

# 5

## Practical measures for incorporating biodiversity

**“Often, the key is for nature to be considered at the outset of the development process and not as an after-thought. It should be seen as part of the solution rather than part of the problem”**

(Sundseth & Raeymaekers, 2006)



## 5. Practical measures for incorporating biodiversity

*In any type of urban development, the existing environment will be altered. From an ecological viewpoint, the crucial questions are what type and how much of the existing habitat will be lost; what will be created in its place; how will this be managed; and how will the development directly or indirectly effect the surrounding environment? In order to determine the answers, an ecological assessment is required at the earliest opportunity to inform the planning and design stage of the development process.*

### 5.1 SITE PREPARATION

#### 5.1.1 Scoping and Constraints Study

Biodiversity should be incorporated into the scoping process to assess the potential of the site and formulate outline designs. The scoping study should include a review of the following:

KEY ECOLOGICAL FACTORS	SOURCE OF INFORMATION
Designated sites including proposed sites on or within 5km of the study area	NPWS database, local authority personnel
Rare or protected plant and animal species	NPWS database; desk review of previous reports and surveys relating to the area; consultation with relevant bodies; general field survey with possible recommendation for specialist survey, local authority personnel
Habitats of international significance Habitats and species of local biodiversity value	NPWS database; desk review of previous reports and surveys relating to the area; NPWS consultation and field survey; desk review of previous reports and surveys relating to the area; general field survey with possible recommendation for specialist survey
Watercourses and other water features	Ordnance Survey map and aerial photography review; field surveys. Consultation with the relevant regional fisheries board is required where a development may potentially impact on a watercourse
Tree Preservation Orders	Local authority database and County Development Plan
Other legislative and policy requirements	County Development Plan objectives; Local Area Plan or other Area Plan objectives; Local Biodiversity Action Plan objectives

A basic habitat assessment is required to identify biodiversity features on site. This process will help determine the viability of the development at an early stage by identifying major constraints such as designated sites. In the event that no major constraints are identified, it will identify features that require early consideration in the design phase and that present opportunities for the proposed development.

## 5.1.2 Basic Habitat Assessment

The level of detail required will depend on the sensitivity and complexity of the site. At a minimum, the basic habitat assessment should include desk review, consultation and a general field survey resulting in a habitat map. The general field survey will make recommendations on any additional specialist surveys required.

### Desk review and consultation

The process of information gathering and consultation are often combined. Desk review will identify previous ecological reports available for the area and data on key plant and animal species associated with the site. Sources of data include the National Parks and Wildlife Service website for information on designations and rare and protected species ([www.npws.ie/MapsData/](http://www.npws.ie/MapsData/)). Other principal sources are Regional Fisheries Boards, the Environmental Protection Agency, the National Biodiversity Data Centre, published papers and theses.

In addition to acting as a source of information, the NPWS and the Regional Fisheries Boards are statutory consultees. Statutory bodies including the NPWS and the appropriate Regional Fisheries Board will identify designated areas and species with statutory protection. These bodies may also make recommendations on additional studies they require to fully assess the potential impacts of the development. In addition, they may advise on the design of structures such as culverting, or may raise concerns about the overall sustainability of the project, if it were to impact on a sensitive site or species.

Many Local Authorities are in the process of developing Local Biodiversity Strategies and Action Plans and will hold information on areas and species of local biodiversity value. Key personnel to contact are the Heritage Officer, Biodiversity Officer and members of the Parks Department.

Non-governmental organisations and local experts often hold detailed information on sites and species of biodiversity value. Organisations such as BirdWatch Ireland, Bat Conservation Ireland and the Botanical Society of the British Isles hold important databases with national coverage.

### Field survey

Databases and knowledge on specific sites is often very limited and a survey by a qualified ecologist is required to identify and evaluate habitats and species of high biodiversity value on all sites proposed for development. The essential ecological information is gathered through general habitat survey. The need for specialised surveys will be identified through scoping and consultation or following the general survey.

