.
Not applicable.

FINDING OF NO SIGNIFICANT EFFECTS REPORT MATRIX

Name of project or plan: Limerick City Biodiversity Plan.
Name and location of Natura 2000 sites;
As given in above.
Description of the project or plan

Is the project or plan directly connected with or necessary to the management of the sites (provide details)?
The Biodiversity Plan has been formulated inline with the policies and / objectives within the Limerick City Development Plan with regard to environmental decisions. The Biodiversity Plan sets out policies relating to the management of these site although is wholly consistent with the policies and objectives of the City Development plan which contains strict policy regarding developments which have the potential to lead to impacts within sites of high conservation value. The Plan includes, inter alia, measures to protect, conserve and manage in a prudent and sustainable manner the outstanding natural heritage of Limerick City including its Natura 2000 sites, and to seek the enhancement of these resources where appropriate and feasible.

Are there other projects or plans that together with the project or plan being assessed could affect the sites (provide details)? Limerick City Development Plan 2010-2016.

The Assessment of Significance of Effects

Describe how the project or plan (alone or in combination) is likely to affect the Natura 2000 site.
The Biodiversity Plan has been formulated inline with the policies and / objectives within the Limerick City Development Plan with regard to environmental decisions. The Biodiversity Plan sets out policies relating to the management of these site although is wholly consistent with the policies and objectives of the City Development plan which contains strict policy regarding developments which have the potential to lead to impacts within sites of high conservation value. The Plan includes, inter alia, measures to protect, conserve and manage in a prudent and sustainable manner the outstanding natural heritage of Limerick City including its Natura 2000 sites, and to seek the enhancement of these resources where appropriate and feasible.

Explain why these effects are not considered significant.

The policies within the Biodiversity Plan have been devised within the context of the Limerick City Development Plan provisions to anticipate and avoid the need for developments that would be likely to significantly affect Natura 2000 sites. Therefore no developments can or will be permitted on foot of the provisions of this Biodiversity Plan as it is outside the scope and purpose of the document, where such developments shall be required to conform with the relevant regulatory provisions for the prevention of pollution, nuisance or other environmental effects likely to adversely affect the status of the Natura 2000 site.

Reference Documents

- Heritage Council Local Authority Biodiversity Plan Guidelines
- http://www.heritagecouncil.ie/wildlife/heritage-council-initiatives/local-biodiversity-action-plan/
- National Biodiversity Plan 2002
- http://www.npws.ie/media/npws/publications/media,4590,en.pdf
- Dirty Dozen Non Native Invasive Species Co Limerick
- http://invasives.biodiversityireland.ie/wp-content/uploads/Dirty-Dozen-invasive-species-Co.-Limerick-2010.pdf
- Limerick City Council Development Plan
- http://www.limerickcity.ie/Publications/
- Local Authority Biodiversity Plans
- Cork City Council Biodiversity Plan
- Wicklow County Council Biodiversity Plan
- North Tipperary Council Biodiversity Plan
- Fingal County Council Biodiversity Plan

Reference Websites

- National Parks and Wildlife Service www.npws.ie
- Environment Protection Agency www.epa.ie
- BirdWatch Ireland www.birdwatchireland.ie
- Mulkear Life Project http://www.mulkearlife.com/
- Irish Peatland Conservation www.ipcc.ie
- Irish Wildllife Trust www.iwf.ie
- National Biodiversity Data Centre http://www.biodiversityireland.ie/
- http://www.botanicgardens.ie/herb/census/flora.htm
- Irish Butterflies http://www.irishbutterflies.com/butterfly_species.html
- Butterfly Ireland http://www.butterflyireland.com/
- Moth Ireland http://www.mothsireland.com/
- Bat Conservation Ireland http://www.batconservationireland.org/
- Inland fisheries Ireland http://www.fisheriesireland.ie/
- OPW http://www.opw.ie/
- Shannon River Basin Project http://www.shannonrbd.com/
- Botanical Society of the British Isles www.bsbi.org.uk/index.html
- http://www.irishwildflowers.ie/AZ-english.html

EC Biodiversity Strategy to 2020

The European Commission adopted a new strategy to halt the loss of biodiversity in the EU by 2020. There are six main targets, and 20 actions to help Europe reach its goal. Biodiversity loss is an enormous challenge in the EU, with around one in four species currently threatened with extinction and 88% of fish stocks over-exploited or significantly depleted.

The six targets cover:

- Full implementation of EU nature legislation to protect biodiversity
- Better protection for ecosystems, and more use of green infrastructure
- More sustainable agriculture and forestry
- Better management of fish stocks
- Tighter controls on invasive alien species
- A bigger EU contribution to averting global biodiversity loss

The strategy is in line with two commitments made by EU leaders in March 2010. The first is the 2020 headline target: "Halting the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, and restoring them in so far as feasible, while stepping up the EU contribution to averting global biodiversity loss"; the second is the 2050 vision: "By 2050, European Union biodiversity and the ecosystem services it provides – its natural capital – are protected, valued and appropriately restored for biodiversity's intrinsic value and for their essential contribution to human wellbeing and economic prosperity, and so that catastrophic changes caused by the loss of biodiversity are avoided."

It is also in line with global commitments made in Nagoya in October 2010, in the context of the Convention on Biological Diversity, where world leaders adopted of a package of measures to address global biodiversity loss over the coming decade.

International and National Legislative Background

Rio de Janeiro Convention 1992

The Convention on Biological Diversity was one of several initiatives to arise from the 'Earth Summit' in Rio de Janeiro in 1992. Ireland was one of 150 signatories to the Convention and it has since been ratified by 188 countries, highlighting the world-wide concern that human activities are impacting natural ecosystems and species at an unprecedented rate.

This landmark international agreement recognised for the first time that biological diversity is ''a common concern for humankind' with each country needing to take responsibility in order to halt the global loss of animal and plant species, through conserving and enhancing biodiversity within their own jurisdiction. Uniquely, while seeking to halt biodiversity loss, the convention also acknowledges that ecosystems, species and genetic variation are used by humans but stresses that this should be in a sustainable way only.

Wildlife Act, 1976 as amended by the Wildlife (Amendment) Act, 2000.
This act, considerably strengthened by the 2000 amendment, makes provisions that are directly related to the protection of biodiversity and provides important statutory protection for Natural Heritage Areas (NHA). NHAs are areas deemed worthy of protection because of the importance of habitats or species present.

