

Green City Guidelines

Advice for the protection and enhancement of biodiversity
in medium to high-density urban developments



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medium to high-density urban developments

UCD Urban Institute Ireland,
Dún Laoghaire-Rathdown County Council,
Fingal County Council.

Prepared by **NATURA** Environmental Consultants (Carmel Brennan) in association with David O'Connor, Planning Consultant.

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Whilst conventional wisdom holds that high levels of biodiversity are rarely to be found outside of rural areas and specific protected habitats, this work highlights the role and importance of urban biodiversity as well as providing practical guidance on how to retain and enhance biodiversity in medium-high density developments. Initially a range of sites within Dún Laoghaire-Rathdown and Fingal were selected based on their urban typologies which reflect a range of forms of differing ages, layouts and compositions. The biodiversity resource in each site was identified using standard survey techniques and recorded on a site by site basis. Then an extensive literature review of best practice internationally was carried out. Finally, planners working in local authorities and in private practice were asked for suggestions concerning the form, layout, design and content of the guidelines. We hope that the information and advice contained in the Guidelines will serve as a practical and easy to-access guide for local authorities, planners and property developers such that the design of medium to high-density developments takes proper and appropriate account of the opportunities for retaining and enhancing biodiversity in urban areas.

Professor Frank Convery

Heritage Trust Professor of Environmental Policy
University College Dublin

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The Green City Guidelines are designed to provide practical guidance for planners and developers on how to integrate biodiversity into new developments, specifically medium to high-density housing developments in urban areas. As we grow in awareness of how our activities affect the natural environment, we must rethink how our basic requirements of sanitation, transport and housing are provided. As a result, best practice measures are constantly evolving to better facilitate the incorporation of biodiversity into development.

Recent decades have seen record levels of housing development, much of which, in line with the 1999 Residential Density Guidelines, has been built at higher densities in urban areas. Even with a slowing in the pace of economic growth this is likely to continue with the number of households forecasted to grow from approximately 1.8m at present to 2.5m by 2020. Recent policy and guideline documents from the Department of the Environment, Heritage and Local Government emphasise strongly the need for an improved quality of housing within sustainable and well-planned neighbourhoods. The holistic and integrated approach to planning, which the Department is recommending, should incorporate biodiversity protection and enhancement as a core objective.

In response to the global decline in biodiversity, the 1992 Convention on Biological Diversity (Rio Convention) was dedicated to finding policies to halt the global decline in biodiversity. Ireland, as a signatory to the Convention, undertook to implement its principles at national and local levels by formulating a biodiversity strategy. The National Biodiversity Plan identifies 87 actions that are to be undertaken, including the integration of biodiversity into all sectors, including planning and development. Implementation of this plan requires the integration of policies at national and local level and cross-sectoral co-operation. This means that all sectors, directly or indirectly connected with biodiversity, must examine their activities and minimise any negative impacts they are likely to cause.

In Ireland, many sites and species of national and international biodiversity value are designated as Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Natural Heritage Areas (NHA). These are protected under law and through the planning system. However, they account for only a small amount of the country. Substantial areas with high biodiversity value remain unprotected, and frequently unrecorded. Frequently these areas are subject to pressure from development. The guidelines aim to provide practical examples of how semi-natural habitats such as woodlands, grasslands, treelines, hedgerows and watercourses can be successfully maintained, enhanced and created within new developments through appropriate planning and management. Local Biodiversity Action Plans (LBAP) set out the objectives for biodiversity conservation within a city or county. They bring together existing knowledge on the state of local habitats, flora and fauna and identify conservation needs. A vital component of every local biodiversity strategy is to identify gaps in knowledge and undertake initiatives to fill them. Many initiatives are ongoing around the country that will feed into and inform the planning process, helping to identify sensitive areas where development would be damaging and areas that are suitable for new development.

An outline of the individual chapters of the Green City Guidelines is provided below.

Chapter 1: Introduction to Green City Guidelines reviews the background to biodiversity; its value to humans and outlines how it is being protected in an Irish context. Considerable coverage has been given to the value of biodiversity in international publications. Maintaining our natural environment not only provides us with amenity and recreational benefits but many of nature's functions and services support our own existence. Basic requirements such as clean water, fresh air and food supply depend upon a functioning and balanced natural environment. We rely on nature to support many of our economic activities including agriculture and tourism. Greener cities provide more attractive centres for people to live and work, which indirectly supports our economic viability. The restorative effects of nature and psychological benefits are generally acknowledged. Beyond our own benefit, there is an intrinsic value to all life and we have an ethical obligation to respect the living organisms with which we share the planet.

Chapter 2: Making space for biodiversity in urban areas looks at where biodiversity is typically found in the urban environment. It considers the origin of the green city approach to planning and introduces the principles of ecological planning and design at the landscape and habitat scales. Urban biodiversity is often perceived as being less important than its rural counterpart. Urban habitats are assumed to be highly modified and lacking in the characteristics that define more natural systems. However, while this can be true, many modified habitats are not without biodiversity value and some can support a high number of plants and animals. Unique urban communities have evolved to adapt to the unusual

environmental conditions that urban locations can present. Urban biodiversity occurs in a variety of areas from private gardens and local parks to river corridors and large coastal zones.

Chapter 3: Overview of the planning and development process highlights the key instruments within the planning process that can be used to identify and incorporate biodiversity into new development and considers the inclusion of biodiversity within the development management process. Planning for biodiversity at the landscape-level means considering the overall connectivity of habitats within the wider landscape. The County Development Plan is one of the most influential instruments in the planning process. It has the capacity to provide a strategic and legal framework for ecological planning within the wider landscape. An ecological spatial strategy, informed by the Local Biodiversity Action Plan and based on the existing network of Natura 2000 designated sites, could be implemented through the County Development Plan. Strategic planning tools such as green belts, green wedges and green fingers can also be used to directly or indirectly protect biodiversity at the landscape-scale.

At the local area level, Local Area Plans can provide a framework for biodiversity conservation. Local Area Plans and similar statutory and non-statutory instruments provide a means for highlighting sites and species of high local ecological value that may not be subject to any form of formal protection.

Chapter 4: Case studies examines the biodiversity resources within a sample of eight case study urban sites. All sites were chosen from the administrative areas of Dún Laoghaire-Rathdown County Council and Fingal County Council. Four urban "sectors" were identified, radiating out from the core city area, that broadly reflected the differing urban environments across both areas: (i) Inner Urban; (ii) Inner Suburban; (iii) Outer Suburban; and (iv) Outer Town. A planning analysis and biodiversity evaluation of all study areas was undertaken. An additional site, Old Connaught and environs is used to illustrate and summarise the key biodiversity messages outlined in the Guidelines. This includes the identification of potential locations for development, identification of important landscape patches and the potential for enhancement of biodiversity on the site. This is a theoretical case study.

Chapter 5: Practical measures for incorporating biodiversity presents general recommendations with reference to practical case study examples where appropriate. Using a combined approach of field work, data analysis and literature review, practical guidelines have been prepared to address the main stages of planning and development from early site assessment through to the detailed design and monitoring stages. An outline of the essential points is as follows:

- Initiate early consultation between planners and developers
- Initiate early ecological surveys to assess the suitability of the site for development and identify considerations and opportunities at an early stage
- Design the development footprint to avoid habitats of high ecological value and maximise the area of open space
- Protect and incorporate semi-natural habitats, especially those of high ecological value and mature features
- Maintain and enhance retained habitats through sensitive management
- Reinstatement and create new habitats using native species that reflect the character of surrounding semi-natural habitats
- Incorporate or create a water feature using native species
- Prevent the introduction and spread of invasive species
- Use new technologies such as green roofs, green walls, permeable surfaces and SUDS
- Protect and create ecological links to the wider landscape
- Monitor the ecological effectiveness of prescribed measures and modify as needed and
- Get the community positively involved

Sustainability has become a core value in planning and decision-making. Defining sustainability and incorporating its principles into new development has presented many challenges to society. At its broadest definition, sustainable development includes three strands: economic, social and environmental. A key issue in achieving sustainable development is finding a balance between competing interests and giving the appropriate value or weighting to each strand. In the past, biodiversity interests have sometimes taken a back seat to other considerations. While biodiversity considerations are most closely associated with the environment, it is increasingly recognised that it plays a vital role in supporting all three strands. Biodiversity is a fundamental consideration that must be genuinely considered and effectively incorporated into any development for it to be truly considered sustainable.