The best period for the general habitat survey is between April and September (see Appendix 1 for appropriate periods for survey). Habitat surveys carried out outside this period are likely to require an additional site visit at the appropriate time of year. This will depend on the sensitivity of the site and the type of habitats present. The standard Irish habitat classification system (Fossitt, 2000) should be used to carry out field surveys. The need for additional specialised surveys will be identified at this point and these should be carried out during the appropriate season.

General field surveys usually include;

- Habitat mapping and evaluation
- Faunal assessment
- An additional visit may be required if the survey is carried out outside the appropriate time of year

Specialist field surveys may include;

- Rare and protected botanical survey
- Bat survey
- Wintering and breeding bird surveys
- Hydrological investigation may be required in relation to sensitive wetland sites
- Large mammal survey
- Tree survey
- Aquatic habitat survey
- Invertebrate surveys

The Table below lists the field surveys which may be required and the time period which is most suitable for carrying them out.

<b>FIELD SURVEYS</b>	<b>OBJECTIVE</b>	<b>SEASONAL CONSTRAINTS</b>
Habitat mapping and evaluation	Provide a general assessment of the habitat on site and a map showing their location	April – September: Optimal January – December: Sub-optimal
Botanical survey	Identify the presence of rare and protected habitats and species. The presence of these features can not be detected from aerial photography and will require field work in the appropriate season	May - August
Large mammal survey (badgers and otters)	Identify the presence of protected mammals on site and the location of resting places, foraging grounds and commuting routes.	November - March
Bat survey	Identify roosts, commuting routes and foraging areas. An abundance of hedgerows, trees and woodland indicate the need for a bat survey.	April - September
Tree survey	Map and evaluate mature trees that are likely to be affected to allow them to be protected and incorporated into any future development design.	January - December

## 5.2 PRE-PLANNING

### Pre-planning meeting

Early consultation between planners and developers can assess the feasibility of the development. Further meetings can be arranged as the development proceeds to address specific issues as they arise and to develop alternative design options where necessary. This will help reduce time-consuming design revisions at a later stage.

The objectives of consultation between planners and developers will be to;



Plate 10. Habitat maps are the primary tool for planning at the local-scale. A general habitat survey will identify key ecological features to be retained.

- Ensure that adequate ecological data is available for the integrated design of the proposed development. Identify the existing information available for the site and a clear schedule of additional specialist surveys required, including appropriate timing of all ecological surveys. This schedule will be informed by the general field survey and consultation with statutory agencies.
- Ensure that the outline design is in accordance with the County Development Plan objectives and Local Biodiversity Action Plan objectives.
- Outline the type of planning requirements that are likely to be attached to the proposed development in order to retain and enhance biodiversity.
- Outline the type of landscape design that will be acceptable for the development.
- Ensure that adjacent areas and features of ecological significance are adequately protected.

## 5.3 PLANNING AND DESIGN

Once the full ecological assessment has been made, planning and design can be initiated to retain significant features or create additional features to enhance the biodiversity value of the site.

### 5.3.1 Evaluation and Assessment

Following the field survey, sites are ranked according to a hierarchy of site evaluation. The most widely used evaluation system is the NRA Site Evaluation Scheme (Nairn & Fossitt, 2004). A full definition of each category is given in Appendix 2.

Sites are generally categorised as one of the following:

- Internationally important
- Nationally important
- High value, locally important
- Moderate value, locally important
- Low value, locally important

**Internationally important** sites are of highest conservation importance. They contain habitats or species that are protected under the EU Habitats or Birds Directives, designated as SACs or SPAs. They may also include undesignated sites containing good examples of Annex I priority habitats under the EU Habitats Directive. Major salmon river fisheries or major salmonid lake fisheries are also included in this category.