EU Habitats Directive (92/43/EEC) and the EU Birds Directive (79/409/EEC)

These form the legislation behind Special Areas of Conservation (SAC) - prime wildlife areas designated for habitats and species and Special Protection Areas (SPA) - sites of international conservation importance for birds.

Ireland has a variety of other conservation designations and has also ratified several International Conventions such as the Ramsar, Bonn and Bern. These are listed in Appendix 1. Thus the conservation of Irelands' biodiversity is underpinned by both global and national measures with the overall target being to achieve by 2010 "a significant reduction of the current rate of biodiversity loss at the global, regional and national level "

EC (Birds and Natural Habitats) Regulations 2011

These regulations apply to flora, fauna and habitats, with a particular emphasis on strengthening the protection of birds. They also contain important contain important new provisions to address the problem of invasive species. There are Third Schedule black listed species. It will be an offence without a licence, to release or allow to escape, to breed, propagate, import, transport, sell or advertise such species.

Limericks Designated Areas & Protected Species

There are a number of habitats, flora and fauna within Limerick City's boundary which are protected under national and international legislation. These include the national and EU designations of Natural Heritage Areas (NHA), Special Areas of Conservation (SAC) and Special Protection Areas (SPA). These land areas are zoned 'Preservation Areas' of Open Space within the Development Plan Land use Zoning Plan, Objectives and Matrix. The following list outlines all designated or proposed designated sites within Limerick City.

The Shannon River in its entirety, along with all connected landscape features such as feeder streams, shoreline vegetation, woodlands and fields is such a feature, recognised and required by EU legislation to be protected through land use, planning and development policy. Almost the entire length of the South Shannon including the shoreline and islands is covered by either International (SAC and SPA) or National (NHA) designation based on criteria relating to habitat quality, species complement and ecological processes.

Natural Heritage Areas (NHAs)

The basic designation for wildlife is the Natural Heritage Area (NHA). This is an area considered important for the habitats present or which holds species of plants and animals whose habitat needs protection. The Wildlife (Amendment) Act 2000 provision was made for the designation of Natural Heritage Area (NHAs)

which include nationally important semi natural and natural habitats, landforms and geomorphological features, plant and animal species, or a diversity of these natural heritage attributes.In Limerick City a number of areas have been designated as Natural Heritage Areas (NHA).

Special Areas of Conservation (SACs)

These are prime wildlife conservation areas in the country, considered to be important on a European as well as Irish level. The legal basis on which SACs are selected and designated is the EU Habitats Directive, transposed into Irish law in the European Union (Natural Habitats) Regulations, 1997 as amended in 1998 and 2005.

The Directive lists certain habitats and species that must be protected within SACs. Irish habitats include raised bogs, blanket bogs, turloughs, sand dunes, machair (flat sandy plains on the north and west coast), heaths,

lakes, rivers, woodlands, estuaries and sea inlets. The 25 Irish species which must be afforded protection include Salmon, Otter, Freshwater Pearl Mussel, Bottlenose Dolphin and Killarney Fern.

The River Shannon and the bordering wetland habitat is within the Lower River Shannon SAC. Also within the SAC are Meelick Creek, its bordering wetland habitat and the wetland area at Westfields City Park. These areas are also designated as a proposed Natural Heritage Area (NHA) forming part of the Fergus Estuary and Inner Shannon, North Shore NHA. Most of this area is also designated as part of The River Shannon and River Fergus Estuaries SPA, but it does not include the wetland at Westfields City Park.

The Lower River Shannon SAC is a very large site stretching along the Shannon valley from Killaloe, Co. Clare, to Loop Head, Co. Kerry. It is designated for fifteen habitats which are listed in Annex I of the Habitats Directive and for seven species which are listed in Annex II of the Habitats Directive.

An additional seven species listed on Annex I of the E.U. Birds Directive breed within the SAC site, including kingfisher (Alcedo atthis). Seven plant species listed in the Irish Red Data Book (Curtis and McGough 1988) species occur within the SAC, several also being protected under the Flora (Protection) Order, 1999. One particular species, the triangular club-rush (Schoenoplectus triqueter) is a rare plant species.

Special Protection Areas (SPAs)

Special Protection Areas (SPAs) are areas of European importance designated under the Birds Directive EU Directive 79/409/EEC to protect birds at their breeding, feeding, roosting and wintering areas. Under the Bird Directive each EU member state is required to designate SPAs for natural areas that support populations of particular bird species that are rare or threatened in Europe and that require measures including the designation of protected areas to conserve them.

Within Limerick City, the main SPA is the River Shannon and River Fergus Estuaries SPA, Site code: 004077. The estuaries of the River Shannon and River Fergus form the largest estuarine complex in Ireland. The site comprises all of the estuarine habitats west from Limerick City and south from Ennis, extending west as far as Killadysert and Foynes on the north and south shores respectively of the River Shannon (a distance of some 25 km from east to west). The site has vast expanses of intertidal flats which provide a rich food resource for the wintering birds which is the most important coastal wetland site in the country and regularly supports in excess of 50,000 wintering waterfowl. This site is of great ecological interest as it contains a high number of habitats and species listed on Annexes I and II of the E.U. Habitats Directive and most of the estuarine part of the site has been designated a Special Protection Area (SPA), under the E.U. Birds Directive, primarily to protect the large numbers of migratory birds present in winter.

Protected Species

Certain plant, animal and bird species are protected by law. This includes plant species listed in the Flora Protection Order 1999 and animals and birds listed in the Wildlife Act, the Habitats Directive and the Birds Directive. The planning process seeks to protect and enhance species protected by law and their habitats. Very often this can be done by minimising adverse impacts (for example, by requiring that development takes place outside the breeding season). In other cases it may be appropriate to seek to ensure that individual members of a species survive by providing alternative roosts in the case of bats for example. It may also be appropriate to seek to have an alternative area of habitat provided.

The EU Water Framework Directive

This directive recognises the critical influence of land use on the water quality within a catchment. The waterway corridor as defined for this study is composed of the catchments of all streams draining directly into the Shannon River between Meelick and Limerick. This area, being critical to the habitat quality, species complement and ecological processes of the Shannon River, can itself be considered a landscape of international natural heritage significance.

SPECIES LISTS

List of Land Mammals in Ireland

Mammals have sweat glands, hair and feed their young though milk-producing glands. Humans are mammals. There are about 4,400 different kinds world-wide. They live in the sea (whales, seals and dolphins), in freshwater (dolphins, otters) and on land. Some fly (bats). If you include these habitats, there are about 50 types in and around Ireland, 21 of whom are terrestrial wild mammals.