Glossary and Abbreviations

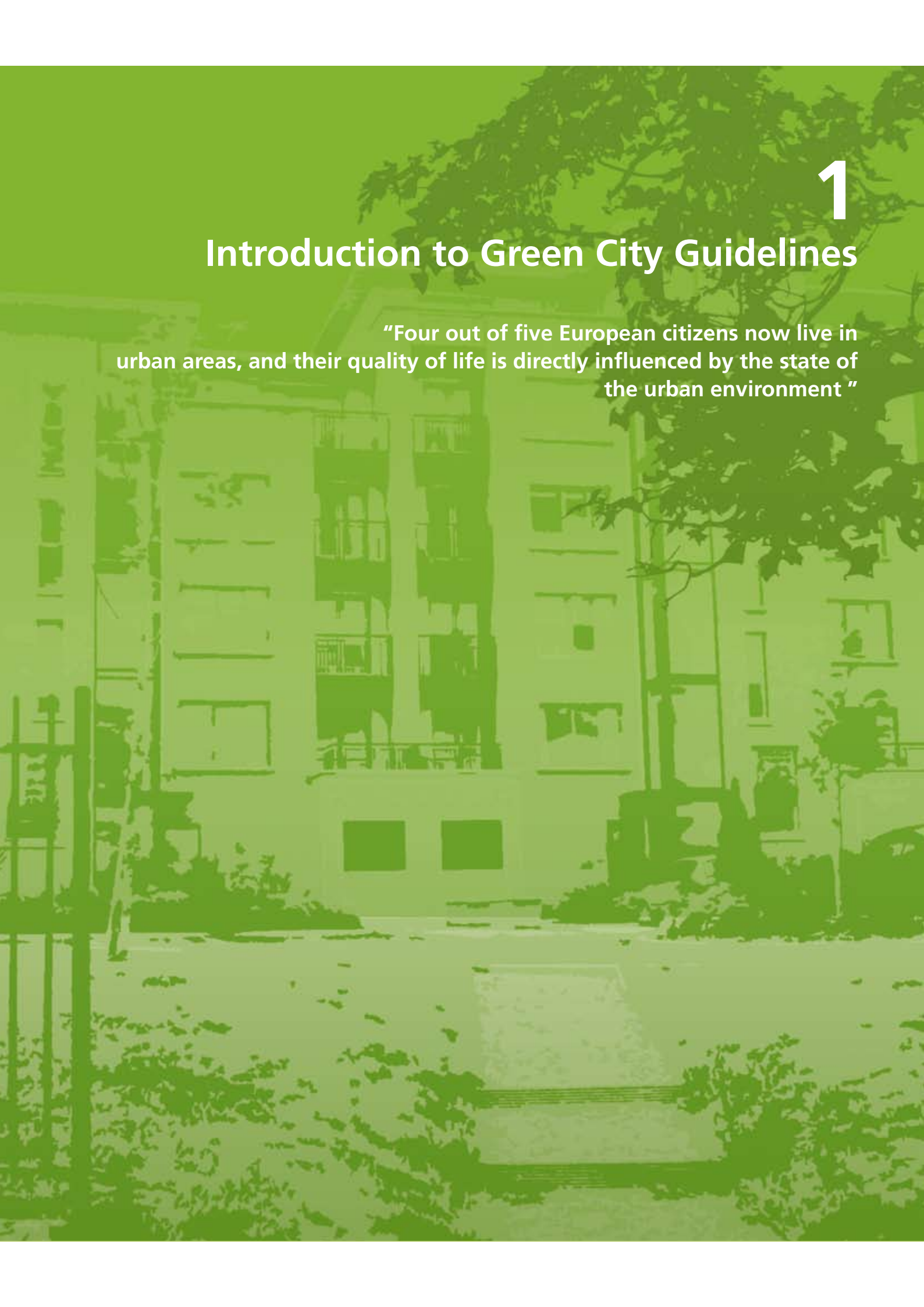
AI	Additional Information
CAI	Clarification of Additional Information
CBD	Convention on Biological Diversity (signed at the United Nations Conference on Environment and Development (Rio 1992) (also Earth Summit)
cSAC	candidate Special Area of Conservation. Ecological network. The core natural habitats together with the elements of connectedness i.e. the major wildlife and water corridors, streams and wetlands, rare habitats and species, and topographic sites
DETR	Department of the Environment, Transport & the Regions (UK)
DoE	Department of the Environment (UK)
EC	European Commission
Ecosystem	An interacting community of independent organisms and their non-living environment
EIA	Environmental Impact Assessment: The process of defining, quantifying and evaluating the potential impacts of defined actions on ecosystems or their components
EIS	Environmental Impact Statement: Report resulting from an EIA
EPA	Environmental Protection Agency
Fauna	A collective term for all kinds of animals
Flora	A collective term for all kinds of plants
FPO	Flora Protection Order: Statutory Instrument (SI) protecting Ireland's rarest flora species
Habitat	A place in which a particular plant or animal lives. Often used in the wider sense referring to major assemblages of plants and animals found together
IAP	Integrated Area Plan
Invertebrates	Animals without a backbone
IUCN	The World Conservation Union
LBAP	Local Biodiversity Action Plan
Mitigation	Measures taken to avoid, reduce or remedy adverse impacts
NGO	Non-Government Organisation
NPWS	National Parks and Wildlife Service
pNHA	proposed Natural Heritage Area
RDB	Red Data Book
Riparian	The edge of streams or rivers
Semi-natural	A habitat or ecosystem created or maintained with some human intervention but where plant regeneration is spontaneous
SUDS	Sustainable Urban Drainage Systems
TPO	Tree Preservation Order - designation under the Planning and Development Act 2000
UN	United Nations
UNEP	United Nations Environment Programme
WWF	World Wildlife Fund



1

Introduction to Green City Guidelines

“Four out of five European citizens now live in urban areas, and their quality of life is directly influenced by the state of the urban environment ”



1. Introduction to Green City Guidelines

1.1 BACKGROUND

In 2007, for the first time in human history, the world's urban population exceeded its rural population (UNEP, 2007). Four out of five European citizens now live in urban areas, and their quality of life is directly influenced by the state of the urban environment (EC, 2004). Ireland stands out in Europe in having one of the fastest rates of urbanisation at present. We are changing from a once rural population to a predominantly urban one. The associated problems of urban sprawl, a degraded urban environment and the loss of biodiversity require sustainable urban design and appropriate land-use and planning to help counteract the effects (EC, 2004).

Planning for urban biodiversity presents a number of challenges: higher population densities, strong development pressure and competing demands on space. However, cities are dynamic landscapes that present opportunity for regeneration and enhancement through incorporating innovative design and the latest best practice methods. A series of planning policies, based around optimising the sustainability of urban areas, is promoting higher densities within the Irish housing stock. These trends are likely to continue in the immediate future.



Plate 1. View of Dublin City with high-density development in the foreground.



Plate 2. A new high-density development in South Dublin.

The Residential Density Guidelines, published by the Government in 1999, called for higher densities in urban areas. This was a response to calls for increased sustainability, particularly in relation to the location of housing relative to employment and amenities, and Local Authorities have followed suit with policies for higher densities, mixing of uses and intensification around town centres and transport hubs.

The objectives of the Green City Guidelines are to identify the key stages in planning and development where biodiversity can be integrated into medium to high-density urban development and to highlight current best practice methods for protecting and enhancing biodiversity throughout the lifetime of the development. The Guidelines have taken a three-tiered approach: a review of key stages in the planning system, a review of existing guidance on biodiversity integration and an examination of case studies from a selection of urban typologies in the Dún Laoghaire-Rathdown and Fingal County Council areas. The Guidelines are designed to be user friendly and accessible with examples and photographic illustrations as appropriate.

There is currently a substantial body of guidance documents from the United Kingdom, continental Europe and the United States on how biodiversity can be successfully integrated into different aspects of planning and development. The Green City Guidelines have drawn extensively on existing recommendations and best practice guidance, as they relate to urban development. Standard guidance documents are referred to throughout the text and can be consulted for specialist advice on specific areas.

Many documents are now available on-line and links to websites are provided in the bibliography section. The discipline of urban ecology and the process of integrating biodiversity into high-density developments are still relatively new in an Irish context. It is anticipated that the Guidelines will be reviewed and updated to reflect the Irish experience as the planning system and best practice methods evolve. The Guidelines examined the existing biodiversity resources within a representative sample of case study urban sites. Key biodiversity indicators were identified and described from a range of urban typologies specific to the administrative areas of Dún Laoghaire-Rathdown County Council and Fingal County Council. The resources were identified and described in terms of their current and potential value.

1.2 DEFINING BIODIVERSITY

Biodiversity is the shorthand for Biological Diversity and refers to the variation of all life on earth (Gaston & Spicer, 2004). It is most commonly divided into three levels of biological organisation; genes, species, and ecosystems, which relate to different aspects of living systems that can be measured in different ways. The term Biodiversity is essentially a new name for an old concept. The term was first used in the late 1980s and then came into popular use following the Convention on Biological Diversity in 1992. Whether we refer to it as nature, flora and fauna, or biodiversity, it remains the variety of all living organisms on the planet at this time.

1.3 THE VALUE OF URBAN BIODIVERSITY

City habitats are often viewed as being less important than their rural counterparts. However, cities support a range of natural and modified habitats in close proximity to each other. Cities are frequently located in areas where biodiversity resources are concentrated such as on rivers, hilltops and along the coast. In some cases, these have been heavily altered and have lost their ability to support the same diversity of life



Plate 3. The hill of Howth and Dublin Bay supporting diverse habitats and species.

as they once did. In other cases, through protection, restoration or by chance, they continue to support remnants of the surrounding countryside that have been incorporated into the urban environment.

Habitats that are heavily modified or artificial in origin, such as gardens and parks, feature prominently in cities. Although these areas typically support an abundance of non-native species, they can play a significant part in supporting wildlife. They are most beneficial when they support a mosaic of habitats and a diversity of fruit and nectar bearing species that can provide shelter and an abundant food source for a variety of common mammals, birds and invertebrates. Artificial water features are also common in landscaped habitats and play a vital role in encouraging wildlife. Gardens and parks represent a major biodiversity resource in urban areas that could be significantly enhanced through more wildlife-friendly management.

Urban areas support unique communities rarely found outside the urban continuum. Wastelands and abandoned industrial sites provide unusual physical conditions such as altered soils, which in turn give rise to unique communities of plants. Cemeteries, railway embankments and road verges often support species-rich communities that have evolved over time. Urban vegetation must contend with unusual and sometimes adverse conditions including wind tunnel effects, high dust levels, compacted soils and air pollution. Heat islands created by large urban areas and high levels of illumination can lead to extended growth periods and encourage a greater range of species. While urban habitats do not always mimic their rural counterparts, they provide a range of rich and often unusual communities specific to the urban environment.

As a consequence of the presence of natural features, modified habitats and the range of unusual communities encountered, cities frequently support a greater diversity of species than the surrounding countryside. In many European countries where the surrounding landscape has been intensively altered, cities support a comparatively higher number of species (Laurie, 1979). However, it should be cautioned that while species diversity is an important factor, created habitats are no replacement for the loss of valuable semi-natural habitats that have evolved into stable communities over decades or centuries. The true value of biodiversity relates to more than the numbers of species and kinds of ecosystems that support life. Biodiversity provides us with an array of services and performs functions, which humans depend on for survival. **Urban areas are highly modified and complex landscapes in which biodiversity**

is seen as having many benefits for humans as well as wildlife (Pickett et al., 2005, 2004).

Environmental services and functions

In general, the range of environmental services supplied by ecological systems is extensive and includes climate regulation, water supply, erosion control, soil formation, food production, nutrient cycling, pollination and raw material supply. The perception of the city as separated from the natural processes that support life is a long-standing misconception (Hough, 2004). Plants



Plate 4. Common reed (*Phragmites australis*), an important plant in constructed wetlands.

improve air quality by removing significant amounts of pollutants and greenhouse gases and consequently improving environmental quality and human health (Nowak, 2006). Vegetation can also have positive energy effects on buildings by providing shelter or shade under appropriate conditions (Nowak, 2000).

Vegetated areas and urban wetlands serve a variety of hydrological functions. In addition to cleaning, storing rainwater in ponds and wetlands, they play a fundamental role in hydrological balance. Soil and vegetation retain moisture much longer than hard surfaces and dramatically slow down runoff to the urban sewer systems. This is particularly useful in times of heavy rainfall when systems can become overloaded and flooding occurs. **As climatic changes occur and weather events become more erratic, the role of urban vegetation and wetlands in maintaining the hydrological balance will become more important.**

Economic value

Biodiversity supplies important economic commodities to a range of diverse sectors including agriculture, mineral extraction, pharmaceuticals and tourism and recreation. Many of these commodities are invaluable to our current way of life and ultimately our existence.

Within the urban environment, there is a new emphasis on eco-friendly developments. Incorporating sustainable features including waste recycling, energy efficiency and renewable material into new developments is becoming an accepted practice as our awareness about environmental issues increases.

However, many developments are now being designed to incorporate biodiversity-enhancing features such as mature trees and compensatory features for wildlife including bat and bird boxes.

The impetus for this is twofold: the planning system is becoming increasingly aware of its legal obligation in relation to conserving biodiversity and mature or scenic settings can add to the value of the property.

Urban housing developments that are adjacent to natural amenities such as woodland, parks, waterways and the coastline are more attractive to buyers and this is often reflected in market prices. Several studies from the US and UK have shown that street trees and views of natural landscapes and waterways can increase property values by between 5% and 18% (Johnston & Newton, 2004, National Urban Forestry Unit, 1998).

