

6 ECOLOGY AND BIODIVERSITY

6.1 INTRODUCTION

The Proposed Development will comprise the establishment and operation of a soil recovery facility at the Applicant's lands in Kilmartin, Coynes Cross, Co. Wicklow. Full details of the Proposed Development are provided in Chapter 3.0: Project Description and a summary is provided in Section 6.3 below. The Application Site ('the Site') is shown where relevant in the figures below¹.

This assessment presents a summary of ecological features which are, or have the potential to be, ecological constraints to the Proposed Development (the Proposed Development is described in Chapter 3.0: Project Description and summarised in Section 6.3 below). This chapter evaluates the importance of the ecological resources present and defines the degree of significance of potential impacts resulting from the Proposed Development. The Chapter also identifies appropriate mitigation measures and defines residual impacts.

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6.2 LEGISLATIVE AND POLICY CONTEXT

This section addresses the legislation and guidance that has been considered when preparing this chapter, and key policy context relevant to biodiversity. The overarching EIA legislation under which this assessment is required is addressed separately in Chapter 1:0 Introduction and Chapter 2:0 Scope and Methodology.

6.2.1 LEGISLATION

- The Planning & Development Act 2000 and the Planning and Development (Amendment) Act, 2010 (as amended) hereafter referred to as the Planning Acts;
- The Wildlife Act 1976 as amended by the Wildlife (Amendment) Act, 2000 (as amended) hereafter referred to as the Wildlife Acts;
- The EIA Directive (Directive 2011/92/EU as amended by Directive 2014/52/EU), the Planning and Development Acts 2000-2018, and the Planning and Development Regulations, 2001-2018;
- European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. no. 477 of 2011) and subsequent amendments (2011-2021); and
- European Communities (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018).

6.2.2 RELEVANT POLICIES AND PLANS

- 4th National Biodiversity Action Plan 2023-2030;
- Ireland's National Strategy for Plant Conservation;
- Wicklow County Development Plan 2022-2028;
- Wicklow Biodiversity Action Plan 2010-2015;

¹ See also Figure 3-1 in Chapter 3.0: Project Description of this EIAR which shows the extent of the Application boundary. The Application boundary delineates the Application Site.

- All Ireland Pollinator Plan 2021–2025; and
- Draft County Wicklow Heritage Plan 2017–2022.

6.2.2.1 Wicklow County Development Plan 2022-2028

The following objectives in the Wicklow County Development Plan (CDP) 2022-2028 are relevant to this assessment:

Natural Heritage & Biodiversity Objectives – General

CPO 17.1 - *‘To protect, sustainably manage and enhance the natural heritage, biodiversity, geological heritage, landscape and environment of County Wicklow in recognition of its importance for nature conservation and biodiversity and as a non-renewable resource.’*

CPO 17.2 - *‘Ensure the protection of ecosystems and ecosystem services by integrating full consideration of these into all decision making.’*

CPO 17.3 - *‘To support and promote the implementation of the County Wicklow Heritage Plan and the County Wicklow Biodiversity Action Plan.’*

Natural Heritage & Biodiversity Objectives – Protected Sites and Species

CPO 17.4 – *‘To contribute, as appropriate, towards the protection of designated ecological sites including Special Areas of Conservation (SACs) and Special Protection Areas (SPAs); Wildlife Sites (including proposed Natural Heritage Areas); Salmonid Waters; Flora Protection Order sites; Wildfowl Sanctuaries (see S.I. 192 of 1979); Freshwater Pearl Mussel catchments; and Tree Preservation Orders (TPOs). To contribute towards compliance with relevant EU Environmental Directives and applicable National Legislation, Policies, Plans and Guidelines’.*

CPO 17.5 – *‘Projects giving rise to adverse effects on the integrity of European sites (cumulatively, directly or indirectly) arising from their size or scale, land take, proximity, resource requirements, emissions (disposal to land, water or air), transportation requirements, duration of construction, operation, decommissioning or from any other effects shall not be permitted on the basis of this plan. Except as provided for in Article 6(4) of the Habitats Directive’.*

CPO 17.6 – *‘Ensure that development proposals, contribute as appropriate towards the protection and where possible enhancement of the ecological coherence of the European Site network and encourage the retention and management of landscape features that are of major importance for wild fauna and flora as per Article 10 of the EU Habitats directive. All projects and plans arising from this Plan will be screened for the need to undertake Appropriate Assessment under Article 6 of the Habitats Directive’.*

CPO 17.7 – *‘To maintain the conservation value of all proposed and future Natural Heritage Areas (NHAs) and to protect other designated ecological sites in Wicklow’.*

CPO 17.8 – *‘Ensure ecological impact assessment is carried out for any proposed development likely to have a significant impact on proposed Natural Heritage Areas (pNHAs), Natural Heritage Areas (NHAs), Statutory Nature Reserves, Refuges for Fauna, Annex I habitats, or rare and threatened species including those species protected by law and their habitats. Ensure appropriate avoidance and mitigation measures are incorporated into development proposals as part of any ecological impact assessment’.*

CPO 17.10 – *‘To support the Department of Housing, Local Government and Heritage and the National Parks and Wildlife Service in the development of site specific conservation objectives (SSCOs) for designated sites’.*

CPO 17.11 – *‘To preserve lands at ‘The Rocks’, Kilcoole (as shown on Map 17.12) in its existing state; to allow no development of these lands; to protect the lands as a natural habitat and biodiversity area; to protect the open nature and landscape quality of the lands’.*

Natural Heritage & Biodiversity Objectives – Sites & Corridors of Ecological & Biodiversity Value

CPO 17.12 – *‘To protect non-designated sites from inappropriate development, ensuring that ecological impact assessment is carried out for any proposed development likely to have a significant impact on locally important natural habitats, species or wildlife corridors. Ensure appropriate avoidance and mitigation measures are incorporated into development proposals as part of any ecological impact assessment’.*

CPO 17.13 – *‘To facilitate, in co-operation with relevant stakeholders, the ongoing identification and recording of locally important biodiversity areas and species in County Wicklow, not otherwise protected by legislation and ensure that consideration is given to these in the development management process.’.*

CPO 17.14 – *‘Ensure that development proposals support the protection and enhancement of biodiversity and ecological connectivity within the plan area in accordance with Article 10 of the Habitats Directive, including linear landscape features like watercourses (rivers, streams, canals, ponds, drainage channels, etc), woodlands, trees, hedgerows, road and railway margins, semi-natural grasslands, natural springs, wetlands, stonewalls, geological and geo-morphological systems, features which act as stepping stones, such as marshes and woodlands, other landscape features and associated wildlife where these form part of the ecological network and/or may be considered as ecological corridors or stepping stones that taken as a whole help to improve the coherence of the European network in Wicklow’.*

CPO 17.15 – *‘To protect and enhance wetland sites that are listed as being of C+ or higher importance in the County Wicklow wetlands survey and any subsequent updates or revisions thereof and to implement the recommendations of the County Wicklow wetlands survey’.*

CPO 17.16 – *‘Require pollinator friendly landscape management and planting within new developments and on Council owned land’.*

CPO 17.17 – *‘Work with statutory authorities to prevent and control the spread of invasive plant and animal species and require, where appropriate Invasive Species Management Plans to be prepared as part of the development management process where necessary’.*

Natural Heritage & Biodiversity Objectives – Woodlands, Trees and Hedgerows

CPO 17.18 – *‘To promote the preservation of trees, groups of trees or woodlands in particular native tree species, and those trees associated with demesne planting, in the interest of the long-term sustainability of a stable ecosystem amenity or the environment generally, as set out in Schedule 17.05 and Maps 17.05 and 17.05A - H of this plan’.*

CPO 17.19 – *‘To consider the making of Tree Preservation Orders (TPOs) to protect trees and woodlands of high amenity value.’.*

CPO 17.20 – ‘Development that requires the felling of mature trees of environmental and/or amenity value, even though they may not have a TPO in place, will be discouraged.’.