Native Land Mammals

- Irish Hare (Giorria)
- Red Fox (Sionnach/ Madra Rua)
- Red Deer (Fia Rua)
- Red Squirrel (Iora Rua)
- Hedgehog (Gráinneog)
- Field Mouse (An Luch Fhéir)
- House Mouse (An Luch)
- Pygmy Shrew (Dallóg Fhraoigh)
- Irish Stoat (Éasóg)
- Otter (Dobharchú)
- Pine Marten (Cat Crainn)
- Badger (Broc)
- Bat – (Ialtóg)

  - o Brown Long-eared Bat *Plecotus auritus*
  - o Common pipistrelle *Pipistrellus pipistrellus* and
  - o Soprano Pipistrelle *Pipistrellus pygmaeus*
  - o Daubenton's Bat *Myotis daubentonii*
  - o Natterer's Bat *Myotis nattererii*
  - o Whiskered Bat *Myotis mystacinus*
  - o Leisler's Bat Nyctalus leisleri
  - o Lesser Horseshoe Bat *Rhinolophus hipposideros*

Naturalised land mammals (some considered invasive species*)

- Grey Squirrel (Iora Glas*)
- Bank Vole (Vól Bruaigh*)
- American Mink (Minc Mheiriceanách*)
- Rabbit (Coinín)
- Black Rat (An Francach Dubh*)
- Brown Rat (An Francach Donn*)
- Great White Toothed Shrew

BIRDS

About 425 species of birds have been recorded in Ireland. Only about half of these birds breed here. This is not a complete list of birds recorded in Ireland but the ones likely to be seen within the Limerick City Council Fuctional Area . Source BirdWatch Ireland website

Crow Family
- Magpie *Pica pica*
- Chough *Pyrrhocorax pyrrhocorax*
- Jackdaw *Corvus monedula*
- Rook *Corvus frugilegus*
- Hooded Crow *Corvus corone cornix*

Sparrows, finches & buntings
Sparrows
- House Sparrow *Passer domesticus* Gealbhan binne

Finches
- Chaffinch *Fringilla coelebs*
- Greenfinch *Carduelis chloris*
- Goldfinch *Carduelis carduelis*
- Siskin *Carduelis spinus*
- Linnet *Carduelis cannabina*
- Lesser Redpoll *Carduelis cabaret*
- Bullfinch *Pyrrhula pyrrhula*

Buntings
- Reed Bunting *Emberiza schoeni*

Other
- Starling *Sturnus vulgaris*
- Skylark *Alauda arvensis*
- Pheasant *Phasianus colchicus*

Other - Winter
- Waxwing *Bombycilla garru*lous

Thrushes
- Blackbird *Turdus merula*
- Song Thrush *Turdus philomelos*
- Mistle Thrush *Turdus viscivorus*

Thrushes - Wintering
- Fieldfare *Turdus pilaris*
- Redwing *Turdus iliacus*

Chats
- Robin *Erithacus rubecula*
- Black Redstart *Phoenicurus ochruros*
- Common Redstart *Phoenicurus phoenicurus*
- Stonechat *Saxicola torquata*
- Whinchat

Warblers
- Blackcap *Sylvia atricapilla* Caipín dubh

Warblers - Summer
- Sedge Warbler *Acrocephalus schoenobaenus* Ceolaire cíbe
- Common Whitethroat *Sylvia communis* Gilphíb
- Willow Warbler *Phylloscopus trochilus* Ceolaire sailí
- Chiffchaff *Phylloscopus collybita* Tiuf-teaf

Pipits & Wagtails

- Meadow Pipit *Anthus pratensis*
- Pied Wagtail *Motacilla alba*

Garden Birds
- Dunnock *Prunella modularis* Donnóg
- Wren *Troglodytes troglodytes* Dreolín

Rivers and Streams
- Kingfisher *Alcedo Cruidín*

OWLS
- Barn Owl *Tyto alba* Scréachóg reilige
- Long-eared Owl *Asio otus* Ceann cait

Pigeons & Doves
- Feral Pigeon *Columba livia* f. domestica
- Stock Dove *Columba oenas*
- Woodpigeon *Columba palumbus*
- Collared Dove *Streptopelia decaocto*

Crakes & Rails
- Water Rail *Rallus aquaticus*
- Moorhen *Gallinula chloropus*
- Coot *Fulica atra*

Gull
- Black-headed Gull *Larus ridibundus* Sléibhín

Gull- Wintering
- Common Gull *Larus canus* Faoileán bán
- Lesser Black-backed Gull *Larus fuscus* Droimneach beag
- Herring Gull *Larus argentatus* Faoileán scadán
- Great Black-backed Gull *Larus marinus* Droimneach mór
- Ring Billed Gull
- Mediterranean Gull
- Yellow Legged Gull
- Little Gull

RAPTORS

- Sparrowhawk *Accipiter nisus* Spioróg
- Kestrel *Falco tinnunculus* Pocaire gaoithe
- Peregrine *Falco peregrinus* Fabhcún gorm

Wintering RAPTOR
- Merlin *Falco columbarius* Meirliún

Waders
- Oystercatcher *Haematopus ostralegus* Roilleach

Plovers
- Ringed Plover *Charadrius hiaticula* Feadóg chladaigh

Wintering plover
- Golden Plover *Pluvialis apricaria* Feadóg bhuí
- Grey Plover *Pluvialis squatarola* Feadóg ghlas
- Lapwing *Vanellus van*ellus Pilibín

Sandpipers
- Knot *Calidris canutus* Cnota
- Wintering Sandpipers
- Dunlin *Calidris alpine* Breacóg
- Snipe *Gallinago gallinago* Naoscach
- Jack Snipe *Lymnocryptes minimus* Naoscach bhídeach
- Black-tailed Godwit *Limosa limosa* Guilbneach earrdhubh
- Woodcock *Scolopax rusticola* Creabhar
- Bar-tailed Godwit *Limosa lapponica* Guilbneach stríocearrach
- Redshank *Tringa tetanus* Cosdeargán
- Greenshank *Tringa nebularia* Laidhrín glas

Passage Sandpipers
- Curlew Sandpiper *Calidris ferruginea* Gobadán crotaigh
- Whimbrel *Numenius phaeopus* Crotach eanaigh
- Curlew *Numenius arquata* Crotach
- Spotted Redshank *Tringa erythropus* Cosdeargán breac