Ultimately, as cities become greener they create a more attractive place for people to live, work and invest, which in turn enhances the potential for job creation, inward investment and economic growth (Johnston & Newton, 2004, EC, 2004).



Plate 5. Mature trees in residential development can add to the value of the property.

Human values

The values placed on biodiversity often arise from its ability to support human life through services and functions and other social benefits relating to recreation and amenity. These elements tend to focus on how the physical environment, such as clean air and water, affects public health (Tzoulas & James, 2004, 2005). Human contact with nature is also recognised as valuable in many ways: contact with nature is promoted as an important factor for child development (Barker and Graf 1989); it provides an immediate restorative effect following stress (Ulrich, et al, 1991) and a more long-term beneficial effect on our sense of well-being (Kaplan, 1995). At a time when more people and families are living in high-density, urban environments, there is a greater need to design new developments that can help realise the potential benefits of biodiversity on physical health and psychological well being.

Biocentric value

Many notable environmentalists have championed the idea that all life has the right to exist and that as humans we are intrinsically connected with all other species (Leopold, 1970, Wilson, 1984). The Convention on Biological Diversity also refers to the intrinsic value of biodiversity, and underlines human responsibility toward other living things. Because human activity is now the primary reason for nearly all extinctions, some believe that our responsibilities extend further than passive interactions and we are obliged to actively protect biodiversity (Noss, 1995).

1.4 THREATS TO BIODIVERSITY

“I think we have an obligation in our generation and in foreseeable generations, to try to protect every species, because virtually every species that is going extinct now is going extinct due to human activity not because of natural processes”.

(R. Noss, 1995)

The expansion of life has not been a steady progression. To date, it has been punctuated by five mass extinctions and it is becoming increasingly evident that we are currently in the early stages of a new event. While extinction is a natural process, the current rate of extinction is much higher than “background” or expected rates. This extinction event differs from previous events in that it is caused by the unsustainable management of the planet by just one species: humans (Stuart, 1999). **The most common causes of species loss are: habitat destruction and degradation, over exploitation, pollution, disease, invasions of alien species, and most recently, the impacts of global climate change (IUCN, 2004). The process of urbanisation contributes to each of these common causes and is becoming a significant global problem in terms of biodiversity loss.**

1.5 HALTING THE LOSS OF IRISH BIODIVERSITY

In recognition of increased biodiversity loss, the 1992 Convention on Biological Diversity (Rio Convention) was dedicated to finding global policies to halt the decline. **Ireland as a signatory to the Convention undertook to implement its principles at national and local levels by formulating a strategy as set out in the National Biodiversity Plan.** This identifies 87 actions that are to be undertaken, including the integration of biodiversity into all sectors. Implementation of this plan requires the integration of policies at national and local level and cross-sectoral co-operation. This means that all sectors, directly or indirectly connected with biodiversity, must examine their activities and minimise any negative impacts they are likely to cause.

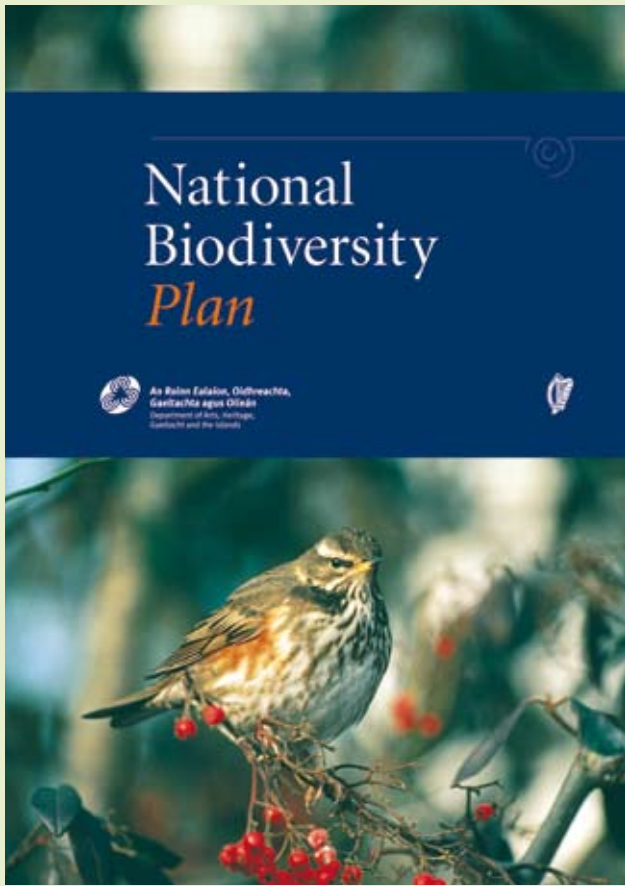


Plate 6. The first National Biodiversity Plan sets out Ireland's strategy towards halting biodiversity loss.

In Ireland, many sites and species of national and international biodiversity value are designated as Natural Heritage Areas, Special Areas of Conservation and Special Protection Areas. These are protected under law and through the planning system. However, they account for only a small amount of the landmass. Substantial areas with high biodiversity value remain unprotected, and in some cases, unrecorded.

Local Biodiversity Action Plans (LBAP) set out the objectives for biodiversity conservation within the county. They bring together existing knowledge on the state of local habitats, flora and fauna and identify the conservation needs within the county. As part of local biodiversity strategies, several biodiversity initiatives are ongoing within the country to identify areas of local biodiversity value. This work will feed into and inform the planning process, helping to identify sensitive areas where development would be damaging and areas suitable for new development. New development sites will require further investigation to identify, not just the potential biodiversity losses, but also the opportunities and gains that can be made through good planning and design.

One of the actions identified in the National Biodiversity Plan is the promotion of biodiversity among the public. Cities provide an ideal opportunity for people to become acquainted with their local biodiversity and become involved with initiatives in their areas.

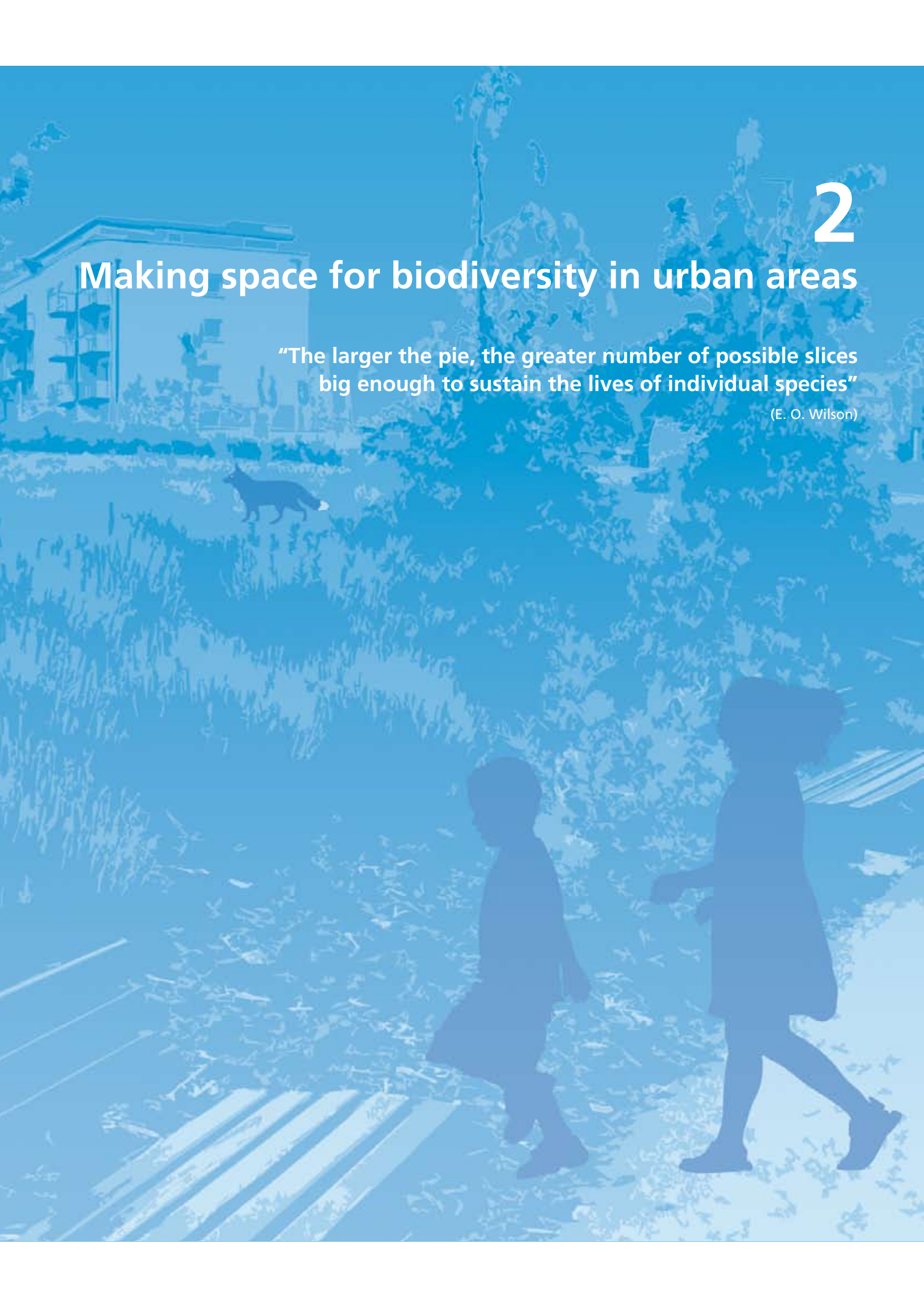


2

Making space for biodiversity in urban areas

“The larger the pie, the greater number of possible slices big enough to sustain the lives of individual species”

(E. O. Wilson)



2. Making space for biodiversity in urban areas

Urban habitats and species are sometimes considered to be less important than their rural counterparts. However, biodiversity can be higher in cities than surrounding rural areas providing rich and diverse ranges of plants and animals, which often occur as unusual or unique communities (Angold et al., 2006). Urban green space provides a unique landscape that supports a diversity of flora and fauna and provides an ever-expanding human population with direct access to nature. Maintaining our connection with nature is a fundamental need and has significant implications for the quality of life of city dwellers. The presence of high quality biodiversity in urban areas provides us with additional environmental and economic benefits including cleaner air and water, more attractive properties and recreational areas. By examining the planning and development process and promoting best practice, we can ensure that nature and natural processes are employed to help support a functioning city and that our biodiversity resources are safeguarded.

Urban environments are often sub-divided into green space, grey space, brownfield sites and private gardens and balconies. Each of these provide their own opportunities for biodiversity enhancement.

2.1 GREEN SPACE

Urban green space includes everything in cities that has vegetation. Collectively it is sometimes referred to as “Green infrastructure”, encompassing the entire working landscape in cities that serve roles such as improving air quality, flood protection and pollution control (Girling and Kellett, 2005).