CPO 17.21 – ‘To strongly discourage the felling of mature trees to facilitate development and encourage tree surgery rather than felling if such is essential to enable development to proceed’.

CPO 17.22 – ‘To require and ensure the preservation and enhancement of native and semi-natural woodlands, groups of trees and individual trees, as part of the development management process, and require the planting of native broad leaved species, and species of local provenance in all new developments’.

CPO 17.23 – ‘To require the retention, wherever possible, of hedgerows and other distinctive boundary treatment in the County. Where removal of a hedgerow, stone wall or other distinctive boundary treatment is unavoidable, provision of the same type of boundary will be required of similar length and set back within the site in advance of the commencement of construction works on the site (unless otherwise agreed by the Planning Authority)’.

Natural Heritage & Biodiversity Objectives – Water Systems

CPO 17.24 – ‘To ensure and support the implementation of the EU Groundwater Directive and the EU Water Framework Directive and associated River Basin and Sub-Basin Management Plans and Blue Dot Catchment Programme, to ensure the protection, improvement and sustainable use of all waters in the County, including rivers, lakes, ground water, coastal and estuarine waters, and to restrict development likely to lead to a deterioration in water quality. The Council will also have cognisance of, where relevant, the EU’s Common Implementation Strategy Guidance Documents No. 20 and 36 which provide guidance on exemptions to the environmental objectives of the Water Framework Directive’.

CPO 17.25 – ‘Ensure that floodplains and wetlands are retained for their biodiversity and ecosystems services value and resist development and activities that would interfere with the natural water cycle to a degree that would interfere with the survival and stability of these natural habitats’.

CPO 17.26 – ‘Protect rivers, streams and other water courses by avoiding interference with river / stream beds, banks and channels and maintaining a core riparian buffer zone of generally 25m along watercourses (or other width, as determined by the Planning Authority having particular regard to ‘Planning for Watercourses in the Urban Environment’ by Inland Fisheries Ireland for urban locations) free from inappropriate development, with undeveloped riparian vegetation strips, wetlands and floodplains generally being retained in as natural a state as possible. Structures such as bridges should be clear span, and designed and built in accordance with Inland Fisheries Ireland guidance.’.

6.2.3 RELEVANT GUIDANCE

- Invasive Species in Ireland (NPWS, 2004);
- Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland: Terrestrial, Freshwater and Coastal Environments (CIEEM, Version 1.3, 2024);
- Circular Letter PL 1/2017 - Implementation of Directive 2014/52/EU on the Effects of Certain Public and Private Projects on the Environment (EIA Directive), 15 May 2017;
- Key Issues Consultation Paper - Transposition of 2014 EIA Directive (2014/52/EU) in the Land Use Planning and EPA Licencing Systems, 2 May 2017;

- Environmental Impact Assessment of Projects - Guidance on the Preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU). European Commission of the European Union 2017;
- Guidelines on the information to be contained in Environmental Impact Statements (EPA, 2002);
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EIAR) (Environmental Protect Agency, 2022);
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Environment, Community and Local Government, 2018);
- Environmental Impact Assessment of National Road Schemes – A Practical Guide (NRA, 2008);
- Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009);
- NRA Environmental Assessment and Construction Series Guidelines (NRA, 2006- 2009);
- A Guide to Habitats in Ireland (Fossitt, 2000);
- Bat Surveys: Good Practice Guidelines (Collins, 2016);
- Bat Mitigation Guidelines for Ireland, Irish Wildlife Manuals No. 25 (Kelleher & Marnell, 2006); and
- Bats & Lighting Guidance Notes for Planners, engineers, architects and developers (Bat Conservation Ireland, December 2010).

6.2.4 PRE-CONSULTATION

A non-statutory consultation process was carried out with prescribed bodies and other parties over the period from 25 May- 26 June 2023 to seek comments and observations about the Proposed Development. This process is fully documented in the Pre-Consultation Report accompanying the planning application submission and a summary is provided in Section 1.8 (Chapter 1.0: Introduction) of this EIAR. All feedback received was considered in the preparation of this assessment.

6.3 PROJECT DESCRIPTION

A full project description is provided in Chapter 3.0 (Project Description). A project description summary is provided below:

The Proposed Development is the establishment and operation of a soil recovery facility within a 17.08 hectare site at Kilmartin, Co. Wicklow (approximately 4 km north-east of Ashford). The soil recovery facility will import up to 2,160,000 tonnes of inert waste, primarily clean soils and stones from construction and development sites. Clean soil and stone will be used to progressively infill a steep-sided natural valley within the Site and raise ground levels to approximately 57mOD, tying in with the surrounding landscape. The infill area covers approximately 14 hectares.

The soil recovery facility will accept up to 100 loads per day on average (maximum 150 in exceptional circumstances) with a projected operational lifespan of up to 10 years depending on market conditions within the construction sector, followed by one year for final restoration and aftercare of the lands.

The Proposed Development will require the following structures be installed and maintained for the operational life of the Soil Recovery Facility: office and welfare facilities, six parking bays for private vehicles, weighbridge and associated weighbridge cabin, one wheel wash and one spray-system wheel wash, two waste inspection bays and one bunded waste quarantine area, hardstanding area (for vehicle movement and storage), surface water drainage infrastructure from hard standing and discharge to ground (including two interceptors and two soakaways), an internal access road,

internal haul roads (constructed from recycled aggregates where available), security features including security gates and fencing, and power supply. These structures will be removed from the Site at the end-of-life point of the soil recovery facility.

Approval will be sought for a connection to the ESB Network for the site office and welfare facilities. Diesel generators will be used to power mobile lighting, if required. Temporary lighting, if required, will be cowled to prevent light spillage.

The temporary relocation of ESB poles within the fill area will be required. This will be subject to prior agreement with ESB.

Wastewater from office and welfare facilities will be managed by a third-party provider, with no connection to foul water mains.

All truck deliveries will access the site via the N11/M11 and Coyne's Cross Road, with internal queuing space provided within the Site and no parking on public roads.

The existing land entrance located on R772 will be upgraded and will be retained following the completion of the Proposed Development.

A groundwater abstraction borehole will be installed to supply water for wheel washes, dust suppression, and welfare facilities, and will be retained for monitoring after restoration.

Restoration will return the site to grassland and hedgerow habitat, similar to its pre-development state. Approximately 140 m of fence and hedgerow opposite the entrance will be temporarily removed to improve sightlines during the life of the soil recovery facility and this will be subsequently reinstated. Native species will be used in hedgerow planting. The restored land will revert to agricultural management.

Permission is sought from An Coimisiún Pleanála for a period of up to 10 years, with an additional year for restoration. The Proposed Development will require a waste licence² from the Environmental Protection Agency (EPA) and aligns with national and regional policy objectives to provide adequate licensed soil recovery capacity for the Dublin and Wicklow regions.

6.4 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

6.4.1 DESKTOP SURVEY

A desktop review was conducted of available published and unpublished information, including a review of data available on the National Parks and Wildlife Services (NPWS) and National Biodiversity Data Centre (NBDC) web-based databases, in order to identify key habitats and species that may be present, in particular those protected by legislation. In order to assess the likely current status of species in the vicinity of the Site, a report was generated that contained all historical records submitted to the NBDC inside the 10 km square in which the proposed site is located.