**Nationally important** sites include sites or waters that are designated or proposed as NHAs or statutory Nature Reserves. Also included are undesignated sites containing good examples of habitats and species protected under EU Habitats and Birds Directives. Important fisheries waters with major trout or amenity fishery value or important commercially coarse fisheries are included here. The Wildlife (Amendment) Act 2000 provides a statutory basis for these NHAs from the time of formal designation. Until that time, proposed NHAs are listed under, and receive protection from, the relevant County Development Plan.

**High value, locally important** consists of sites supporting semi-natural habitat types with a high degree of naturalness, or significant populations of locally rare species. Small water bodies with known salmonid populations or with good potential salmonid habitat are also included along with sites containing any listed Annex II species under the EU Habitats Directive or Annex I species under the EU Birds Directive. Large water bodies with some coarse fisheries value should also be considered of high local value. These areas are important areas of local biodiversity but are often unrecorded within the wider landscape. Local Biodiversity Action Plans will seek to identify these areas through habitat mapping and other initiatives. Local Area Plans and other strategic planning tools will identify these areas and seek to protect them within the planning process. However, many areas are only first recorded when a preliminary site survey is carried out.

**Moderate value, locally important** includes sites containing some semi-natural habitat or locally important for wildlife, may also include small water bodies with some coarse fisheries value, some potential salmonid habitat or any stream with an unpolluted Q-value rating. These areas may be noted in LBAPs or LAPs but are more likely to be first recorded in the site survey.

**Low value, locally important** refers to artificial or highly modified habitats with low species diversity and low wildlife value. Water bodies with no current fisheries value and no significant potential fisheries value are also included. These are generally not significant from a biodiversity view point and are more suitable for habitat creation and development.

**The EU Habitats Directive** and the **EU Birds Directive** identify habitats and species of European Community importance (In the Habitats Directive, habitat types are listed in Annex I. Priority habitats are specially protected habitats of which Ireland has 16. Species are listed in Annex

II and IV of the Directive. These are commonly referred to as Annex I habitats or Annex II species or Annex IV species. The EU Birds Directive lists species in Annex I of the Directive). SACs and SPAs are designated for the preservation of these habitats and species, although many still occur outside these designated areas. The European network of designated SPAs and SACs is known as Natura 2000. Natura 2000 sites are protected by law to ensure that they are preserved. Only in exceptional circumstances, “imperative reasons of overriding public interest” or where there is no alternative to the plan or project and where it can be shown that it must be carried out, will development be permitted. Where a designated site supports a priority species or habitat, these reasons can only be for human health or public safety. For designated sites that do not hold a priority species or habitat, the reasons can also include social or economic reasons.

**Article 6** of the Habitats Directive requires “an appropriate assessment” of any plans or projects that are likely to have a significant effect on a designated site. The onus is on the developer to ensure that all the necessary steps were taken to avoid deterioration to the site or its qualifying interests. The type of appropriate assessment required should be decided in consultation with NPWS.

Certain activities are restricted within SACs, SPAs and NHAs. These are known as notifiable actions and can only be carried out with the permission of the Minister for the Environment, Heritage and Local Government.

Designated sites are a representative sample of Ireland’s most valuable habitats. However, they account for only a very small proportion of land. Substantial areas of high biodiversity value are found outside the existing network of designated sites. One of the main goals of the Local Biodiversity Action Plan is to identify and protect areas of high local value. Extensive mapping projects that tackle countywide areas require significant resources and time to complete. In the mean time, Local Area Plans and individual site assessments can identify these areas and earmark them for protection.

One of the key purposes of an ecological assessment or an EIS is to evaluate the site in terms of its international, national and local value. It will also identify the key features that should be protected in order to safeguard the ecological integrity of the site. These are the features that should be protected retained or enhanced as appropriate.