Common types of urban green spaces include;

- Doorstep and communal green space (including balconies and courtyards)
- Private gardens
- Institutional land
- Local parks
- District and regional parks
- River corridors and floodplains
- Coastal zones

2.2 GREY SPACE

Grey space is defined as the built environment, incorporating buildings, pavements and roads. These were traditionally seen as being of limited benefit to biodiversity and were rarely ever designed with biodiversity considerations in mind. Today, advances in design and best practice methods means that the potential for supporting biodiversity has improved. Incorporated features such as green roofs, green walls, modified bricks and roof tiles, have the potential to support wildlife and significantly add to the biodiversity value of a development. Although adding vegetation to the roofs, walls and around buildings

will not replace the habitats lost, it will help compensate and in some instances, create a diversity of new habitats for birds, bats, invertebrates and a diversity of plants. The quality and type of artificial surfaces used throughout a development play an important role in defining the biodiversity potential of a site. A high degree of sealed surfaces, such as concrete, or asphalt, provide no potential for plants or wildlife to live. In addition it creates rapid runoff of rainfall into the drainage system and can lead to flooding. By using partially sealed, permeable surfaces such as gravel with grass coverage, wood-block paving or honeycomb brick with grass and limiting the area of hard standing, natural infiltration is permitted into soils below and there is greater potential for small plants and invertebrates to exist.



Plate 7. A European green roof and living wall. Source: ecotourismblog.



Plate 8. A green roof atop a building in Beijing. Source: Treehugger.

2.3 BROWNFIELD SITES

Brownfield site refers to land that is or was occupied by a permanent structure, which has become vacant, underused or derelict and has the potential for redevelopment. Brownfield sites are part of the cycle of planning and development. By their nature they are transient communities. They are periodically lost through redevelopment while other brownfield areas develop as new sites become vacant. This natural dynamic creates a balance in the number of brownfield sites that persist at any one time. Several studies have focused on the biodiversity value of brownfield sites and found them to be diverse for flora, particularly in the younger pioneer and tall herb phases, which persist longer on nutrient poor substrate or under disturbance. These communities eventually develop into more stable grassland or scrub communities. The biodiversity of brownfield sites will benefit by not having any intermediate measures taken to “tidy up” these sites while they await redevelopment. Instead it is better if they are allowed to recolonise and undergo the natural processes of ecological succession.

2.4 PRIVATE GARDENS AND BALCONIES

A substantial proportion of urban green space comprises private gardens. While development design dictates the quantity of public space and private gardens, landscape design and post-development management dictates its quality. Once the development has been completed the biodiversity value of the private space is beyond the influence of the planning system. The same principles apply for design and management of private green space as for public green space. Wildlife-friendly gardening methods can be encouraged through local biodiversity initiatives. Balconies are a standard feature of high-density urban developments and provide occupants with private space for some planting and access to open

space. The value of this personal space is often not fully appreciated. Some studies suggest that residents in high-density developments are less susceptible to illness if they have a balcony or terrace garden and the psychological benefits of seeing and caring for plants are well known (Johnston & Newton, 2004). Larger balconies encourage people to sit out and use the area more. While these small areas may have limited biodiversity value, they contribute to the overall network of green space within a development.

2.5 THE EVOLUTION OF THE GREEN CITY

Almost since the beginning of urban planning, planners have sought means of incorporating nature into the city and preserving the surrounding landscape. The motivation for this has included aesthetics, health, recreation and amenity. However, motivations relating to nature conservation have also been considered for a surprisingly long time.

“The case for the conservation of nature and for the increase of our accesses to her must be stated more seriously and strongly than is customary. Not merely begged for on all grounds of amenity, of recreation, and repose, sound though they are, but insisted upon. On what grounds? In terms of the maintenance and development of life”. (Patrick Geddes, Cities in Evolution, 1915)

Geddes offered a concept of regional planning, emphasising essential connections between the city and its region, which he described as any geographic area that expresses a certain unity of climate, soil, vegetation, industry and culture. His simple three-part component of the regional city incorporated place, folk and work, which equate to environment, society and economy (Hough, 2004), the three strands of modern sustainability.

As cities grew rapidly in the late 19th century there was increased emphasis on integrating nature into the city landscape. Many early landscape architects, most notably Fredrick Law Olmsted (1822- 1903), sought not only to improve the appearance of the city but to improve health and provide areas for rest and recreation for the crowded urban population (Hough, 2004). Olmsted, who was responsible for New York’s Central Park and the ‘Emerald Necklace’ in Boston, viewed his parks and parkway systems as means of extending the rural character of the countryside into the city. His work is viewed as the precursor to the modern concept of greenways; the spatial planning concept where a string of green areas are connected into a system of protected lands, managed for multiple uses including nature conservation (Fabos, 1995; Ahern, 2000). The notion of bringing nature into the city expanded after Olmsted to include the idea of urban containment and buffering. Ebenezer Howard’s (1850-1928) influential Garden Cities of Tomorrow (1902) outlined a model of a self-sustaining town. Howard promoted the idea of planned satellite communities surrounded by greenbelts, containing carefully balanced areas of residences, industry and agriculture. Green belts were designed to define the city limits and preserve the integrity of the countryside surrounding the London area.

The London Metropolitan Green Belt encircles the greater London area covering approximately 5,000 km². The concept first emerged in the mid-1930s to provide public open space and recreational areas, and was later developed as a means of preventing urban sprawl and preserving both urban and rural character. In addition to their primary planning functions they help preserve valuable landscapes and support nature conservation objectives on the urban fringes. There are currently 14 green belts in England covering

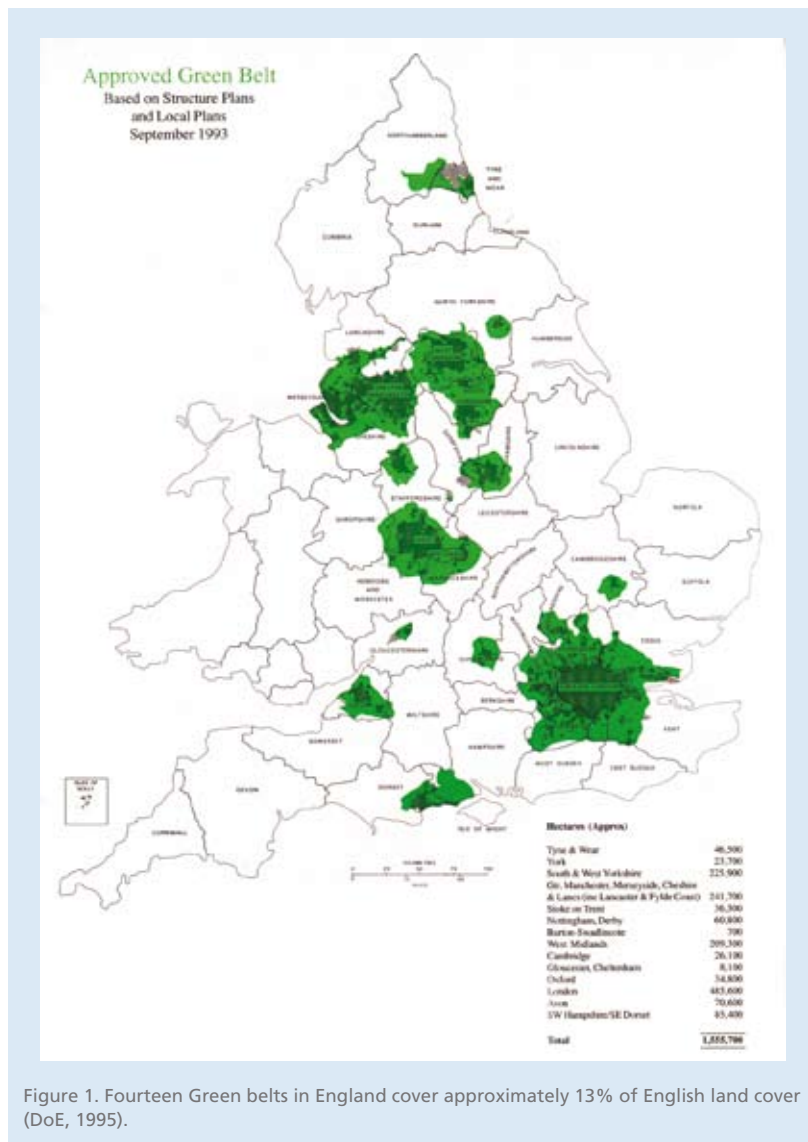


Figure 1. Fourteen Green belts in England cover approximately 13% of English land cover (DoE, 1995).

approximately 13% of the English land cover (DoE, 1995).

Strategic gap and green wedges policies provide axes of protected land that extend into the city. The main overlap between strategic gap and green wedge and Green Belt purposes is in the area of preventing the coalescence of settlements. Green wedges penetrate urban areas and can be used to preserve landscape and wildlife links between town and country, providing recreational facilities and promoting positive land management (DETR, 2001). Green Belts primarily buffer and separate areas while greenways are always linear and, in addition to buffering development, provide a corridor for human and wildlife movement (Searns, 1995). Greenways and green networks generally refer to connected patches and linear strips of habitat that have an inbuilt ecological use including hedgerows, woodlands, wetlands and artificial corridors such as roads, railway lines, road margins and streetscapes (Girling and Kellett, 2005).

Copenhagen provides an example of regional urban green space planning. The city has evolved from a compact core into the Greater Copenhagen area over the

past 60 years. The master plan for the development of Greater Copenhagen, published in 1947, became known as the 'Finger Plan'. The five fingers were intended to contain and buffer new settlements and the necessary infrastructure in the form of roads and railways. The landscape between the fingers would remain open, supporting agriculture, recreation and amenity purposes. Since the publication of the plan, the city has expanded radially through a series of regional plans. Provincial towns and suburbs have been linked by transport corridors. Urban areas are confined to the linear corridors. Green wedges protected from urban development fill the spaces between the urban corridors. This provides efficient transport structures though the fingers and assessable landscape close to most people. However, many cities have not had the benefit of such foresightedness and are now faced with repairing and restoring degraded habitats and severed linkages.

Although green belts, green wedges, greenways and green fingers are largely planning designations, they can directly or indirectly support biodiversity objectives by providing and maintaining connected open space in areas of high density urban development. The spatial arrangement of these designations is important. Firstly, they should align with natural features of significance in order to adequately protect elements of greatest biodiversity value. These would generally

be large features such as river corridors, woodland and other substantial tracts of semi-natural habitat that are clearly identified at the landscape scale. Secondly, these designations should be connected to one another by preserving existing links or creating additional linkages in the landscape. Thirdly, they should provide additional linkages that radiate outwards into the wider landscape. Smaller features such as hedgerows, streams and treelines that are identified at the habitat-scale can form additional linkages.