² The proposed development will be carried out in accordance with a waste licence from the EPA or in accordance with by-product regulations, Article 27 of the European Communities (Waste Directive) Regulations 2011 (see Section 3.5 in Chapter 3.0: Project Description of this EIAR for further detail).

6.4.2 DESIGNATED AND NOTABLE SITE ASSESSMENT

The desktop review included a search within the 15 km search area for sites of international importance, including Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar Sites³. These sites contain examples of some of the most important natural and semi-natural ecosystems in Europe. Sites of national importance, which include Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHAs) were also searched for. The designated search area was 15 km from the Application boundary⁴, in accordance with the precautionary recommendations from DoEHLG (2009).

In the subsequent analysis of designated sites, particular attention was given to potential for the Proposed Development to influence a designated site. In other words, potential ecological pathways were identified; these pathways can be hydrological, physically overlapping or exhibiting habitat and species synergies that could result in temporary or residual impacts being afforded to a designated site.

6.4.3 ECOLOGICAL SURVEY

Ecological baseline surveys of the Site were carried out by O'Donnell Environmental Ltd. by way of a multi-disciplinary site walkover on the 9 February 2022. Subsequently, confirmatory ecological walkover surveys were carried out by WSP on 21 August 2023 and on 18 June 2025 in order to determine whether baseline conditions had changed.

In response to observations received during the statutory consultation process, an additional bat survey was undertaken on 1 June 2026 in accordance with Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th Edition) (Collins, 2023). The survey included a detailed reassessment of all previously identified Potential Roost Features (PRFs) using binoculars, torch and endoscope equipment, together with climbed inspections where required. Four trees containing PRFs were assessed and no bats or evidence of current or recent occupation were identified. The results of this survey are presented in Appendix 6D.

6.4.3.1 Habitats

A habitat survey was carried out in accordance with the Heritage Council's guidelines (Smith et al. 2011). This involved a walkover of the Site⁵, where the habitats present were classified according to Fossitt (2000) and recorded on a field map. The area subject to the ecological walkover survey is hereafter referred to as the 'study area'.

The purpose of this site visit was to describe and characterise the types of habitats present and determine whether there were ecologically-sensitive or legally-protected habitat types within the study area. Plants were identified to species level where possible (some plants are not identifiable to species level during winter months).

6.4.3.2 Mammals

A survey for non-volant mammals was undertaken, which involved a walkover of the Site to identify any mammal species present or signs of mammal activity such as droppings, tracks, burrows etc.

³ From Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971.

⁴ Referred to as site boundary in the Figure 6-1 figure legend.

⁵ At the time of survey, the application boundary (red line) had not yet been established. The extent of the area subject to the ecological walkover survey is illustrated in Figure 6-2.

Observations were recorded using field notes and/or a handheld GPS unit. Techniques used to identify mammal activity followed recognised guidelines (e.g. Bang and Dahlstrom, 2004 and Muir et al., 2013).

An infra-red equipped trail camera (Browning Strike Force Pro XD) was deployed at the entrance of a suspected badger sett located centrally with the Site. The camera was deployed from 9 February 2022 to 3 March 2022.

The conservation status of mammal species was considered. The conservation status of mammals within Ireland and Europe is indicated by inclusion in one or more of the following: Irish Wildlife Acts (1976 and subsequent amendments); Irish Red List of Terrestrial Mammals (Marnell et al. 2019); EU Habitats Directive.

Ground-level roost assessments were carried out to identify any bat roosting potential which may exist within the Site. Potential Roost Features (PRFs) are described according to the scheme outlined in Table 6-1. Surveys were initially undertaken in accordance with Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition) (Collins, 2016).

Following the ground-level roost assessment by O'Donnell Environmental, a tree climbing survey was carried out in September 2022 to inspect each identified Potential Roost Feature in detail. A further bat survey was subsequently undertaken on 1 June 2026 in accordance with Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th Edition) (Collins, 2023). The survey included detailed inspection of all identified Potential Roost Features using binoculars, torch and endoscope equipment, together with climbed inspections where required. Full details of the survey are provided in Appendix 6D).

Table 6-1 - Scheme for describing the potential suitability of features for bats

Suitability	Description
Negligible	Negligible features which are likely to be used by roosting bats.
Low	A feature with one or more potential roost sites that could be used by individual bats opportunistically. Potential roost sites which do not provide appropriate conditions and / or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation). A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to characteristics and surrounding habitat but unlikely to support a roost of high conservation status.
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.

Following the ground-level roost assessment by O'Donnell Environmental, a tree climbing survey was carried out in September 2022, in order to inspect each potential roosting feature in detail. The survey was carried out by Eire Ecology, and the report is provided in Appendix 6A.

6.4.3.3 Birds

The presence of any avian species was recorded during the Site visit. Birds were detected using visual and aural cues, noting the visit was conducted outside the nesting season. The habitats onsite were also evaluated for their suitability for birds.

6.5 SURVEY CONSTRAINTS OR LIMITATIONS

The habitat survey was undertaken outside the optimum survey period for botanical and habitat surveys. However, due to the nature of the habitats recorded within the Proposed Development site, the timing of the survey is not deemed to be a substantial limitation in this instance. The survey occurred outside the bird breeding season and bat activity season and any potential limitation to data here is addressed through a precautionary approach taken within the assessment.

6.6 IMPACT ASSESSMENT METHOD

Habitats and species were assessed in accordance with the guidance contained in the document Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland (CIEEM, 2022) which recommends that the importance of an ecological resource be determined within a defined geographical context.

6.6.1 DEFINING IMPORTANCE

The relative importance of each ecological feature has been defined on a geographical scale, from international importance, to having relevance only in the context of the Application boundary and local surroundings.

The criteria used for assessment of the value of the ecological resources follows those set out in Section 3.3 of the NRA's (2009) guidance document 'Guidelines for Assessment of Ecological Impacts of National Road Schemes' (see Appendix 6B). These guidelines set out the context for the determination of ecological value on a geographic basis with a hierarchy assigned in relation to the importance of site features. The guidelines provide a basis for determination of whether any particular site is of importance on the following scales:

- International Importance,
- National Importance,
- County Importance,
- Local Importance (Higher Value), and
- Local Importance (Lower Value).

This guidance clearly sets out the criteria by which each geographic level of importance can be assigned. For example, Locally Important (Lower Value) features contain habitats and species that are widespread and of low ecological significance and only of any importance in the local area. Conversely, Internationally Important sites are either designated for conservation as part of the Natura 2000 Network (SAC or SPA) or provide the best examples of habitats or internationally important populations of protected fauna.

It should be noted that professional judgement has been employed in the allocation of a level of importance to each feature as it occurs on the Site. In other words, the importance of the feature is presented in the context of its actual status within the Site. Therefore, a single individual of a species which is protected under the European Union (EU) Habitats Directive would not automatically be

considered of international importance but would be evaluated in the context of its relationship to the overall population and conservation status.

6.6.2 DEFINING IMPACT

The impacts to ecological features are defined by the relationship between the likely effect and the defined importance of the feature being affected (geographical importance is assigned based on the NRA's (2009) guidance). It is not possible in this system to have an impact greater than the overall geographical importance of the feature (e.g. the maximum possible impact to a feature of a county importance would be one which is of county significance). In general, impacts are characterised with reference to the parameters shown in Table 6-2 (from CIEEM, 2022).