Ducks
- Shelduck *Tadorna tadorna* Seil-lacha
- Mallard *Anas platyrhynchos* Mallard
- Tufted Duck *Aythya fuligula* Lacha bhadánach

Wintering Ducks
- Wigeon *Anas Penelope* Rualacha
- Teal *Anas crecca* Praslacha
- Pintail *Anas acuta* Biorearrach
- Shoveler *Anas clypeata* Spadalach
- Pochard *Aythya farina* Póiseard cíordhearg
- Goldeneye *Bucephala clangula* Órshúileach

Wintering GEESE
Greylag Goose *Anser anser* Gé Ghlas

Swans
- Mute Swan *Cygnus olor* Eala bhalbh Wintering Swans
- Whooper Swan *Cygnus cygnus* Eala Ghlórach

Heron
Grey Heron *Ardea cinerea* Corr réisc
Little Egret

Cormorant Wintering
- Cormorant *Phalacrocorax carbo* Broigheall

Divers & Grebes
- Great Crested Grebe *Podiceps cristatus* Foitheach mór

Wintering Divers & Grebes
- Little Grebe or Dabchick *Tachybaptus ruficollis* Spagáire tonn

Summer Visitors
- Swallow & Martins
- Sand Martin *Riparia riparia*
- Swallow *Hirundo rustica*
- House Martin *Delichon urbica*
- Cuckoo *Cuculus canorus* Cuach

Other Summer Visitors
- Swift *Apus apus* Gabhlán gaoithe

LIST OF FISH

Indigenous Fish
- Salmon *Salmo salar* bradan
- Sea Lamprey *Petromyzon marinus*
- Trout *Salmo trutta* morpha trutta
- European Eel *Anguilla anguilla* Eascann
- Stickleback *Gasterosteus aculeatus* Garmachán, biorach lodáin, dealg úcaire, pincín
- Allis shad Alosa alosa
- River lamprey *Lampetra fluviatilis* Peist da shuil deag
- Brook lamprey *Lampetra planeri*
- European smelt *Osmerus eperlanus* Cualarach
- Eurasian minnow *Phoxinus phoxinus* Libin
- European flounder *Platichthys flesus* Leadhbhóg

Introduced
- Common Carp *Cyprinus carpio* Carbán
- Common Bream *Abramis brama* Bréan
- Perch *Perca fluviatilis* Péirse
- Pike *Esox lucius* Gailliasc
- Rudd *Scardinius erythrophthalmus* Ruán
- Stone loach *Barbatula barbatula* Cailleach Rua
- Gudgeon *Gobio gobio* Bronnòg
- Common dace *Leuciscus leuciscus* Deas
- Roach *Rutilus rutilus* Roiste
- Tench *Tinca tinca* Curaman

Amphibians

- Common Frog *Rana temporaria* Loscán
- Smooth Newt *Triturus vulgaris* Earc Sléibhe

INVASIVE SPECIES – DIRTY DOZEN

http://invasives.biodiversityireland.ie/wp-content/uploads/Dirty-Dozen-invasive-species-Co.-Limerick-2010.pdf

1. Japanese Knotweed *Fallopia japonica* Glúineach bhiorach
2. Himalayan Balsam *Impatiens glandulifera* Lus no pléisce
3. Giant Knotweed *Heracleum mantegazzianum* Feabhrán capaill
4. Rhododendron *Rhododendron ponticum* Róslabhras
5. Water Fern *Azolla filiculoides* Raithneach uisce
6. Nuttall's Waterweed *Elodea nuttallii* Tím uisce chaol
7. African Curly Waterweed *Lagarosiphon major*
8. Least Duckweed *Lemna minuta*
9. Common Cord-grass *Spartina anglica* Spairtíneach ghallda
10. Dreissena polymorpha Zebra Mussel
11. Dace *Leuciscus leuciscus* Deas
12. *Sciurus carolinensis* Grey/American Squirrel Iora Glas

INSECTS IN IRELAND

There are about 12,000 known insects species in Ireland, these include butterflies, moths, dragonflies, bumblebees etc species. Insects are a vital part of life on earth and are a valuable and necessary part of ecosystems and biodiversity as a whole.

Lists of moths, butterflies dragon and damsel flies for Ireland are listed in the attached pages it would be impossible to list all 12,000 plus insects species.

Bumblebees
Common species
- *Bombus locorum*
- *Bombus terrestris*
- *Bomsus pratorum*
- *Bombus hortorum*
- *Bombus jonellus*
- *Bombus pascrorum*

Wide Spread but not common
- *Bumbus muscorum*
- *Bombus lapidaries*

Rare – national conservation priorities
- *Bombus distinguendus*
- *Bombus ruderaius*

Moths
A moth is an insect closely related to the butterfly, both belong to the order Lepidoptera. Moths form the majority of this order. Moths are usually nocturnal, but there are crepuscular (twilight) and diurnal species.Most moths (some moths don't eat as adults) - feed through a tube -like tongue called a proboscis so their food must be liquid.

Macro moths
- List supplied by local naturalist
- Found or likely to be present in Limerick City

2281 Angle shades phlogophora meticulosa
2306 Alder moth Acronicta alni
1912 August thorn ennomos quercinaria
1797 Autumnal moth epirrita autumnata
1647 Barred hook tip Watsonalla cultraria
2267 Beaded chestnut Agrochola lychnidis
1748 Beautiful carpet Mesolueca albicellata
2442 Beautiful golden y Autographa pulchrina
2232 Black rustic Aporophyla nigra
1766 Blue bordered carpet Plemyria rubiginata
2262 Brick Agrochola circellaris
2160 Bright line brown eye Lacanobia oleracea
1906 Brimstone moth Opisthograptis luteolata
1852 Brindled pug Eupithecia abbreviate
2110 Broad bordered yellow underwing Noctua fimbriata
1773 Broken barred carpet Electrophaes corylata
2163 Broom moth melanchra pisi
1902 Brown silver line Petrophora chlorosata
2192 Brown line bright eye Mythimna conigera
1945 brussels lace Cleorodes lichenaria
1653 Buff arches
2061 Buff ermine
2049 Buff footman
1994 Buff tip
2369 Bullrush wainscot
2269 Centre barred sallow
2258 Chestnut
1755 Chevron
2069 Cinnibar
1681 Clay treble lines
1887 Clouded border
2326 Clouded bordered brindle
1738 Common carpet
1669 Common Emerald Common footman
1764 Common marbled carpet
1834 Common pug
2187 Common quaker
2343 Common rustic Agg.
1956 Common wave
1955 Common white wave
1972 Convolvulus hawk moth
2297 Copper underwing
2000 Coxcomb prominent
1693 Cream wave
2321 Dark arches
1762 Dark marbled carpet
2449 Dark spectacle
1725 Dark barred twin spot catrpet
1973 Deaths head hawk moth
1631 December moth
2114 Double dart
2336 Double lobed
2128 Double square spot
1862 Double striped pug
1640 The drinker
2318 Dunbart
2243 Early grey
1917 Early thorn
1881 Early tooth stripe
1643 Emperor
1947 The engrailed
2489 Fanfoot
2098 Flame
1722 Flame carpet
2102 Flame shoulder
1728 Garden carpet
2057 Garden tiger
0014 Ghost moth
2439 Gold spot
2136 The gothic
1776 Green carpet
2245 Green brindled crescent
2150 Grey arches
1768 Grey pine carpet
2089 Heart and dart
2190 Hebrew character
2469 The Herald
1984 Hummingbird hawk moth
2120 Ingrailed clay
2000 Iron prominent
1777 July highflyer
2375 Large wainscot
1894 Latticed heath
2107 Large yellow underwing
2111 Lesser broad bordered yellow underwing
1692 Lesser cream wave
2109 Lesser yellow underwing
2322 Light arches
1061 Light emerald
1694 Little emerald
1884 Magpie moth
0018 Map winged swift