In order to do this, landscape and ecological features should be taken into account within the regional framework of planning. In addition to protecting and maintaining existing features and habitats of value, Masterplans should seek to identify potential connecting corridors and to enhance the ecological value

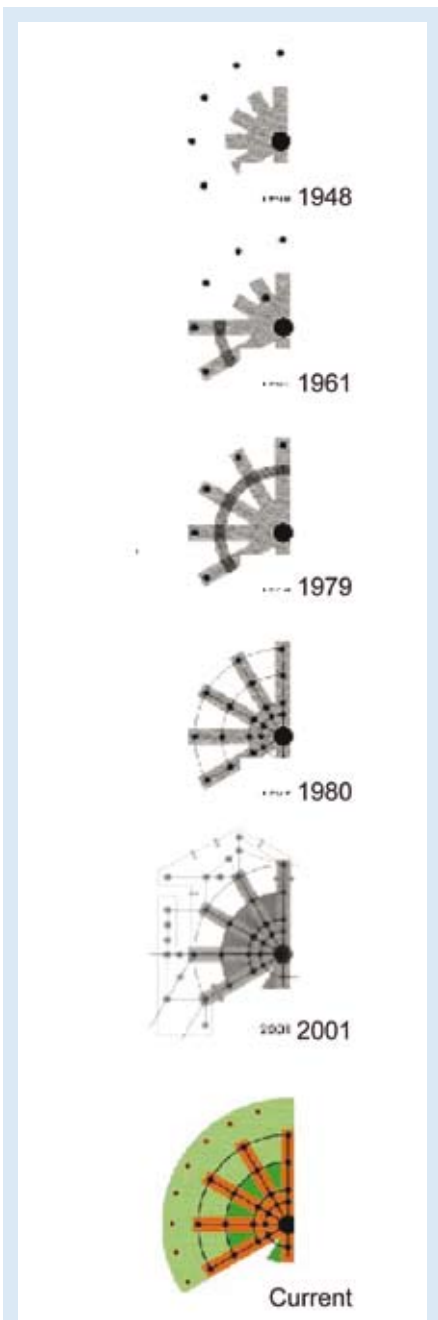


Figure 2. Schematic diagram of the radial development of Greater Copenhagen from 1948 to 2001.

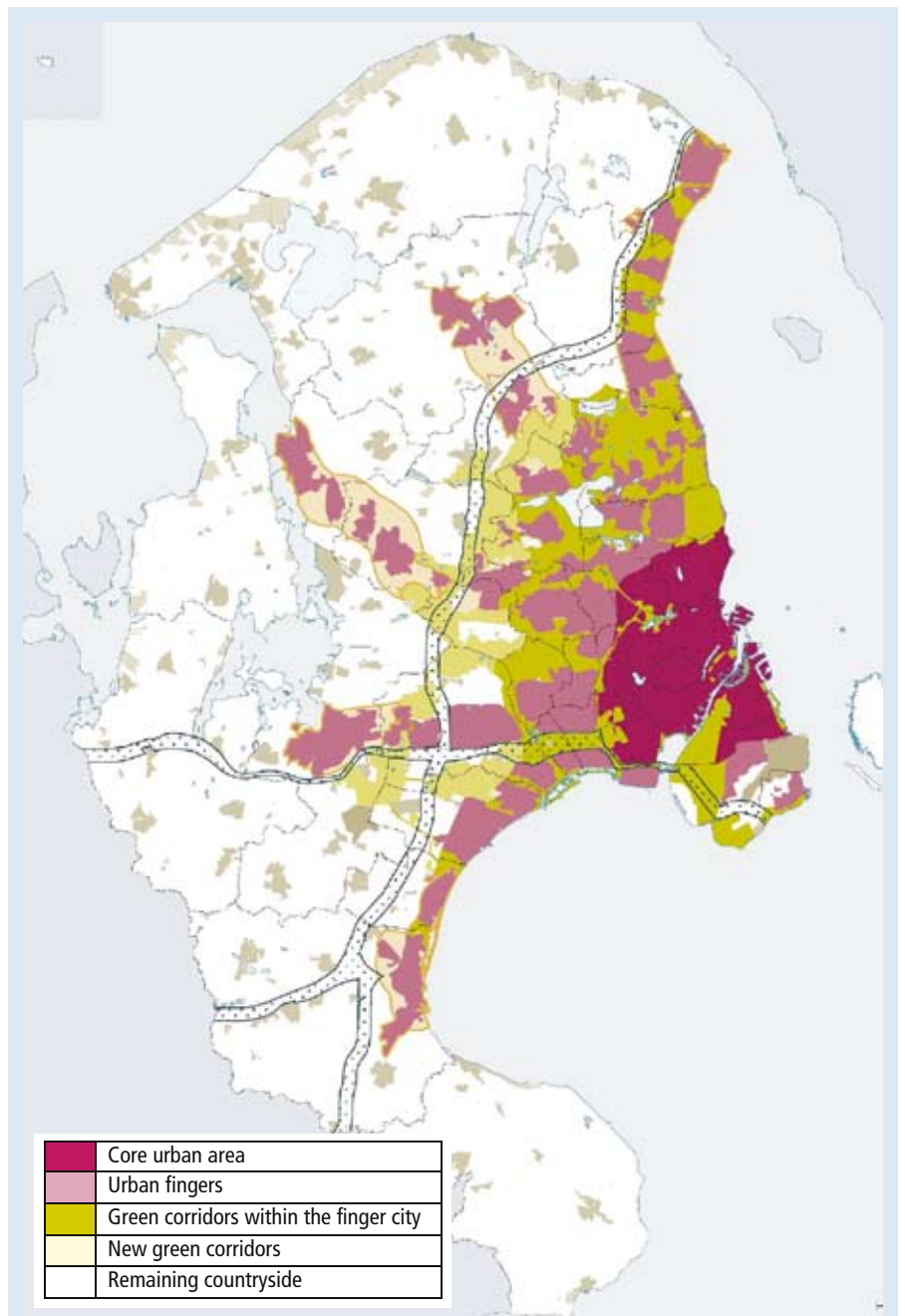


Figure 3. Greater Copenhagen showing the finger-like urban extensions and network of planned green space.

of these linkages over time. The ecological benefits may not be realised in the immediate future, but over time an ecologically coherent network of green space will evolve using natural features and the existing landscape as a framework for urban growth.

2.6 DESIGNING GREEN SPACE FOR BIODIVERSITY

Planning for biodiversity must take the spatial requirements of species into consideration by providing sufficient habitat for them in a connected arrangement. A spatial overview at the landscape-scale is required to overcome existing fragmentation and prevent further depletion of connected features.

Designing space for biodiversity requires the integration of knowledge from spatial planning and landscape ecology. Patterns in vegetation are the result of variation in physical conditions such as soil type, hydrological conditions and land use. For example, calcareous grasslands require lime-rich soils with a high pH and that are grazed or mown repeatedly to prevent scrubs and trees encroaching. Patterns in vegetation can be viewed at different spatial scales ranging from the wider landscape-scale to the regional-scale and smaller habitat-scale. Planning for biodiversity needs to be considered at all spatial scales.

2.6.1 Landscape-scale design

Viewed at the landscape-scale, land cover can appear as a mosaic of patches and linear strips embedded in the surrounding environment, or matrix. In the rural Irish landscape, the dominant matrix is generally agricultural grassland. Patches are formed by areas of woodland, wetland or other habitats that differ from the surrounding matrix. Patches can vary in size from extensive woodlands to a small pond. Hedgerows, treelines, rivers, streams and other linear habitats form networks of connecting features that criss-cross the landscape forming valuable habitat and acting as corridors for the movement of species.

In cities and towns, the surrounding environment is predominantly urban development. Habitat patches and corridors are frequently the remnants of the previous rural landscapes or new habitats that have been created or evolved within the urban matrix. Patches are formed by open spaces such as parks, institutional grounds and gardens. In addition to existing linear features such as streams and treelines, new potential corridors are created by road verges, railway lines and other artificial features where vegetated margins can facilitate movement.

Patch size is an important factor. Conditions within the centre of a patch are generally different to conditions along the edge, creating what is known as the edge effect. As the overall patch size decreases, the internal area (core area) of the patch also decreases and the edge habitat increases. Specialist species adapted to core conditions will be more greatly affected by this loss than generalist species that can happily survive on the edges of habitats. Specialist species tend to be more limited in their ability to adapt to new conditions and are therefore particularly vulnerable to change. They also tend to have a more limited distribution and are therefore relatively rare in the wider landscape. Generalist species on the other hand show greater flexibility in their requirements. They can survive in a variety of habitat types and can move more freely between areas. These species tend to be widespread and generally common within the landscape.

Connectivity

Connectivity within the landscape is about maintaining functional connections between patches of similar habitat and allowing free movement of species from one area to another. By definition, all patches exhibit some degree of isolation as they differ from the surrounding landscape type. The key to successful ecological planning is to ensure that ecologically valuable patches do not become too small or isolated to support species. The size, number and location of patches contribute to how they function as habitats within the landscape and the degree to which species can move between them.



Fragmentation

Habitat fragmentation is the opposite of connectivity and is the degree to which habitat patches in the landscape become physically and functionally isolated. It can occur when contiguous patches are sub-divided into smaller areas or when the surrounding matrix becomes too hostile to allow movement between neighbouring patches. The remaining patches are smaller and more isolated, which limits the resources available to plants and animals and restricts movement between areas.



Key factors defining habitat quality are size, diversity, naturalness, typicalness, rarity, fragility and history.

2.6.2 Habitat-scale design

Every organism has a few basic requirements for survival: food and water for nourishment, a place of rest and shelter from hostile conditions, and ultimately reproduction for genetic transfer and survival of the species. The manifestation of these requirements takes different forms depending on the species. The objective of ecological design is to optimise the conditions for species survival in order that their basic requirements are fulfilled. The quantity of urban space for plants and animals is an important factor determining biodiversity value of new developments. A number of key factors are used to define habitat quality and are aspired to in the ecological design. Among them are size, diversity, naturalness, typicality, rarity, fragility and recorded history (Ratcliffe, 1977). These are the key factors that need to be considered when managing or creating habitats.

Size

Large areas of habitat are considered to be of greater importance than small. An ecological rule of thumb is that the larger the area, the greater the number of species that it can support (all other things being equal). In addition to supporting greater numbers of species, many species such as otter require large, continuous territories where they can move freely.



Diversity

Genetic, species and habitat diversity are key measures of biodiversity. A greater diversity of habitats is more likely to support a greater number of species. This helps create complex food webs and robust, healthy ecosystems.



Naturalness

Natural and semi-natural habitats have the greatest value for biodiversity, as they are more likely to support a greater variety of native plants and animals. Semi-natural refers to habitats that, although altered by human influence, support native plant and animals.



Typicalness

Each local area supports habitats typical of that region. These habitats are often indicative of local physical conditions such as geology, soil type and climate. Establishing plant communities that are typical of the region helps to expand the range of these habitats within the locality. This in turn helps support local animal populations.



Rarity

Rare habitats, plants and animals are by their nature limited within the wider landscape. This may be because their required environmental conditions are scarce or their extent has been reduced through habitat loss. Their rarity makes them vulnerable to local extinction.