Table 6-2 - Characteristics of Potential Impacts (adapted from CIEEM, 2022)

Potential Impact Parameter	Description
Quality of Effect	Potential impacts can have a positive or negative effect on the environment.
Magnitude	Magnitude can be measured in many ways such as the spatial or geographical area over which the impact may occur, or the size of a population impacted.
Duration	Effects may be described as temporary, short, medium, long-term or permanent.
Frequency and Timing	The number of times an activity occurs will influence the resulting effect. The timing of an activity or change may result in an impact if it coincides with critical life-stages or seasons e.g. bird nesting season.
Significance	Potential impacts are either significant or not significant.

The most important aspects of impact assessment are determining whether an impact is positive or negative, and whether it is significant. In this context, impacts are assessed following the below sequence of logic:

1. Determine whether the impact is positive or negative for the ecological feature in question;
2. Collectively examine the magnitude, duration and frequency/timing of a potential impact, and consider all of these in combination; and
3. Use the information from Step 2 to inform whether the impact is significant for the ecological feature in question.

6.6.3 OUTLINING MITIGATION, COMPENSATION, AND ENHANCEMENT MEASURES

Features subject to significant impacts are the focus of the provision of mitigation measures which have been formulated according to the mitigation hierarchy as per CIEEM (2022) (avoid, mitigate, compensate, enhance). All proposed mitigation measures follow industry best practice. Those for protected species follow the prescribed regulatory protocols.

6.6.4 ASSESSING RESIDUAL IMPACT

Following the application of mitigation measures, impacts to each ecological feature are reassessed, and any residual impacts are reported.

6.6.5 ESTABLISHING A ZONE OF INFLUENCE (ZOI)

The 'zone of influence' for a project is the area over which ecological features may be affected by biophysical changes as a result of the Proposed Development and associated activities. This is likely to extend beyond the project site, for example where there are ecological or hydrological links beyond the site boundaries (CIEEM, 2022).

6.6.6 LIKELY ENVIRONMENTAL EFFECTS

Considering the nature and location of the proposed works, as described in Chapter 3.0: Project Description, the following effects have been considered for the works:

- Noise/Vibration emissions;
- Dust emissions;
- Surface water contamination;
- Habitat loss; and
- Spread of invasive flora⁶.

6.6.6.1 Noise/Vibration Emissions

Considering the nature of the proposed works in the context of the site's location, it is not anticipated that noise emissions from the works will exceed existing levels so as to be environmentally significant. Taking account of the below factors, the proposal does not represent a substantial increase in existing noise levels experienced by the surrounding environment:

- The Site is currently in agricultural use, and is subject to occasional ingress of farm machinery;
- The Site is located close to (approximately 180 m) a busy motorway intersection;
- The noise impact assessment (see Chapter 10.0) notes that the predicted noise levels from the Proposed Development are predominantly below existing background levels. Potential noise impact from the Proposed Development have been deemed insignificant.

Vibrational impacts from the works phase are expected to be negligible, considering the project will not require any interaction with bedrock or include activities that include blasting or other percussive activities other than the installation of 1 No. groundwater well.

As a precautionary measure, a 10-metre buffer from the application boundary will be used to establish the ZOI for noise emissions.

6.6.6.2 Dust Emissions

Various aspects of the works phase, but notably earthworks, will give rise to increased potential for dust mobilisation. Wind speed and rainfall will influence the distance that dust particles can travel from site. As a point of reference, the IAQM⁷ Guidance on the Assessment of Mineral Dust Impacts for Planning indicates that significant dust impacts are typically restricted to 100 metres of a source, and this is with reference to quarrying activities. As a precautionary measure, a ZOI of 100 metres has been applied to dust emissions for this project.

⁶ As per Third Schedule (Part 1) of The Birds and Natural Habitats Regulations (S.I. 477/2011).

⁷ Institute for Air Quality Management.

Potential impacts from dust emissions have been assessed in Chapter 9.0: Air Quality and Climate, and residual effects from dust were found to be not significant.

6.6.6.3 Surface Water Contamination

In the event of a leak, spillage or leaching associated with rainfall, contaminants, such as hydrocarbons or suspended sediment, could be carried large distances downstream, providing there is connectivity between the Site and a watercourse. The potential distance travelled may extend several kilometres downstream of the site but is dependent on the contaminant (e.g. solubility, density, mass) and the physical nature of the watercourse, including its morphology and flow velocity, which influences its capacity to transport contaminants downstream and the extent to which dilution occurs.

For this project, the Application boundary and the Cullenmore stream are separated by a distance of approximately 45 m at the southernmost point of the Site. In considering the likelihood of the transport of a significant magnitude of water-borne contaminants from the proposed site, Table 6-3 should be viewed as a useful benchmark. This is taken from the Nitrates Explanatory Handbook by the Department of Agriculture, Food and the Marine (DAFM, 2022), and provides guidance distances for the spreading of organic fertilisers (e.g. slurry). As an example, if the receiving waters were intended to provide drinking water for human consumption, it is permissible to spread organic fertiliser up to 25 metres from the water's edge. Considering the inert nature of the proposed soil fill material and considering the actual distance between the Application boundary and the watercourse and the good practice measures relating to surface water protection, the ingress of contaminants is considered unlikely. In this context, the ZoI for surface water contamination is restricted to within the Application boundary.

Table 6-3 - Buffer zones for spreading organic fertilisers (DAFM, 2022)

Buffer zones for spreading organic fertilisers	
Water body/Feature	Buffer zone
Any water supply source providing 100m ³ or more of water per day, or serving 500 or more people	200 metres (or as little as 30 metres where a local authority allows)
Any water supply source providing 10m ³ or more of water per day, or serving 50 or more people	100 metres (or as little as 30 metres where a local authority allows)
Any other water supply for human consumption	25 metres (or as little as 15 metres where a local authority allows)
Lake shoreline	20 metres
Exposed cavernous or karstified limestone features (such as swallow holes and collapse features)	15 metres
Any surface watercourse where the slope towards the watercourse exceeds 10%	10 metres
Any other surface waters	5 metres*

*The 5 metre buffer zone is increased to 10 metres for a period of two weeks preceding and two weeks following the periods when application of fertilisers to land is prohibited as set out in Schedule 4 of the **Regulations** (check the table and map on page 7). The objective of increased setback distances at the shoulders of the closed period is to help retain as much of the applied nutrient in the field as possible thereby reducing its risk of loss through overland flow.

6.6.6.4 Habitat Loss

Habitat loss will be confined to within the Application boundary.

6.6.6.5 Spread of Invasive Flora

The proposal involves substantial earthworks, which will include the transport of soil to and within the site. The transport of viable seeds and plant tissue (of invasive flora) in the soil has the potential to occur via vehicle tyre treads, machinery tracks and the footwear of onsite personnel. 15 km has been applied for the spread of invasive flora, as a conservative precautionary ZoI⁸.

6.7 EXISTING ENVIRONMENT

6.7.1 DESIGNATED AND NOTABLE SITES

The Site is approximately 17.08 hectares in area and is located at Kilmartin, Coyne's Cross, Co. Wicklow. Specifically, the Site is located approximately 180 m east of the M11 motorway at Exit 14. The Site is predominantly pastoral grassland, grazed by sheep at the time of site visits. Habitats are described in Section 6.8.1.

There are twelve Natura 2000 sites located within the 15 km search area (see Figure 6-1). These consist of nine SACs and three SPAs. A Natura Impact Statement accompanies this Strategic

⁸ In theory, soil could be transported anywhere in the country on footwear and vehicles. However, the authors of this report have considered the scale of the proposed works in this area and have deemed 15 km to be a reasonable zone of influence for the purpose of this assessment.

Infrastructure Development (SID) application, which focuses specifically on the potential impacts to Natura 2000 sites. There are eleven pNHAs within 15 km of the Site, but no NHAs, and no Ramsar sites. The distances between Natura 2000 sites/pNHAs and the Site are provided in Table 6-4.