2337 Marbled
1663 March moth
1778 May highflyer
1941 Mottled beauty
1935 Mottled umber
2038 Muslin footman
2063 Muslin moth
1795 November moth agg.
2425 Nut tree tussock
1939 Oak beauty
1719 Oblique carpet
2300 Old lady
2236 Pale pinion
2011 Pale prominent
2028 Pale tussocl
1652 Peach blossom
1931 Peppered moth
2484 Pinion streaked snout
2273 Pink barred sallow
1981 Poplar hawk moth
2186 Powdered quaker
2122 Purple clay
1995 Puss moth
2241 Red sword grass
1760 Red green carpet
2263 Red line quaker
1713 Riband wave
2361 Rosy wave
2035 Round winged muslin
1779 Ruddy highflyer
2274 Sallow
2256 Satellite
1940 Satin beauty
1920 Scalloped hazel
Scalloped oak
1904 Scorched wing
1732 Shaded broad bar
1794 Sharp angled carpet
1746 Shoulder stripe
2441 Silver y
1727 Silver ground carpet
2133 Six striped rustic
2305 Small angle shades
2492 Small fan foot
1702 Small fan foot wave
1759 Small phoenix
2182 Small quaker
2123 Small square spot
2350 Small wainscot
2477 The snout
2450 The spectacle
2134 Square spot rustic
2474 Straw dot
1747 The streamer
2380 Treble lines
2188 True lovers knot
2087 Turnip moth
2189 Twin spotted quaker
2381 Uncertain
1858 V pug
1750 Water carpet
2060 White ermine
1937 Willow beauty
1799 Winter moth
2264 Yellow line quaker

LIST OF MICRO MOTHS

246 Tinea semifulvella
453 Honeysuckle moth
453 Honeysuckle moth
464 Diamond backed moth
610 Elachista argentella
647 Brown house moth
648 White shouldered house moth
663 Diurnia flagella
673 Parsnip moth
706 Agnopterix nervosa
873 Blastoobasis adustella
937 Agapeta hamana
970 Barred fruit tree tortrix
972 Dark fruit tree tortrix
977 Large fruit tree tortrix
989 Timothy tortrix
1007 Capua vulgana
1033 Green oak tortrix
1038 Acleris laterana
1041 Acleris spersana
1044 Acleris ferrugana
1048 Garden rose tortrix
1053 Acleris hastiana
1061 Acleris literana
1062 Acleris emergana
1076 Celypha laculana
1083 Marbled orchard tortrix
1111 Bactra lancealana
1126 Ancylis badiana
11159 Holly tortrix
1201 Eucosma cana
1251 Grapholita jungiella
1288 Twenty plume moth
1293 Garden grass veneer
1294 Crambus pascuela
1301 Crambus lathoniellus
1304 Agriphila straminella
1305 Agriphila tristella
1333 Scoperia pyralella
1334 Scoperia ambigualis
1338 Dipluerina lacustrata
1340 Eudonia truncicolella
1344 Eudonia mercurella

China mark Nymphula nymphaeata

1348 Ringed china mark Parapoynx statiotata
1350 Beautiful china mark mymphula stagnata
1354 Small china mark cataclysta lemnata
1356 Garden pebble Evergestis forficalis
1358 Evergestis pallidata
1376 Eurrhypara hortulata Small magpie
1378 Phlyctaenia coronate
1388 Udea lutealis
1390 Udea prunalis
1395 Udea ferrugalis Rusty pearl dot
1398 Nomophila noctuella Rush veneer
1405 Plueropyta ruralis Mother of pearl
1428 Amphomia sociella Bee moth
1513 Pterophorus pentadactyla White plume moth
1524 Emmelina monodactyla

LADY BIRD LIST

- 2 Spot Ladybird *Adalia 2-punctata*
- 7 Spot Ladybird *Coccinella 7-punctata*
- 14 Spot Ladybird *Propylea 14-punctata*
- 22 Spot Lady Bird *Psyllobora 22-punctata*

BUTTERFLIES FOUND WITHIN LIMERICK CITY BOUNDARY

Multicoloured butterflies
- Peacock Inachis io Péacóg
- Small Tortoiseshell *Aglais urticae* Ruán Beag
- Red Admiral *Vanessa atalanta* Aimiréal Dearg
- Painted Lady *Cynthia cardui* Áilleán

Small Butterflies
- Common Blue *Polyommatus icarus* Gormán Coiteann
- Small Copper *Lycaena phlaeas* Copróg Bheag
- Dingy Skipper *Erynnis tages* Donnán

Brown Butterflies
- Speckled Wood *Pararge aegeria* Breacfhéileacán Coille
- Meadow Brown *Maniola jurtina* Donnóg Fhéir
- Ringlet *Aphantopus hyperantus* Fáinneog
- Small Heath *Coenonympha pamphilus* Fraochán Beag

White/Yellow Butterflies
- Green-veined White *Pieris napi* Bánóg Uaine
- Small White *Pieris rapae* Bánóg Bheag
- Large White *Pieris brassicae* Bánóg Mhór
- Brimstone *Gonepteryx rhamni* Buíóg Ruibheach
- Clouded Yellow *Colias croceus* Buíóg Chróch
- Wood White *Leptidea sinapis* Bánóg Choille
- Orange Tip *Anthocharis cardamines* Barr Buí