Fragility

Some habitats or species are especially vulnerable or sensitive to change. Those with restricted area or ranges are generally considered to be more vulnerable.



History

The recorded history of a site can relay important information about the past condition of the site or previous management. Most habitats have been altered in some way by human intervention. By using appropriate management, habitats can be maintained at their optimum condition for biodiversity value.

(Adapted from Ratcliffe, 1977)







3

Overview of planning and development process

“It is a challenge to provide an integrated landscape strategy that can meet conflicting demands”

3. Overview of planning and development process

3.1 BIODIVERSITY MANAGEMENT IN FORWARD PLANNING

3.1.1 Developing a County Policy Framework for Biodiversity

The County Development Plan is central to the legal planning framework in the Republic of Ireland and most planning direction takes place at the county level. The County Development Plan sets out the aims of the Council for the proper planning and sustainable development within the county. Among the detailed objectives of the County Development Plan are a number of key policies and objectives relating to the natural heritage. The importance of designated sites, protected species and sensitive landscapes are highlighted within these plans. However, much of our biodiversity is unprotected and occurs outside designated areas. In recognition of this, many County Development Plans contain policies and objectives that aim to protect and enhance biodiversity within the wider landscape. These are objectives that aim to preserve the more widespread features such as streams, hedgerows, small woodlands and species-rich grasslands.

As populations grow, there are increased demands placed on limited resources, such as land for housing, infrastructure and other development. It is a challenge to provide an integrated landscape strategy that can meet conflicting demands. In order to achieve this, a clear strategy is required to effectively address the needs of biodiversity and to integrate biodiversity into all sectors in line with the National Biodiversity Plan. This strategy is embodied in the Local Biodiversity Action Plan; a key document that will inform planning at the county level.

3.1.2 Local Biodiversity Action Plans

Some local authorities have Local Biodiversity Action Plans. These provide the framework for the co-ordinated delivery of the local biodiversity strategy. Among the key aims of any Local Biodiversity Action Plan is to gather information on local biodiversity, co-ordinate existing and new initiatives, assist in sustainable planning and development and, raise public awareness and involvement. A core objective of any Local Biodiversity Action Plan is undertaking habitat surveys and a county wide review of biodiversity that will identify habitats, species and sites of local importance. This information can be used to highlight sensitive areas where development could have a negative impact on biodiversity and areas where development could be successfully integrated with the natural environment. Existing nature designations are recognised within the plan and form the basis for a network of important natural heritage sites within the county. In addition, many local authorities currently hold internal databases detailing the known locations of important habitats and species that do not have legal protection but are of high local biodiversity value. As additional surveys are carried out, the level of detail contained in these databases will grow and provide a more informed view of the county.

An important aspect in generating Local Biodiversity Action Plans is the adoption of a “whole landscape” approach. An objective of the Local Biodiversity Action Plan is to maintain and restore connections between important habitats at the landscape scale. This objective could be facilitated through the County Development Plan, which has the capacity to retain and develop landscape connections that provide habitat for species and allow movement between areas.

3.1.3 Biodiversity in Area Plans

The Planning and Development Act 2000 introduced some statutory area planning mechanisms, in particular Local Area Plans and Planning Schemes. It is the intention that these act as masterplans for an area. They should be integrated studies and deal with the co-ordinated and optimal development of the lands in question. As such, biodiversity is a critical assessment layer and should be given consideration in any study. A Local Area Plan (LAP) is a statutory plan made by a local authority for a specific area. LAPs should comprise an integrated framework for the development of the area and should consider biodiversity as a core component.

A Planning Scheme is a statutory plan made by a local authority for an area within a “Strategic Development Zone” (SDZ). The purpose of the SDZ mechanism is to create “fast-track” planning for development within strategic areas. As with LAPs, it is the intention that Planning Schemes provide an integrated framework for the development of the area and should consider biodiversity as a core component.

Integrated Area Plans, introduced under the Urban Renewal Act 1998, take into account a community’s cultural, employment and educational needs. IAPs are generally targeted at urban areas and biodiversity has, perhaps wrongly, not traditionally been incorporated as a factor. However, there is no reason to discount biodiversity as a potentially important aspect of an area’s regeneration.

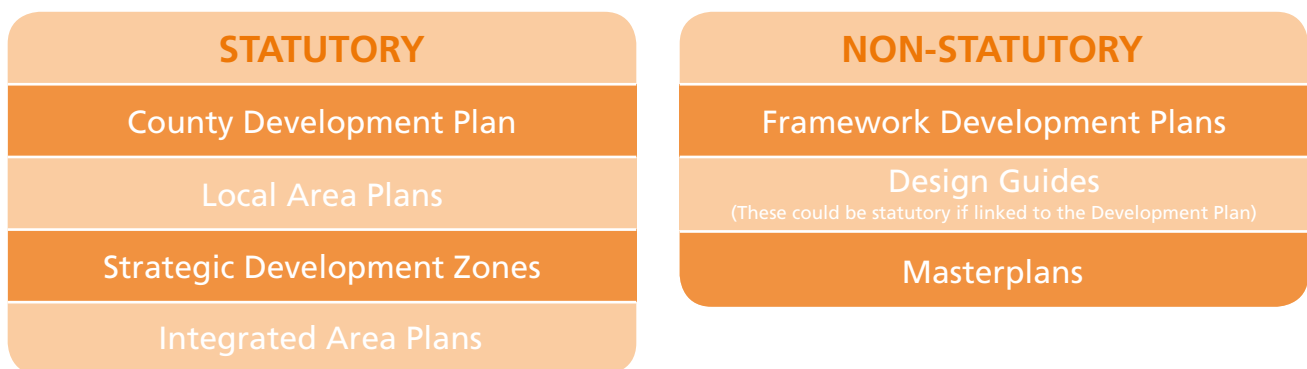


Figure 4. Types of plans - Statutory and Non-Statutory.

Types of plans

In addition to these statutory mechanisms, other non-statutory mechanisms of area planning exist.

Action Area Plans (AAPs) are fundamentally similar to Local Area Plans, with the significant exception that they are not subject to a statutory democratic approval process.

In some cases, developers are promoting and preparing their own framework development plans for landbanks that they wish to develop. As with any area plan, they should be encouraged to incorporate biodiversity within the brief. Recently, local authorities have begun to invest in what might broadly be termed “**urban framework strategies**”. Typically, the brief for such schemes will include transport, landscape architecture and heritage, among other factors. Wherever practical, biodiversity should also be incorporated into the brief.

Design guides have been used to a limited degree in the Irish urban development context. Design Guides are beneficial where a particular set of specifications, materials and styles can be devised and agreed for an area, either new or old. Once developers comply with the design guide, maintenance departments are certain they will be able to service and upkeep the particular materials used, etc. Where a local authority seeks to develop a design guide, it is recommended that they consult a biodiversity specialist.

3.1.4 Approaches to Area Planning

An important perspective within planning is that of the spatial hierarchy (Figure 5). This is reflected in national planning policy through the existence of the National Spatial Strategy, regional planning guidelines, and below this level, County Development Plans.

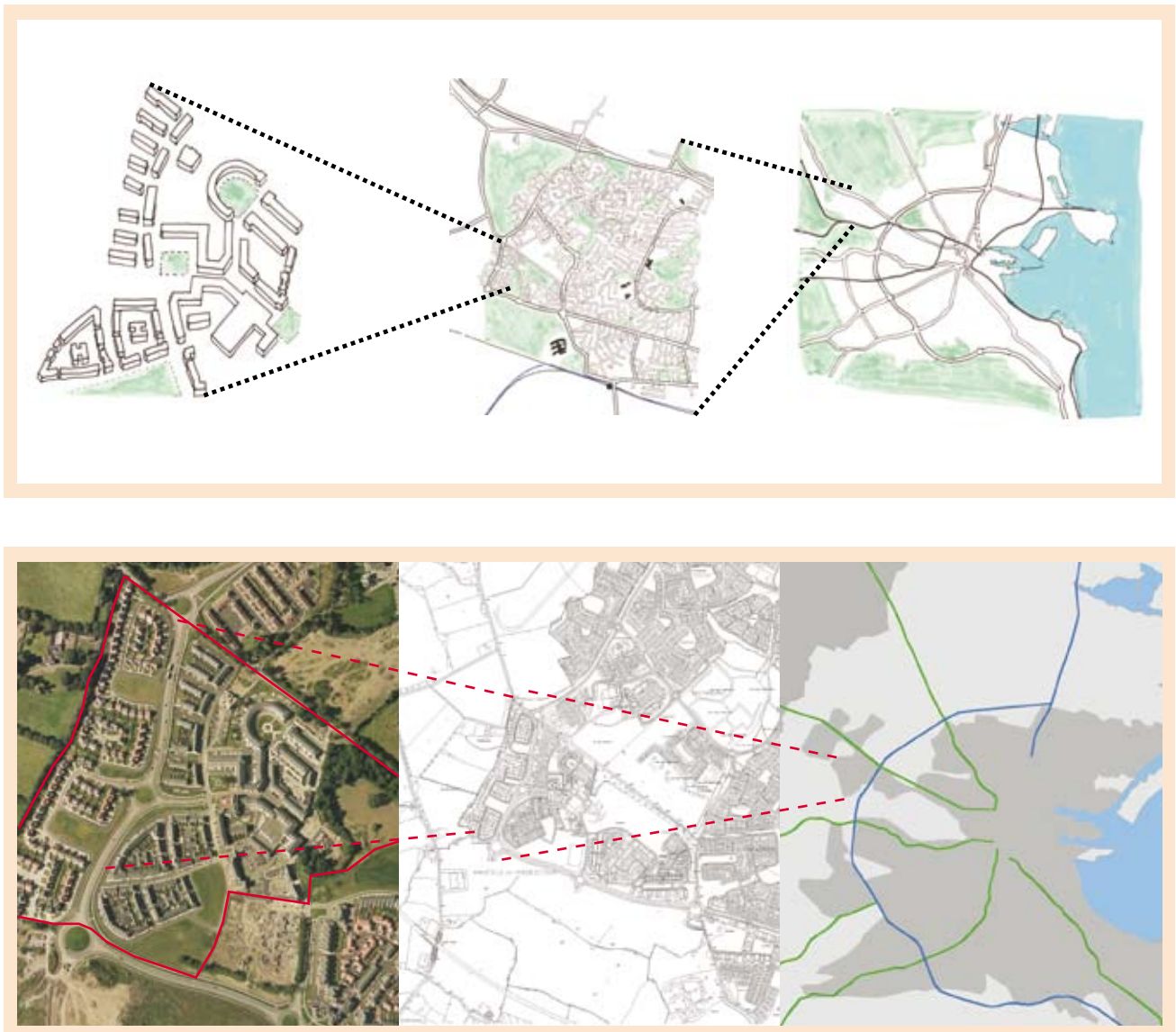


Figure 5. Spatial hierarchy within the planned landscape: neighbourhood, district and regional scales. e.g. Ongar, West Blanchardstown and Dublin.