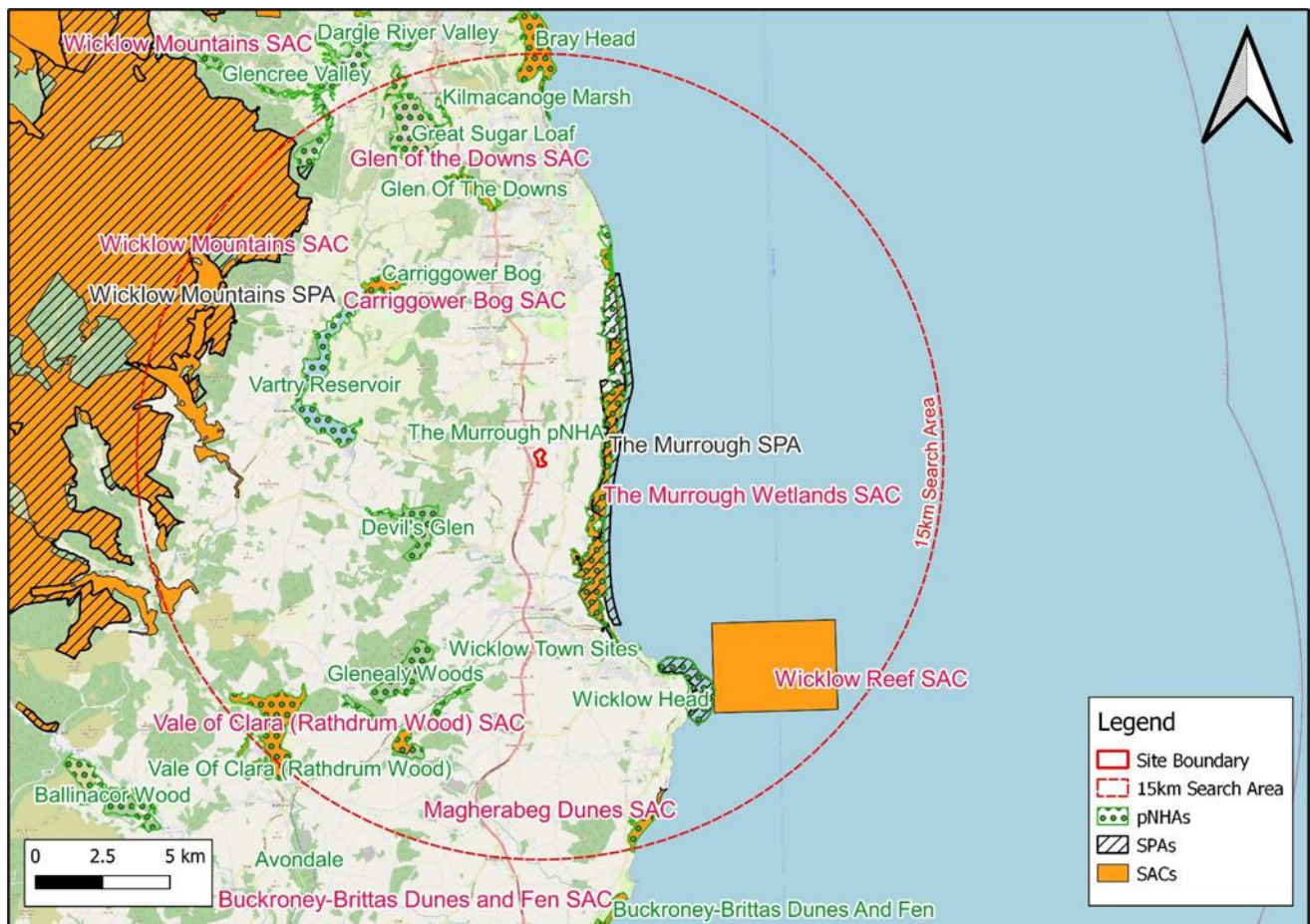


Figure 6-1 - Designated and notable sites within 15 km Search Area

There are no watercourses that traverse through the Site. However, the Cullenmore stream flows east approximately 45 metres south of the Application boundary at its nearest (southernmost) point. The Cullenmore joins the Dunran Demesne stream 1.3 km to the east. The Dunran Demesne flows southeast for 1.8 km and subsequently turns south where it enters the Murrough Wetlands SAC. It flows south for 800 m where it discharges into Broadlough Estuary which is connected to the Irish Sea at Wicklow Town. The Dunran Demesne stream (before its convergence with the Cullenmore) is located approximately 1 km north of the Site – with no watercourses connecting it to the Site.

Table 6-4 - Designated Nature Conservation Sites within the 15km Search Area

Site Name	Designation	Approximate Distance from Proposed Site (km)
The Murrough Wetlands	SAC	4.4
Carriggower Bog	SAC	8.6
Wicklow Reef	SAC	8.8
Glen of the Downs	SAC	9.6
Deputy's Pass Nature Reserve	SAC	11.0

Wicklow Mountains	SAC	11.8
Vale of Clara (Rathdrum Wood)	SAC	12.0
Bray Head	SAC	12.9
Magherabeg Dunes	SAC	12.9
The Murrough	SPA	4.4
Wicklow Head	SPA	8.7
Wicklow Mountains	SPA	12.7
The Murrough	pNHA	2.2
Devil's Glen	pNHA	4.15
Vartry Reservoir	pNHA	6.8
Glenealy Woods	pNHA	8.0
Wicklow Head	pNHA	8.7
Carriggower Bog	pNHA	8.6
Glen of the Downs	pNHA	9.6
Vale of Clara (Rathdrum Wood)	pNHA	12.0
Bray Head	pNHA	12.9
Magherabeg Dunes	pNHA	12.9
Powerscourt Waterfall	pNHA	14.0
Powerscourt Woodland	pNHA	14.5

6.8 ECOLOGY WALKOVER

The O'Donnell Environmental Ltd ecological survey confirmed that the Site occurs predominantly in an intensive agricultural context and occupies an area of approximately 17.08 hectares. The habitats present within the Application boundary of the study area are described in the below sections and illustrated in Figure 6-2. No habitats listed under Annex I of the EU Habitats Directive are present within the Proposed Site. All species recorded during the botanical survey are considered common for similar habitats in Ireland.

6.8.1 HABITAT ASSESSMENT

The habitats presented in Table 6.5 are those observed during the surveys undertaken by O'Donnell Environmental (2022), as described in the following sections. This refers solely to the area surveyed, as illustrated in Figure 6-2.

Table 6.5: Habitats Recorded onsite (Fossitt, 2000)

psb2	Habitat code	Area coverage (ha)
Improved Agricultural Grassland	GA1	12.78
Dry Meadows and Grassy Verges	GS2	2.83
Hedgerow	WL1	0.93
Exposed Sand, Gravel and Till	ED1	0.05
Spoil and Bare Ground	ED2	0.04
Scrub	WS1	0.29

A review of protected⁹ and notable¹⁰ flora was carried out from the records obtained from the NBDC. Within the 10km grid square (O20), only one notable species was noted – river water crowfoot (*Ranunculus fluitans*), which is listed as Vulnerable.



Figure 6-2 - Habitats and potential roosting features, as identified by O'Donnell Environmental and Eire Ecology

6.8.1.1 Improved Agricultural grassland (GA1)

The dominant habitat on site is improved agricultural grassland. The regular use of fertilisers and regular grazing is evidenced by the plant species composition found in this habitat type. Perennial ryegrass (*Lolium perenne*) was dominant and other plants recorded include dandelions (*Taraxacum* spp.), broad leaved dock (*Rumex obtusifolius*), clover (*Trifolium* spp.) and creeping buttercup (*Ranunculus repens*).