- Housing developments which directly or indirectly harm the integrity of an internationally important site, or which conflict with the conservation objectives for that site, should not be permitted
- Habitats and species identified as having high local value should be protected, retained, and incorporated within the overall development
- Where feasible, habitats and species identified as having moderate local value should be protected, retained, and incorporated within the overall development with a view to enhancing their overall value. Where retention is not feasible, they should be compensated for by replacing the same quantity and quality of habitat through habitat creation and appropriate management

### 5.3.2 Protecting and retaining features of value

#### Protecting and retaining features

Case Study 3: Dundrum  
Case Study 5: Stepside  
Case Study 6: Swords

A key factor in protecting and retaining features of value on the site is in the design of the development footprint.



- Design the footprint of the development to avoid impacts on areas of high biodiversity value. Areas of semi-natural habitat should be incorporated into the development where possible. Extensive areas of heavily modified habitat such as brownfield sites, improved agricultural grassland and arable land have a low biodiversity value and are generally most suitable for development. Higher plot densities use a smaller footprint within the overall development area and could provide more open green space.
- Treelines, hedgerows and streams that have connections to the surrounding landscape, should be identified at the planning and design stage and prioritised for retention within the new development. Case Study 3: Dundrum provides an example of how connecting features such as hedgerow, stream and treelines have been retained within an expanding residential area.
- In Case Study 5: Stepside, a number of habitats such as scrub, woodland, mature trees, treelines, hedgerows and a stream are retained and help maintain the original character of the surrounding landscape.
- Avoid building on floodplains. Incorporate these features into the design and use them as flood protection and water management features. Case Study 8: Swords shows an example of how retained floodplain can provide an important landscape element that provides excellent biodiversity value while enhancing the amenity value of the site.
- Ensure that adjacent designated sites are not indirectly impacted by the development. This is particularly important for developments adjacent to wetlands where the quantity and quality of water supply should be maintained. Surface water wetlands, such as rivers and lakes can be adversely affected by diffuse and point source contamination. Many wetlands are dependant on groundwater resources for their water supply. Wetlands can be severely damaged if the quantity of water reaching them is depleted through water abstraction elsewhere within the catchment. Professional advice should be sought on the potential impact of developments on adjacent wetland habitats such as wet grasslands, marshes, fens or springs.

- Identify planning policy objectives that can overlap with or support biodiversity objectives. These include the provision of open space, recreation areas, sustainable transport links such as footpaths and cycle ways, sustainable drainage and landscape. Multi-functional green areas are more likely to be conserved in the long term.

### 5.3.3 Creating and enhancing biodiversity

New developments provide an opportunity for creating ecologically valuable habitats that can replace existing low quality habitats. Development design should aim to create and maintain open spaces that incorporate a diversity of habitat types. A mosaic of grassland, scrub, woodland and wetland creates the greatest species richness and structural diversity.

#### 5.3.3.1 Terrestrial habitats

<b>Trees and woodland</b>	<b>Case Study 7: Lusk</b> <b>Case Study 1: Monkstown</b> <b>Case Study 2: Castleknock</b> <b>Case Study 6: Swords</b>
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#### The benefits of urban trees

- Provide wildlife habitat
- Provide visual amenity
- Absorb airborne particles by up to 75% and produce oxygen
- Act as a carbon sink
- Create energy savings by providing wind protection to exposed buildings
- Increase humidity and provide a cooling effect
- Attenuate noise and introduce a pleasant noise of their own
- Introduce an element of natural scale to streetscapes
- Reflect the changing seasons and provide a psychological link with nature
- Increase property values by up to 18%
- Increase spending in "leafy streets" by up to 10%

*(Adapted from Johnston & Newton, 2004: TCPA, 2004;)*

- One of the most important points when planting trees is to use species appropriate to the physical and environmental conditions of the site including soil conditions, availability of space and aspect. Use a high diversity of native trees. Choose a variety of sizes and age classes to improve visual and structural diversity.
- Urban environments can be difficult environments with high levels of air pollution. Case Study 4: Lusk shows how a high number of native tree species suitable for street planting and tolerant of air pollution such as ash, silver birch and wych elm which are used in new planting. Non-natives form a relatively minor component of the planting regime.