Within the County Development Plan, planning authorities can determine that more detailed plans can be made at district level (Local Area Plans, Action Area Plans, etc.) and the neighbourhood scale (urban design framework strategies, etc.). It is useful to see ecology as a layer to be incorporated in the area plan (Figure 6).

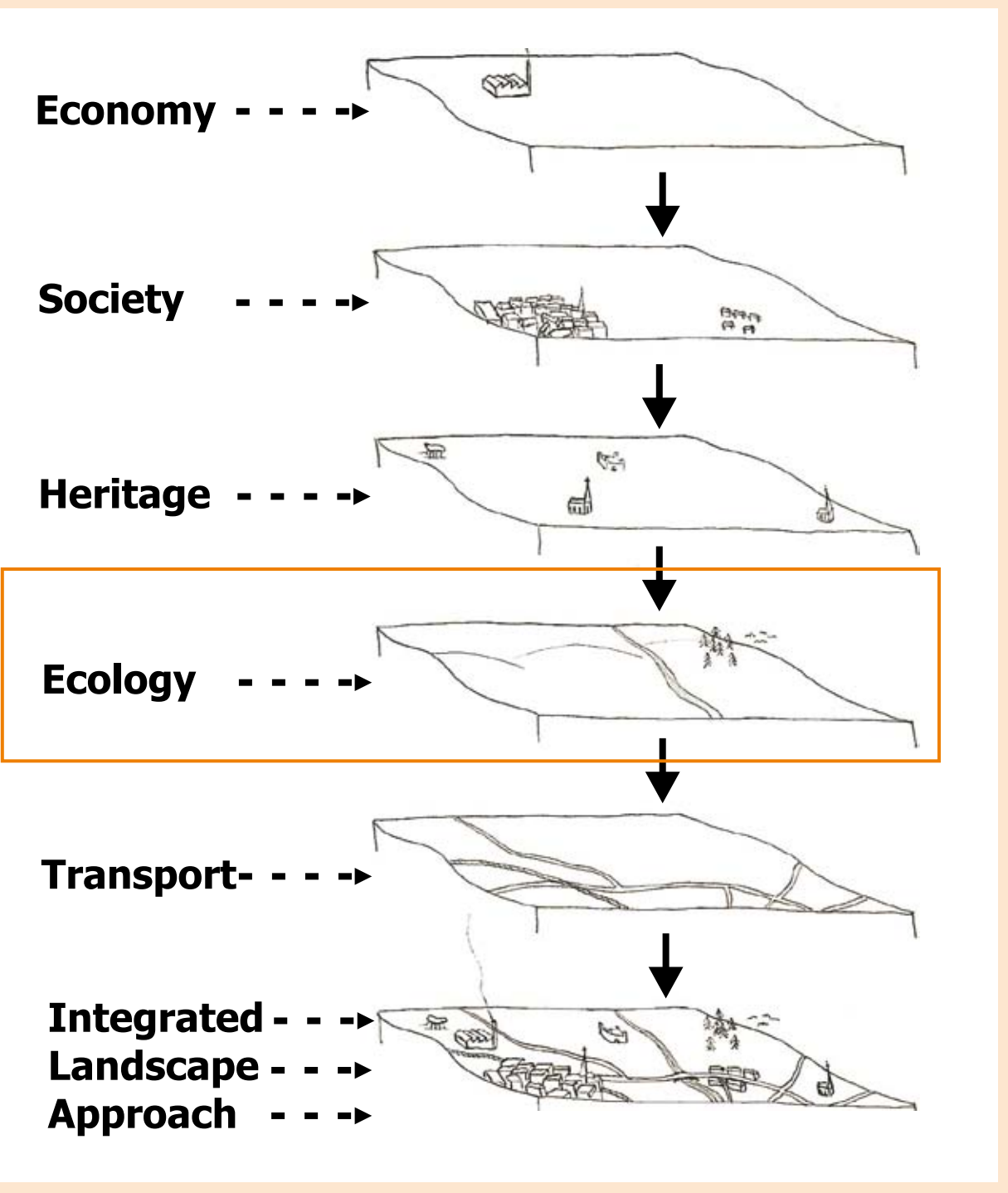


Figure 6. Integrated Landscape Approach to Area Planning.

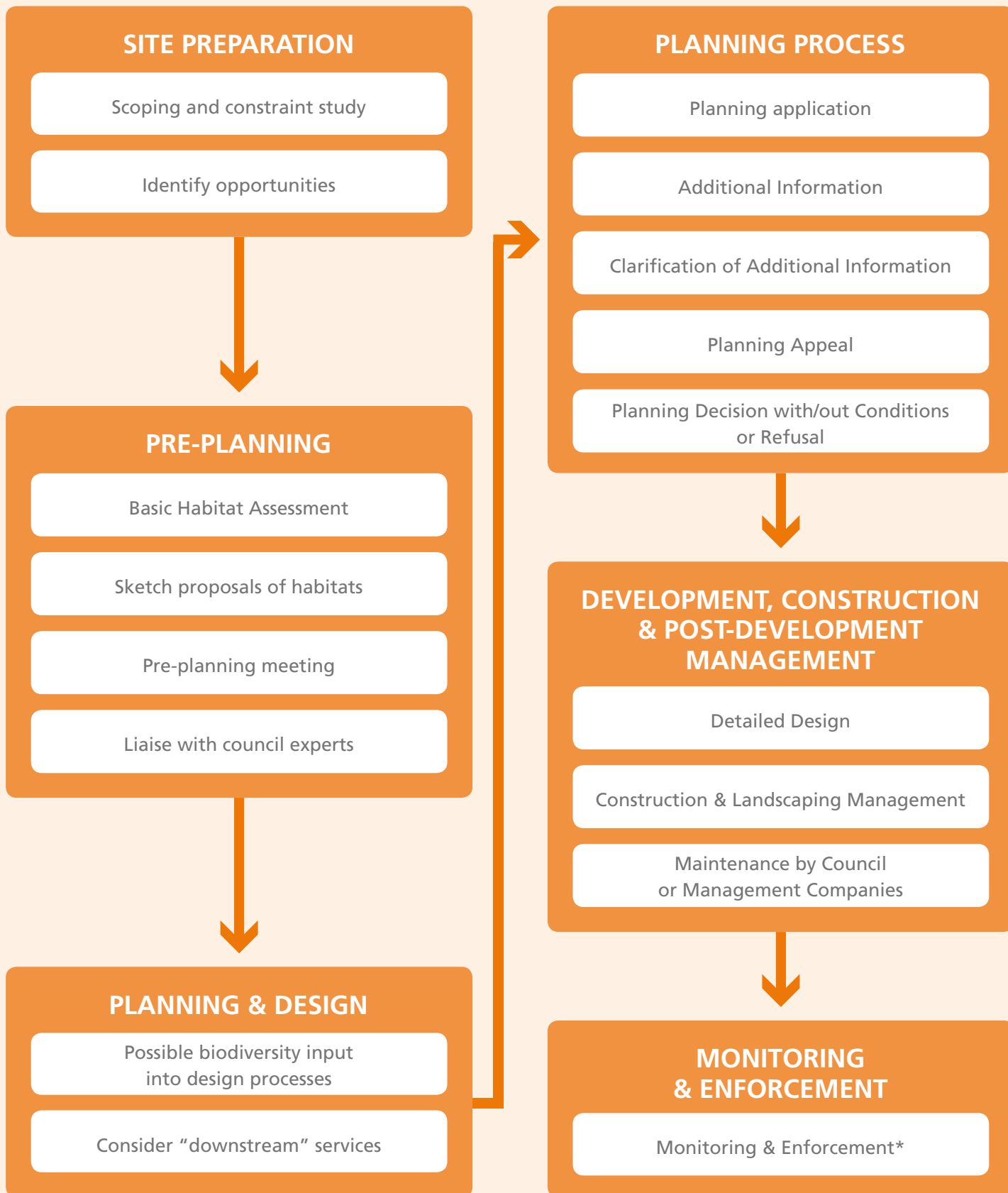


Figure 7. Biodiversity in Development Management Flowchart.

*Monitoring will occur only if made a condition in the granting of permission. Enforcement occurs if conditions are not fulfilled & the local authority made aware

3.2 BIODIVERSITY MANAGEMENT WITHIN THE DEVELOPMENT MANAGEMENT PROCESS

3.2.1 Guidelines in the Development Management Process

After forward planning, most planning and development is co-ordinated through the “Development Management” process. Guidelines for the development management process (previously referred to as the “development control” process) are set out in “Planning Guidelines 13: Development Management Guidelines for Planning Authorities”, (Department of Environment, Heritage and Local Government, June 2007). The flow chart shown in Figure 7 illustrates the principle stages in development management.

3.2.2 Site Preparation

When assembling a site, developers should be aware of the responsibilities associated with development of potentially sensitive habitats and conscious of the downstream impacts of significant landscape modifications.

The most important factor in good biodiversity management is early consideration of local ecology. An initial scoping and constraints study will benefit any development proposal. An alternative, or best practice approach to site development is to view environmental constraints as opportunities that can inform design decisions.

3.2.3 Pre-planning

Planners emphasise the benefit of the “pre-planning consultation”, particularly in relation to larger sites. Planners are responsible for co-ordinating the delivery of the development plan and must consider the proper planning and sustainable development of an area.

Carrying out a basic habitat assessment as a pre-planning provisional survey is advisable. The use of sketch proposals in pre-planning stages is recommended. In this regard, it is useful to see ecology as a layer to be incorporated in the development proposal. It is recommended that the developer’s ecology consultant consult with the planner and council expert, who may have a view on the sensitivity or otherwise of a habitat and may be carrying out a study in the area.

3.2.4 Planning and Design

At the planning and design stage, the pre-planning scoping assessment will determine the extent of involvement necessary by an ecologist. If done properly at pre-planning stage, the sketch examples and Basic Habitat Assessment carried out by the ecologist can be developed and biodiversity-enhancing measures incorporated into the design itself.

At this stage, “downstream” service departments in the council must be consulted. Once development is permitted it is the responsibility of service departments, such as the parks department, infrastructure and transportation departments to implement, service and possibly maintain the development. Often, it is necessary and advisable for these departments to recommend to the Planner the inclusion of conditions outlining their required specifications.

3.2.5 The Planning Application Process

Figure 8 shows an outline of the basic planning application timescale in outline. More information in relation to the specific process is accessible from the Department of Environment, Heritage and Local Government Planning Leaflet series (www.environ.ie).

The council may request “Additional Information (AI)” relating to biodiversity, if it is felt that insufficient consideration has been given in the application. The local authority can also seek “clarification of additional information (CAI)” received. In both cases, it is up to the developer to make a response and, if it relates to ecology, the ecological consultant will normally be commissioned to prepare a draft.