⁹ E.g. The Flora Protection Order (2015) and Annex II of the Habitats Directive.

¹⁰ Notable species are species considered rare or important/endemic in Ireland. Specifically, if they are categorised as Vulnerable, Endangered or Critically Endangered, Extinct in the Wild, or Extinct as per the International Union for the Conservation of Nature and Natural Resources (IUCN) Red Lists. Available at: <https://www.npws.ie/publications/red-lists>



Figure 6-3 - Improved agricultural grassland (GA1)

6.8.1.2 Dry Meadows and Grassy Verges (GS2)

This habitat type occurs (sometimes in mosaic with GA1) in the areas that are less intensively managed. While regularly grazed by livestock there was no visual evidence of significant fertiliser application. Low lying areas of this habitat may be subject to waterlogging. Plants recorded in the GS2 habitat include sweet vernal-grass (*Anthoxanthum odoratum*), nettle (*Urtica dioica*), vetches (*Vicia* spp.) and creeping bent (*Agrostis stolonifera*). Rushes (*Juncus* spp.) are frequent but not dominant.



Figure 6-4 - Dry Meadows and Grassy Verges (GS2)

6.8.1.3 Hedgerow (WL1)

Hedgerows form the boundaries of most fields on site¹¹. These vary in age and area but are of similar species composition with the following species present: hawthorn (*Crataegus mongyna*), holly (*Ilex aquifolium*), gorse, bramble (*Rubus fruticosus*) and ivy (*Hedera helix*). Tree species recorded occasionally within the hedgerows included oak (*Quercus* spp.), beech (*Fagus sylvatica*), sycamore (*Acer pseudoplatanus*), ash (*Fraxinus excelsior*), sweet chestnut (*Castanea sativa*) and willows (*Salix* spp.).



Figure 6-5 - Hedgerow (WL1)

6.8.1.4 Exposed sand, gravel and till (ED1)

Previous extraction works carried out on site have created a small area of ED1 habitat in the southern section of the study area. Vegetation cover is substantially less than 50% in these areas.

¹¹ The hedgerow on lands opposite the proposed site entrance comprises a somewhat low, thin and gappy layer of hawthorn, which has been planted along a post and wire fence.



Figure 6-6 - Exposed sand, gravel and till (ED1)

6.8.1.5 Spoil and bare ground (ED2)

Imported spoil and rubble heaps located in the east of the Site are at various stages of vegetation colonisation and consist of a mosaic of ED2 with areas Recolonising Bare Ground (ED3), representative of transitioning grassland habitat. Vegetation cover is less than 50% in the ED2 areas and increases to more than 50% with grasses dominating in areas of ED3.



Figure 6-7 - Spoil and bare ground (ED2) with some recolonising bare ground (ED3)

6.8.1.6 Scrub (WS1)

Scrub, consisting mostly of established gorse, occurs particularly along field boundaries and drainage channels. Elsewhere gorse has largely been flailed and now occurs within grassland habitats, where Scrub regeneration is likely in the absence of intervention.



Figure 6-8 - Scrub (WS1)

6.8.1.7 A Note on Protected and Notable Flora

No protected or notable flora were recorded onsite. The habitats described above are typical of a managed agricultural landscape, and floral diversity is typically low in such settings.

Update Surveys

Update surveys in 2023 and 2025 found that habitats present at the Site, and the percentage coverage of these habitats, had not changed, and that the findings reported by O'Donnell Environmental were still valid.

6.8.2 WATERBODIES

6.8.2.1 Hydrogeology / Groundwater

The hydrogeological assessment undertaken for the Proposed Development is provided in updated Chapter 8:0 of this EIAR. The conceptual model identifies that the Site has a single groundwater table and that the bedrock and subsoils are hydraulically connected. The conceptual model shows that groundwater flooding can occur in low lying areas of the central valley feature within the Site and that this only occurs during peak winter groundwater levels. If surface ponding occurs during the summer, then it is due to rainfall and runoff.

Groundwater pathways in the bedrock will be shallow and mostly within weathered zones, and where present via fractures. Groundwater flow in the subsoils will be by vertical infiltration down to the water table or, in areas where the water table is deeper, to rock head. If the rock head is weathered then the vertical infiltration will continue to the water table in the weathered bedrock, or if

rock head is non-weathered then recharge will locally perch and flow along rock head to join the main water table. The conceptual model for the Site shows that the water table has a southward gradient and all lateral flow, whether in the subsoil and bedrock, drains towards the Cullenmore Stream south of the Site, which is the receiving water and receptor for all groundwater from the Site. The stream to the north of the Site, the Coynes Cross Stream, is not expected to receive any groundwater from within the Site boundary.

6.8.2.2 Watercourses (offsite)

As previously described, there are no watercourses traversing through the Site. Desk based assessment reveals that (see Figure 6-9) the Cullenmore stream flows east, approximately 45 m south of the southernmost extent of the Application boundary. The Cullenmore watercourse is bordered on the northern bank by a hedgerow (see Figure 6-10). After approximately 2.5 km, the Cullenmore enters the Murrough Wetlands, site of The Murrough Wetlands SAC, The Murrough SPA and The Murrough pNHA. It then discharges into Broadlough Estuary, and eventually into the Irish Sea after a further ~6.5 km; and

The Dunran Demesne watercourse is located approximately 300 m to the north of the Site.