LIST OF DRAGONFLY SPECIES

Source - http://www.habitas.org.uk/dragonflyireland/

- Banded Demoiselle *Calopteryx splendens*
- Emerald Damselfly *Lestes sponsa*
- Large Red Damselfly *Pyrrhosoma nymphula*
- Blue-tailed Damselfly *Ischnura elegans*
- Scarce Blue-tailed Damselfly *Ischnura pumilio*
- Common Blue Damselfly *Enallagma cyathigerum*
- Variable Damselfly *Coenagrion pulchellum*
- Azure Damselfly *Coenagrion puella*
- Hairy Dragonfly *Brachytron pratense*
- Common Hawker *Aeshna juncea*
- Brown Hawker *Aeshna grandis*
- Migrant Hawker
- Emporer Dragon Fly
- Four-spotted Chaser *Libellula quadrimaculata*
- Keeled Skimmer *Orthetrum coerulescens*
- Black-tailed Skimmer *Orthetrum cancellatum*
- Common Darter *Sympetrum striolatum*
- Ruddy Darter *Sympetrum sanguineum*

LIST OF INDIGENOUS IRISH TREES

Oaks
- Sessile Oak *(Quercus petraea*) and
- Pedunculate Oak (*Quercus robur).*

Birch
- Silver Birch (*Betula pendula*) and
- Downey Birch (*Betula pubescens*)

Cherries
- Common/Wild Cherry (Prunus avium) and
- Bird Cherry (*Prunus padus*)

Willows,
- Goat Willow (*Salix caprea),*
- Grey Willow *(Salix atrocinerea),*
- Bay Willow (*Salix pentandra*) and
- Eared Willow (*Salix aurita*)

Other Trees
- Ash (*Fraxinus excelsior*)
- Hazel
- Wych Elm (*Ulmus glabra*)
- Black Alder (*Alnus glutinosa*)
- Aspen or Trembling poplar (*Populus tremula / tremuloides*)
- Mountain Ash or Rowan (*Sorbus aucuparia*)
- Whitebeam (*Sorbus hibernica*)
- Crab apple (*Malus sylvestris)*
- Yew (*Taxus baccata*)
- Juniper (*Juniperus communis*)
- Scots Pine (*Pinus sylvestris)*
- Blackthorn/Sloe (*Prunus spinosa*)
- Hawthorn *(Crataegus monogyna*)
- Killarney Strawberry Tree (*Arbutus unedo)*

As part of the consultation process a local naturalist identified two trees of note for their historical significance.
Both have been referred to planning to be considered a candidtates for tree preservation orders

1. Tallest Tree in Limerick (likely) – planted after the battle of Waterloo it is known as a Wellintonia. Approx 50 yards from O Driscolls pub, Corbally.

2. Ginko Bilbao – in the grounds of a private house in Corbally it is reckoned to be over 200 years old. Originally from India and China it is said to have exceptional curative powers. (after the bombing of Hiroshima in 1945 the only things left alive were three Ginko biloba trees. A testament to their durability.

INDIGENOUS PLANTS

For a full list of indigenous plant species in Ireland: See www.botanicgardens.ie/herb/census/flora.htm or www.irishwildflowers.ie/AZ-english.html

Ireland has 850 native species of flowering plants, including trees. Over the recent past many of these species have declined in numbers and have even disappeared in parts of the country. There are various reasons for this, including changing agricultural practices, mowing of roadside verges, drainage schemes, overgrazing, housing developments and the expanding numbers of golf courses.

Picking wild flowers has been a traditional pastime, we are now aware of that poses risks. Even common species such as Bluebells are now threatened by over-picking. Picking flowers should not be encouraged, instead please leave them for others to enjoy.

The conservation of plants must be achieved by protecting their habitats, since plants do not occur in isolation, but as part of a living biological community.

Many pest species of plant have arrived in Ireland over the centuries, such as Rhododendron and Giant hogweed. Care should be taken to avoid the introduction of any exotic plant species into the wild. Only Irish sourced wild seed mixtures should be used.

The National Botanic Gardens estimates that some 120 species are threatened in the country, of which six are on the verge of extinction. The Botanic Gardens has now established an Irish Threatened Plant Species Conservation Programme, and will begin research on cultivating many of the threatened species in order to build both expertise and knowledge of growing these species.

KNOWN ENDANGERED SPECIES WHICH HAVE BEEN RECORDED WITHIN THE LIMERICK CITY AREA

- Triangular Club-rush
  Schoenoplectus triqueter Bogshifín tríchúinneach

- Opposite-leaved Pondweed
  Groenlandia densa Líobhógach dlúth

- Meadow Barley
  Hordeum secalinum Eorna mhóinéir

- Smooth Broom
  Bromus racemosus

- Cornflower
  Centaurea cyanus

An Irish checklist of Protected and Rare Species is available on the NPWS web site see www.npws.ie/media/npws/publications/Listed%20species%20checklist%20Mar-11.pdf

LIMERICK CITY COUNCIL TREE MANAGEMENT OPERATIONAL POLICY DOCUMENT

Limerick City Council is committed to developing and maintaining the economic, social and cultural life of the city. Greens and open spaces contribute to the recreational, natural and visual amenity of a city and City Council trees form an important part of the streetscape, social and housing areas, parks and wildlife areas. The Parks Department maintains three mini-forests in the city environs and approximately 3,000 trees in the City.

Trees
- Contribute to biodiversity
- Improve air quality
- Enhance cityscape - visual amenity
- Shade – wind, rain and sun
- Provide habitats for wildlife – animals, birds and insects
- Screen – eyesores and noise pollution
- Provide an educational resource

Tree Planting
Limerick City Council maintains and aims to annually increase the City tree resource. Tree requests from members of public are always considered. This includes the planting of commerative trees at locations throughout the city including Parks.
Tree planting is most appropriate in the winter months when trees are dormant. Species are selected to enhance the environment of the area, provide shade, and thrive in the area and act as shelter and wildlife habitat. Indigenous species are planted whenever possible to augment local biodiversity although it should be noted that the People's Park is famous for its diverse, historic collection. LCC actively participates in the annual tree planting week and encourages school visits to promote understanding of biodiversity and an understanding of nature and the environment.