It is normal for the council to attach conditions to a decision. These conditions should be strictly complied with in any development. Where a developer disagrees or objects to the decision or the attached conditions for any reason, the decision or conditions can be appealed to An Bord Pleanála, (the National planning appeals authority). An Bord Pleanála can review the proposal “de novo” or just on the individual aspect being appealed and will again be concerned that biodiversity and ecological considerations are adequately taken into consideration. As with the local authority, An Bord Pleanála must take into account national and EU policies and legislation relating to biodiversity.

TIMESCALE	ACTION
Start	Notice published in newspaper and site notice erected
2 weeks later	Latest data for lodging application
Between 2 weeks and 5 weeks	Application is validated by the planning authority. Submissions or objections are considered
Between 5 weeks and 8 weeks	Planning authority issue notice of their decision on the application. (Alternatively, they may request further information)
4 weeks after issue of notice of decision	If no appeal is made, the planning authority will grant of permission, or outline permission, except where they have already indicated a decision to refuse

Figure 8. Timescale for Planning Applications without an Environmental Impact Statement.

3.2.6 Development, Construction and Post-development Management

Once permission is given, the developer may proceed and carry out the scheme as permitted. A detailed design should be drawn up in consultation with the ecologist and best practice guidelines (e.g. for trees: British Standard 5837, 2005). Often the success of creating biodiversity features or retaining them depends not only on the design of the development, but also on the appropriate protection and procedures during the construction process. Therefore, the ecologist needs to be involved in the design phase as well as when construction and landscaping are taking place and best practice procedures need to be followed. The ecologist should interpret the decision and advise on good practice in construction management. It is also important to involve the ecologist when landscaping is being carried out as this has implications for habitat management.

The involvement of parks, infrastructure and transportation departments will continue into the construction and management phases of development. In most cases, the planning conditions will set out their requirements and how these are to be accomplished. However, their needs must always be initially addressed at the early Planning and Design Stage.

3.2.7 Monitoring and Enforcement

Ultimately the development is either taken in charge or a management company established to maintain the scheme. The council will not take in charge the area until the full provisions of the planning decision, including biodiversity-related conditions, have been executed.

The local authority can exercise powers of enforcement and injunction to halt development works or to have development removed should it not comply with the planning decision. This is the least desirable outcome for a developer and may have serious financial implications. Non-compliant development can include such things as non-permitted encroachment or disruption of a habitat where it has been specified otherwise within a decision. Once again, early consideration of biodiversity and proper incorporation into the development proposal, including execution of the permitted designs is a priority and will save money in the long run.

SITE PREPARATION
Landbank assembly or site preparation begun by developer
Consult ecologist to consider potentially sensitive habitats
Consider downstream impacts of significant landscape modifications
Carry out initial scoping and constraints study
View environmental constraints as opportunities
PRE-PLANNING
Consider what type of development is permissible or desirable in an area
Consider the provisions of the development plan
Consider a Basic Habitat Assessment as a pre-planning provisional survey
Work on devising creative design solutions incorporating biodiversity
Pre-planning meeting with local authority
Table biodiversity management proposals for site
Bring a habitat assessment map of the area
Council planners will consult or advise developer to consult Council in-house experts
See ecology as a layer to be incorporated in the development proposal
PLANNING & DESIGN STAGE
Carry out consultation with relevant agencies and affected communities
Basic Habitat Assessment should be developed further
Assess potential biodiversity-enhancing measures
Consult "downstream" service departments (Parks, Maintenance, etc.)
PLANNING APPLICATION PROCESS
Council tests application for compliance with policies and objectives of development plan
Council must also take into account national and EU policies and legislation
Additional Information (AI) may be requested if insufficient information is submitted
If biodiversity is an issue, ecologist reviews AI and advises developer
Council may request "clarification of additional information" (CAI)
If biodiversity is an issue, ecologist reviews CAI and advises developer
Council decides to grant, refuse or grant with conditions
Ecology consultant should review decision and advise on biodiversity matters
PLANNING APPEAL
Decision can be appealed by first or third parties
Board can review the proposal anew but must consider biodiversity and ecological matters
Board may seek additional information, which may relate to biodiversity
For significant schemes the Board may hold an Oral Hearing (ecologist usually must attend)
Board decides to grant, refuse or grant with conditions
POST-PLANNING & DEVELOPMENT MANAGEMENT
Applicant must carry out the scheme as permitted or not at all
Conditions may apply to certain construction and development standards
Conditions may also relate to habitats and biodiversity management
Ecologist should advise on good practice in construction management
Ecologist should review landscaping plans
Developer must ensure that needs of "downstream" service departments are met
Council will not take site in charge until full provisions of the planning decision are met
For private developments a management company will be established to maintain scheme

Figure 9. Best Practice Checklist for Biodiversity in Development Planning.

3.3 UNDERSTANDING THE PLANNING AND DEVELOPMENT BENEFITS OF BIODIVERSITY

3.3.1 High Density in the Irish Planning Environment

The Green City Guidelines examine approaches to enhancing biodiversity within high-density areas or areas undergoing urban “densification”. The Residential Density Guidelines, published by the Government in 1999, called for higher densities in urban areas. This was a response to calls for increased sustainability, particularly in relation to the location of housing with regard to employment and amenities. Local authorities have followed suit with policies for higher densities, mixing of uses and intensification around town centres and transport hubs. In February 2008, the Department of Environment, Heritage and Local Government published draft Guidelines on Sustainable Residential Development in Urban Areas. These guidelines are part of a review and updating of the Residential Density Guidelines, 1999. The Department also published Guidelines on Sustainable Urban Housing: Design Standards for New Apartments in September 2007.

The Residential Density Guidelines indicate that 50+ units per hectare can be considered high density. However, the term “high-density” is relative and will alter significantly from place to place. It is often the character and structure of an urban area that defines its acceptance or otherwise of urban densities.

An examination (See Figure 10) of two recent Planning Schemes - the Adamstown Planning Scheme and the Clonburris Draft Planning Scheme - show different definitions of “high-density” in nearby locations and another range again within Hansfield SDZ. “The New Housing” (RIAI, 2002) provides a study of recent and contemporary approaches to residential schemes throughout Ireland and includes an analysis of densities. Figure 10 shows the wide variety of densities recently permitted in different urban environments that were studied by the project. “The New Housing” looked at new and contemporary housing and therefore had a presumption towards higher densities. Nevertheless, it demonstrates the densities being achieved in urban areas. How such developments are designed will have an affect on the quality of biodiversity as human activity interacts with the natural world and as development restricts the activity of species.

Residential Densities* in Planning Scheme Zones	Low Density Zones	Medium Density Zones	High Density Zones
Adamstown	40 - 54	50 - 78	75 - 90
Hansfield SDZ**	18 - 36	48	74 - 84
Clonburris (Draft)	N/A	66 - 112	75 - 113
“The New Housing” Densities* by Sector	Minimum	Average	Maximum
Urban	99	258	531
Inner Suburban	35	96	253
Outer Suburban	37	66	129
Towns and Villages	17	80	353

* all units measured in dwellings per hectare. ** approximate (guidance) figures given

Figure 10. Examples of Residential Densities in Ireland.

3.3.2 Why Enhanced Biodiversity Means Better Development

Not only is biodiversity an important and indispensable part of the planning process, but its consideration at an early stage in the design process is also of benefit to the developer. Delays occurring in the planning process arising from insufficient consideration of biodiversity can be avoided, thus shortening the length of time taken to gain planning permission. Including biodiversity-enhancing measures in a development can provide an additional 'selling point' and a better quality environment for potential buyers. This adds value to the development and achieves higher quality surroundings for the residents and general public alike.

Incorporating biodiversity into the scheme at an early stage can also mean a better design process. By examining the landscape, what might otherwise be considered constraints could be seen as opportunities and may inform the design process. For example, instead of culverting a ditch, it could be converted into a watercourse, which in turn might influence a building line, etc. The basic habitat assessment and scoping study can then be used to identify opportunities rather than constraints if development is approached in this manner.

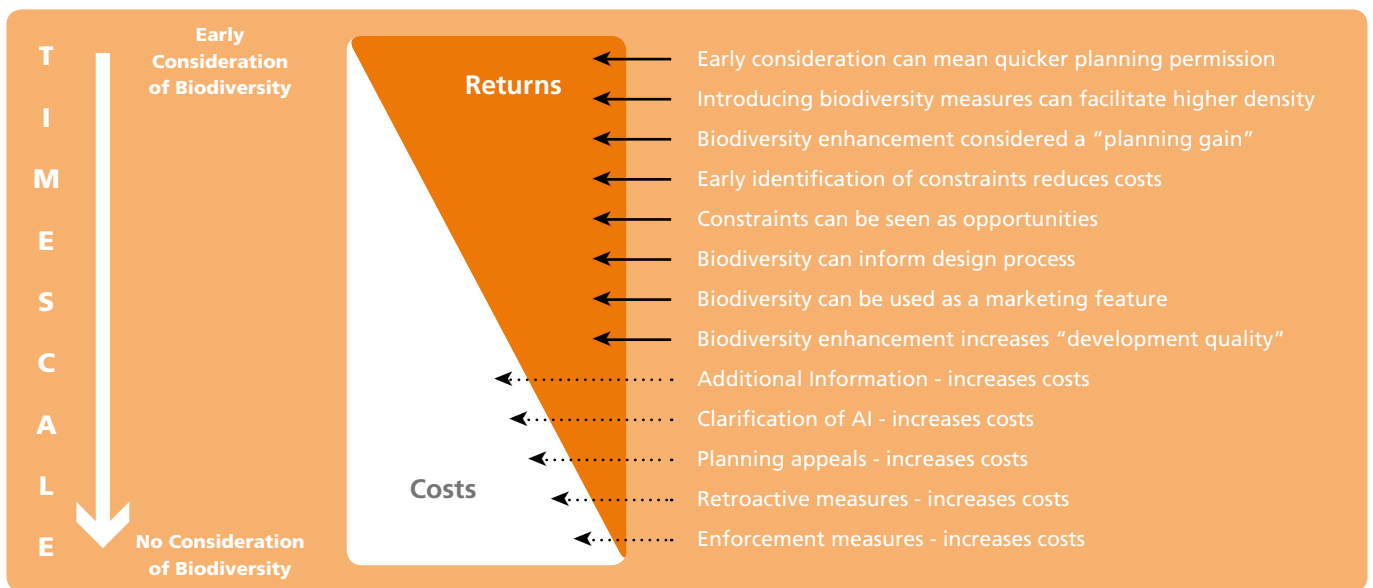


Figure 11. Risk Hierarchy in Planning for Biodiversity.

Furthermore, enhancing biodiversity within a scheme is likely to improve the perceived quality of the scheme to the end-user. Ultimately, humans are highly influenced by the quality of their environment. Natural and “green” imagery is commonly used to market schemes. There are tangible gains to the quality of an urban environment by accommodating biodiversity. Equally there are intangible and long-term health benefits to a community from living in a more amenable and ecologically diverse environment. This in turn leads to greater marketability, higher returns and a better quality environment.



Plate 9. Constraints can become opportunities. Mature tree at (a) Adamstown (b) Ongar and water channel turning into feature at (c) Bellevue, Islandbridge.