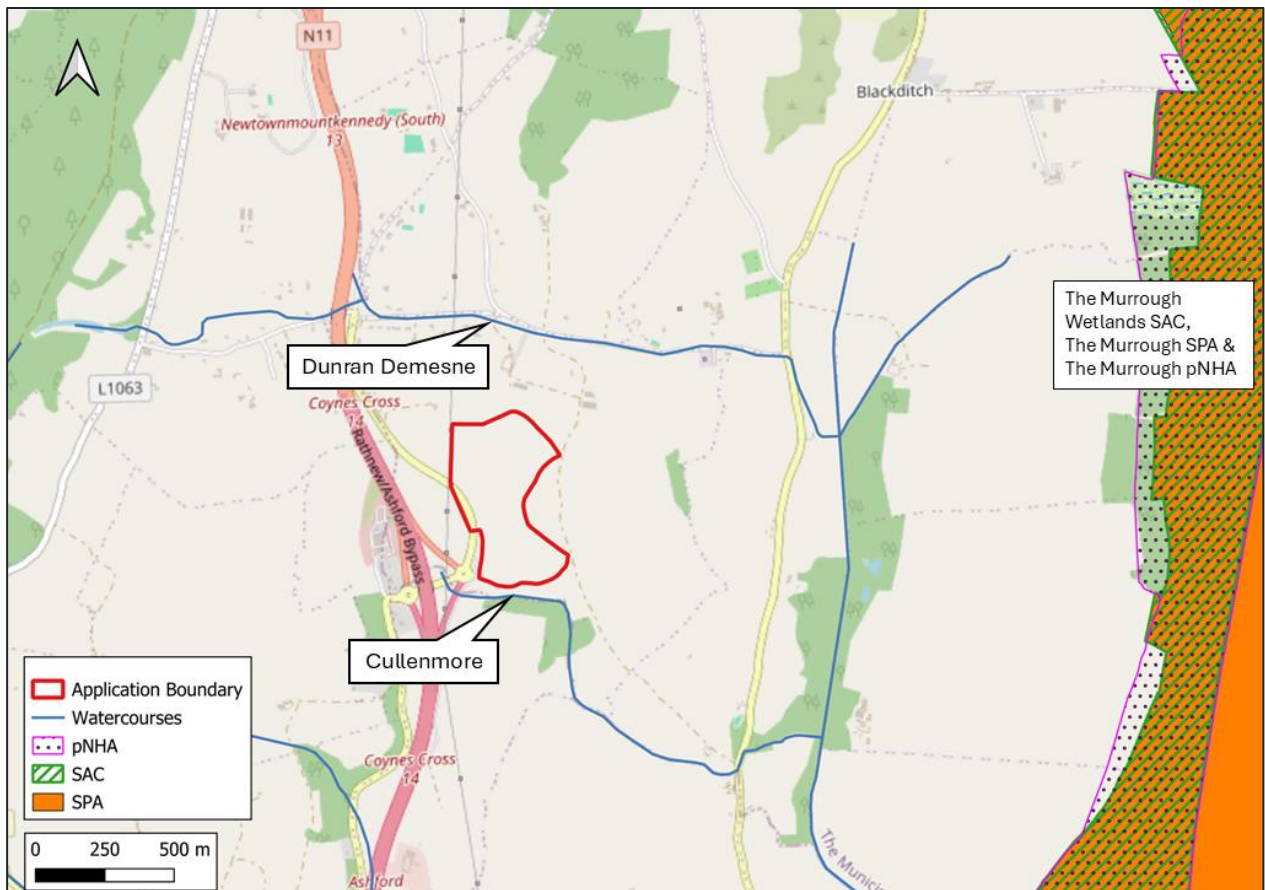


Figure 6-9 - Watercourses in the vicinity of the Site

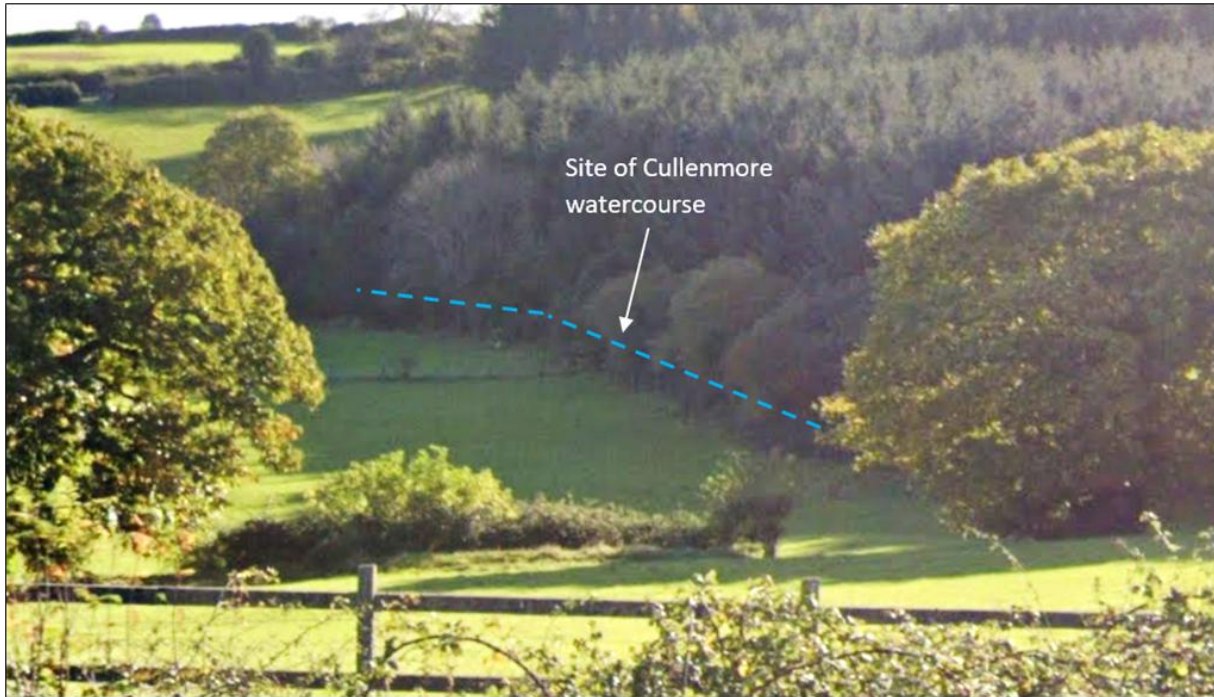


Figure 6-10 - Indicative location of Cullenmore watercourse – obscured from view by a hedgerow (source: Google Maps – imagery from May 2021)

6.9 BASELINE RESULTS: FAUNA ASSESSMENT

The presence, or potential presence, of species of fauna on the Site was determined based on a combination of desk study by WSP, and a site survey undertaken by O'Donnell Environmental Ltd in February 2022. A second walkover was carried out by WSP in August 2023.

6.9.1 HABITAT SUITABILITY

Suitable habitat was observed onsite for breeding birds, roosting, commuting and foraging bats, and several terrestrial mammals (notably including badger). No open waterbodies were recorded onsite, which is important in terms of the Site's lack of suitability for species such as otter, frogs and newts.

6.9.2 BIRDS

Within the 10 km grid square in which the study area is located (O20; NBDC) there are historic records for a total of 76 protected¹² or notable¹³ bird species (Table 6-6).

¹² 'Protected' in this case refers to the inclusion of a species in an Annex of the EU Birds Directive. It is acknowledged that all wild birds are protected under the Wildlife Acts (1976 and subsequent amendments).

¹³ Amber/Red-listed as per BoCCI 4 (Gilbert *et al.*, 2021).

Table 6-6 - Protected bird species previously recorded within the 10km grid square (O20) in which the Site is located (NBDC, 2026)

Common name	Species name	Legal Protection*	Conservation Status (BoCCI)
Barn Owl	<i>Tyto alba</i>	-	Red
Barn Swallow	<i>Hirundo rustica</i>	-	Amber
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	-	Amber
Black-legged Kittiwake	<i>Rissa tridactyla</i>	-	Red
Black-tailed Godwit	<i>Limosa limosa</i>	Annex II	Red
Common Coot	<i>Fulica atra</i>	Annex II, III	Amber
Common Gull	<i>Larus canus</i>	Annex II	Amber
Common Goldeneye	<i>Bucephala clangula</i>	Annex II	Red
Common Kestrel	<i>Falco tinnunculus</i>	-	Red
Common Kingfisher	<i>Alcedo atthis</i>	Annex I	Amber
Common Linnet	<i>Carduelis cannabina</i>	-	Amber
Common Pheasant	<i>Phasianus colchicus</i>	Annex II, III	Green
Common Pochard	<i>Aythya ferina</i>	Annex II, III	Red
Common Quail	<i>Coturnix coturnix</i>	Annex II	Red
Common Redshank	<i>Tringa totanus</i>	Annex II	Red
Common Sandpiper	<i>Actitis hypoleucos</i>	-	Amber
Common Shelduck	<i>Tadorna tadorna</i>	-	Amber
Common Snipe	<i>Gallinago gallinago</i>	Annex II, III	Red
Common Starling	<i>Sturnus vulgaris</i>	Annex II	Amber
Common Swift	<i>Apus apus</i>	-	Red
Eurasian Curlew	<i>Numenius arquata</i>	Annex II	Red
Eurasian Teal	<i>Anas crecca</i>	Annex II, III	Amber
Eurasian Tree Sparrow	<i>Passer montanus</i>	-	Amber
Eurasian Wigeon	<i>Anas penelope</i>	Annex II, III	Amber
Eurasian Woodcock	<i>Scolopax rusticola</i>	Annex II, III	Red