Tree Management
Limerick City Council Tree Management Operational Policy Document continued

Other work
Most public queries relate to the pruning of trees, tree health and leaf fall. The Parks Department undertakes a regular routine of inspection, pruning and management which may be supplemented by requests from the public or on road safety grounds through Transport and Infrastructure. The need for work is assessed though trained Parks staff, Departmental engineer or a specialist arborist if needed and the Department aims to implement best practice in tree management.

LCC will not usually undertake work where the benefit to an individual is outweighed by the benefit to the wider community. Requests that are not generally considered good reasons for undertaking work on trees include shade/light issues, fallen leaves, bird roosts, any works that may contravene wildlife legislation, loss of view, aerial or satellite dish reception and work on privately owned trees. It is not generally considered good practice to allow privately erected decorative lights in council owned trees and the hanging of signage in trees is actively discouraged through removal and the implementation of the Litter Act

Requests for the removal or pruning of trees on the grounds of anti-social behaviour in an area or need for cctv coverage should be supported by the Gardaí.

Tree Felling: It is not the council's policy to fell healthy trees. The decision to fell a council tree can only be made by the Parks Department. Trees can be felled if there are overriding safety grounds, where trees are dead, dangerous or diseased, to follow good tree management practice and promote healthy trees or where buildings, roads and paths are being damaged and root pruning would be ineffective. If appropriate a replacement tree of a suitable species will be planted as near as possible to the original site. Trees may be cut down by felling directly onto the ground, or by being lowered down in sections.

Crown Lifting: Removal of branches below a specified height. This is often done to allow pedestrian or vehicle access on paths and roads. Normally, a tree by a path will have its branches removed up to a height of three metres and a tree beside a road to six metres.

Crown Reduction: Reduction of overall height and/or spread of the tree. This is normally done where a tree is touching a building, street light, CCTV camera, telephone or power cable. The ESB has the power to prune any tree at any time near its cables. LCC Parks Department works with the ESB to manage the tree cutting programme to minimise radical tree pruning.

If frequent reductions are required it may be preferable to remove a tree. If overshadowing severely affects quality of life a crown reduction may be used. Overhanging trees may be pruned back to boundaries by property owners if the trees are not protected. There is no right to trespass on adjoining land while cutting back overhanging branches.

Crown Thinning: This is usually undertaken on broad-leaved trees and removes a percentage of the smaller branches from within the crown, leaving a canopy of foliage on a well-structured framework of branches. It is often combined with a crown lift to allow more light to pass through the tree, or where the density of the crown causes increased wind resistance.

Crown Cleaning and Dead Wooding: The removal of ivy, broken branches and dead, diseased and dying wood. This is used to allow visual tree inspections and to manage the risk of wood falling from the tree. If appropriate, some dead wood may be left to provide wildlife habitat.
Coppicing: The regular cutting of woody stems to near ground level to encourage the development of multiple stems. This is normally done on a cycle of five to 15 years. Species that can managed in this way include hazel, alder, sweet chestnut, hornbeam and willow.

Root Pruning: Where a tree root is removed to prevent direct root damage. It is used where a root may be damaging footpaths, highways, walls, buildings and underground services. If root removal may affect the tree's stability or health, tree felling may be the only option.

Pollarding: Pollarding can be used to maintain street trees that would otherwise outgrow their location and is considered most appropriate for trees that have been managed as pollards from a young age. The tree is cut back to the same point, known as pollard heads, at regular intervals which is mainly used for broad-leaved trees such as hornbeam, lime, willow, oak and london plane.

Recycling of Tree Waste
All the wood produced from work undertaken on council-owned trees is reused. The wood chipped and used for compost/mulch or logs are distributed as firewood. None is wasted or taken to landfill.

Tree Preservation Orders
- Ashbrook
- Baggott Estate
- (Note: other trees may be preserved as a condition of planning)

Trees and Other Sections
Corporate:
- May request the planting of commemorative trees.

Transport and Infrastructure:
- May request the removal/pruning of trees on Health & Safety grounds – pedestrian and road traffic safety.
- Assessment of trees for estates that are being take in charge.
- Consultation regarding new planting e.g. street redesign

Planning:
- Request assessment of trees in planning permission.
- Consultation on planting of trees in new developments.
- Tree Preservation Orders.

Housing:
- Management of trees on council owned properties.
- It is recommended that assessments of trees on council owned properties are undertaken between letting agreements.

Cemeteries:
- Plants and manages trees on cemetery property

LIST OF KNOWN COMMUNITY GARDENS AND ALLOTMENTS WITHIN LIMERICK CITY.

- Southill Community Garden, Community Centre Southill
- Our Lady Queen of Peace, Jansboro
- Limerick Civic Trust, Kings Island, Community Garden
- Limerick City Council Allotments, Ballynanty
- Moyross Community Garden, Community Centre, Moyross
- St Munchin's Family Resource Centre, Community Garden, Ballynanty

LIST OF ORGANISATIONS/INDIVIDUALS CONSULTED

1. Limerick County Council, Heritage Officer and Director of Services Environment
2. Clare County Council, Heritage Officer, Director of Services Environment
3. National Parks and Wildlife Service, National, Planning and Development Sections.
4. Department of the Environment
5. Environment Protection Agency
6. Office of Public Works
7. Shannon Development
8. Shannon River Basin Project
9. Mulkear Life Project
10. Failte Ireland
11. Heritage Council
12. University of Limerick
13. Limerick Institute of Technology
14. Limerick Senior College
15. Local Ministers, TDs and Senators
16. Local papers and Local radio
17. Kevin Hannon, Local moth and butterfly recorder
18. Internet and public offices

19. Mr Geoff Hunt BirdWatch Ireland Limerick Branch
20. Limerick.ie
21. Draft Copies in Libraries and main Reception of City Hall
22. Secondary Schools
23. Primary Schools
24. Chamber of Commerce
25. City Centre Business Association
26. Anglers Group _ Kevin Hannon, Secretary
27. BirdWatch Ireland, National and local
28. Irish Wildlife Trust, National and Local
29. St Marys Maritime Group – Dan Heagarty
30. Cork Bat Group
31. An Taisce, National Office
32. Dr Liam Lysaght National Biodiversity Database Centre
33. Invasive Species Database Centre
34. Master Composters
35. Tidy Towns Committees
36. Allotment Users
37. Residents Associations
38. JP MCManus Charitable Foundation
39. LEDP
40. All Local Development Companies and Community Groups
41. FH Welands Systems, Consultants
42. John Murphy, Clare Branch BirdWatch Ireland & Waxwings inc.
43. EcoFact, Tait Centre
44. Mr. Sandro Cafolla T/a Design By Nature
45. Thomond Branch of Engineers Ireland.
46. Scouting Association of Ireland.

USEFUL CONTACTS

National Parks & Wildlife Service
7 Ely Place, Dublin 2
tel: 01-8882000
fax: 01-8883272

Irish Wildlife Trust IWT
Sigmund Business Centre,
93A Lagan Road,
Dublin Industrial Estate,
Glasnevin, Dublin 11.
Tel: 01 8602839.
www.iwt.ie

Bat Conservation Ireland
Office 8, Unit 8D, Dunshaughlin Business Park,
Co Meath.
Tel: (0)46 924 2886 or (0)1 801 1474
www.batconservationireland.org

Birdwatch Ireland
1 Springmount, Newtownmountkennedy,
Co Wicklow.
Tel: (0)1 281 9878
www.birdwatchireland.ie

The Heritage Council
Áras na hOidhreachta, Church Lane,
Kilkenny.
Tel: (0)56 777 0777
www.heritagecouncil.ie

Irish Seed Savers
Capparoe, Scarriff, Co. Clare.
Tel: (0)61 921 866
www.catalase.com

Butterfly Ireland
www.butterflyireland.com

Dragonfly Ireland
http://birdweb.net/dragonfly.html

Irish Whale and Dolphin Group
Sightings Co-ordinator, Pádraig Whooley,
Dereen, Rossmore, Clonakilty, Co. Cork.
Tel: (0)23 387 61
www.iwdg.ie

ENFO – The Environmental Information Service
www.enfo.ie

Native Woodland Trust
Stoneybrook, Kilteel, Co.Kildare.
www.nativewoodtrust.ie

Inland Fisheries Ireland
Ashbourne Business Par, Dock Road,
Limerick limerick@fisheriesireland.
+353 (0)61 300238
+353 (0)61 300308

REPORT ON THE SUBMISSIONS RECEIVED ON THE LIMERICK CITY COUNCIL DRAFT BIODIVERSITY PLAN

A total of 15 submissions were received in relation to the Biodiversity Plan see table below.

List of Submissions Received on the Limerick City Council Draft Biodiversity Plan

The submissions were generally positive and in most cases welcomed the fact that Limerick City Council was in the process of developing a Biodiversity Plan for Limerick City.

The comments ranged from:
- Amendments on phasing,
- Additions to species lists,
- Promotion of species,
- Inclusion of ecosystems, monitoring, pollution and biodiversity indicators.
- Additional urban sites in public ownership,

Submission 1
Requests inclusion of the following:
- Transboundary pollution and how incidences occurring in the City could affect the biodiversity outside of the city and vice versa.
- Correct disposal of household chemicals such as herbicides and pesticides
- Facilitate the development of Eco Unesco Clubs
- What not to dispose of down the kitchen sink or toilet.
- Air quality

Submission 2
- List additional sites not in ownership of the City Council. E.g. Mary Immaculate College, Villiers Secondary School, St Munchins, Laurel Hill, St Nessan's, St Endas, St Josephs Hospital.
- Would like to see more tree preservation orders
- Amendments to bats, and birds list

Report on the Submissions received on the Limerick City Council Draft Biodiversity Plan Ctd.

Submission 3
- Welcomes the mention of seed saving in the document and has offered assistance with developing a programme if required.

Submission 4
- Emphasising the importance of facilitating the development green/brown roofs in relation to biodiversity and other knock on benefits.

Submission 5
- Amendments to fish and butterfly lists
- Offers of photographs
- Interesting historical reference to trees in Corbally.

Submission 6
- Welcomes the plan with general comments on phrasing.

Submission 7
- Welcomes the plan
- Compliments the work of the Environment Department, local councillors and Limerick Civic Trust.
- Includes presentation made to the City Manager in 2008

Submission 8
- Replace cut grass with wildflower meadows
- Set up a Biodiversity Group
- Include a Bee Plan managed by the Limerick Bee Keepers
- Emphasise the importance of the Swift population in the City
- Emphasise the importance of indigenous species
- The importance of having an education programme in relation to species

Submission 9
Welcomes the Plan and requests inclusion of:
- How this plan relates to other statutory development plans.
- life time of the plan
- Mention of the five biodiversity indicators air climate change, flood risk, soil protection and landscape.

- **Reference to EPA's 2020 Vision – Protecting and Ireland's Environment**

Submission 10
- Observation on the need to prevent shooting on lands at Coongh.

Submission 11
- Amendments of Species lists, dragon fly, butterfly, birds
- Addition of ladybird list
- Mention the City Councils committeemen to halting the loss of biodiversity.
- Creation of bye laws to prevent the spread and movement of invasive species.

Submission 12
- Amendments to text
- Inclusion of additional legislation

Submission 13
- Amendments to text

Report on the Submissions received on the Limerick City Council Draft Biodiversity Plan Ctd.

Submission 14
- Include information on monitoring

Submission 15
- The need to emphasise the importance of ecosystems and the fact that basis of many of these ecosystems may be aquatic and not visible to the naked eye.
- Concern expressed in relation to algal blooms

Photographs

Cover
Main Photograph via the Limerick Communication Office
Insets/John Murphy

Back Cover
Flying Mute Swans – John Murphy

Inside Front Cover
Dragonfly emerging/Libellula quadrimaculata
– John Murphy

Inside Back Cover
Diarmuid Neilan - Native Irish Flowers

Page John Murphy
1 Oak Egar Moth Caterpillar/lasiocampa quercus
2 Cowslip/Primula veris
3 Swift/Apus apus
5 Elephant Hawk Moth/Deilephila elpenor
6 Japanese Knotweed/Fallopia japonica
8 Birdbox surrounded by Ivy
9 Brown Long Eared Bat/Plecotus auritus
10 Aerial shot of river/Park canal
11 White tailed bumble bee/Bombus lucorum
14 Grey Heron/Ardea cinerea
15 Otter/Lutra lutra
16 Little Egret/Egretta garzetta
17 Oak Leaves Quercus
20 Mute Swan/Cygnus olor

Stopfoodwaste.ie
4 Food Web of a Compost Pile

Diarmuid Neilan
3 Limerick City Biodiversity Network

Anthony Fulong
7 Blackthorn Prunus spinosa

19 Stock Image, Kingfisher / *Alcedo Atthis*

Maps
12 Planning Department, Limerick City Council
13 Planning Department, Limerick City Council

Environment Department
Limerick City Council
City Hall
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design:www.alphaset.ie