Common name	Species name	Legal Protection*	Conservation Status (BoCCI)
European Golden Plover	<i>Pluvialis apricaria</i>	Annex I, II, III	Red
Gadwall	<i>Mareca strepera</i>	Annex II	Amber
Goldcrest	<i>Regulus regulus</i>	-	Amber
Goosander	<i>Mergus merganser</i>	Annex II	Amber
Great Cormorant	<i>Phalacrocorax carbo</i>	-	Amber
Great Crested Grebe	<i>Podiceps cristatus</i>	-	Amber
Great Northern Diver	<i>Gavia immer</i>	Annex I	Amber
Great Spotted Woodpecker	<i>Dendrocopos major</i>	Annex I	Green
Greater Scaup	<i>Aythya marila</i>	Annex II, III	Red
Greenfinch	<i>Chloris chloris</i>	-	Amber
Grey Wagtail	<i>Motacilla cinerea</i>	-	Red
Greylag Goose	<i>Anser anser</i>	Annex II, III	Amber
Hen Harrier	<i>Circus cyaneus</i>	Annex I	Amber
Herring Gull	<i>Larus argentatus</i>	Annex II	Amber
House Martin	<i>Delichon urbicum</i>	-	Amber
House Sparrow	<i>Passer domesticus</i>	-	Amber
Jack Snipe	<i>Lymnocyrtus minimus</i>	Annex II, III	Green
Kestrel	<i>Falco tinnunculus</i>	-	Red
Kingfisher	<i>Alcedo atthis</i>	Annex I	Amber
Lesser Black-backed Gull	<i>Larus fuscus</i>	-	Amber
Little Egret	<i>Egretta garzetta</i>	Annex I	Green
Little Grebe	<i>Tachybaptus ruficollis</i>	Annex I	Green
Mallard	<i>Anas platyrhynchos</i>	Annex II, III	Green
Meadow Pipit	<i>Anthus pratensis</i>	-	Red
Merlin	<i>Falco columbarius</i>	Annex I	Amber
Mew Gull	<i>Larus canus</i>	-	Amber

Common name	Species name	Legal Protection*	Conservation Status (BoCCI)
Mistle Thrush	<i>Turdus Viscivorus</i>	Annex II	Green
Mute Swan	<i>Cygnus olor</i>	-	Amber
Northern Lapwing	<i>Vanellus vanellus</i>	Annex II	Red
Northern Shoveler	<i>Anas clypeata</i>	Annex II, III	Red
Northern Wheatear	<i>Oenanthe oenanthe</i>	-	Amber
Osprey	<i>Pandion haliaetus</i>	Annex I	Green
Peregrine Falcon	<i>Falco peregrinus</i>	Annex I	Green
Red Grouse	<i>Lagopus lagopus</i>	Annex II, III	Red
Red Kite	<i>Milvus milvus</i>	-	Red
Red-necked Phalarope	<i>Phalaropus lobatus</i>	Annex I	Red
Redwing	<i>Turdus iliacus</i>	Annex II	Red
Rock Dove	<i>Columba livia</i>	Annex II	Green
Sand Martin	<i>Riparia riparia</i>	-	Amber
Skylark	<i>Alauda arvensis</i>	-	Amber
Smew	<i>Mergellus albellus</i>	Annex II	Amber
Song Thrush	<i>Turdus philomelos</i>	Annex II	Green
Sparrowhawk	<i>Accuputer nису</i>	-	Green
Spotted Flycatcher	<i>Muscicapa striata</i>	-	Amber
Stock Dove	<i>Columba oenas</i>	Annex II	Red
Tufted Duck	<i>Aythya fuligula</i>	Annex II, III	Amber
Whinchat	<i>Saxicola rubetra</i>	-	Red
White Stork	<i>Ciconia ciconia</i>	Annex I	Green
Whooper Swan	<i>Cygnus cygnus</i>	Annex I	Amber
Willow Warbler	<i>Phylloscopus trochilus</i>	-	Amber
Yellowhammer	<i>Emberiza citrinella</i>	-	Red

During the walkover survey undertaken by O'Donnell Environmental (2022), the species listed in Table 6-7 were recorded (seen or heard). One Amber-listed species (Starling) and one Red-listed species (Yellowhammer) were observed.

Table 6-7 - Bird species recorded onsite.

Common name	Species name	Legal Protection	Conservation Status (BoCCI)
Blackbird	<i>Turdus merula</i>	-	Green
Buzzard	<i>Buteo buteo</i>	-	Green
Chaffinch	<i>Fringilla coelebs</i>	-	Green
Hooded Crow	<i>Corvus cornix</i>	-	Green
Jackdaw	<i>Corvus monedula</i>	-	Green
Magpie	<i>Pica pica</i>	-	Green
Starling	<i>Sturnus vulgaris</i>	-	Amber
Robin	<i>Erithacus rubecula</i>	-	Green
Rook	<i>Corvus frugilegus</i>	-	Green
Song Thrush	<i>Turdus philomelos</i>	-	Green
Yellowhammer	<i>Emberiza citrinella</i>	-	Red

The hedgerows, treelines and scrub onsite represented suitable nesting habitat for a variety of passerine avifauna.

6.9.3 NON-VOLANT MAMMALS

Within the 10km grid square in which the study area is located (O20; NBDC) there are historic records for a total of 18 mammal species (see Table 6-8). Red Fox (*Vulpes vulpes*), Eastern Grey Squirrel (*Sciurus carolinensis*), and Eurasian Badger (*Meles meles*) have previously been recorded in the 2 km grid square in which the study area is located (O20V; NBDC). It should be noted that:

Eastern Grey Squirrel is legally designated as an invasive species as per the Third Schedule of the Birds and Natural Habitats Regulations (S.I. 477/2011); and Eurasian Badger is listed as a protected species under the Wildlife Acts.

Table 6-8 - Mammal species previously recorded within the 10km grid square (O20; NBDC 2026) in which the Site is located

Common name	Species name	Legal Status*	Conservation Status**
American Mink	<i>Mustela vison</i>	AIS	AIS
Brown Rat	<i>Rattus norvegicus</i>	AIS	AIS
Eastern Grey Squirrel	<i>Sciurus carolinensis</i>	AIS	AIS
Eurasian Badger	<i>Meles meles</i>	WA	LC
Eurasian Pygmy Shrew	<i>Sorex minutus</i>	WA	LC
Eurasian Red Squirrel	<i>Sciurus vulgaris</i>	WA	LC

Common name	Species name	Legal Status*	Conservation Status**
European Otter	<i>Lutra lutra</i>	Annex II/IV, WA	LC
European Rabbit	<i>Oryctolagus cuniculus</i>	AIS	LC
Fallow Deer	<i>Dama dama</i>	WA	AIS
Irish Hare	<i>Lepus timidus hibernicus</i>	Annex V, WA	LC
Irish Stoat	<i>Mustela erminea hibernica</i>	WA	LC
Pine Marten	<i>Martes martes</i>	Annex IV, WA	LC
Red Deer	<i>Cervus elaphus</i>	WA	LC
Red Fox	<i>Vulpes vulpes</i>	-	LC
Siberian Chipmunk	<i>Tamias sibiricus</i>	AIS	AIS
Sika Deer	<i>Cervus nippon</i>	AIS	AIS
West European Hedgehog	<i>Erinaceus europaeus</i>	WA	LC
Wood Mouse	<i>Apodemus sylvaticus</i>	-	LC
* Annex status (EU Habitats Directive), WA (Protected under Wildlife Acts 1976 and 2000); Alien Invasive Species (Birds and Natural Habitats Regulations, 2011). ** LC – Least Concern (Irish Red List – Marnell <i>et al.</i>, 2019).			

6.9.3.1 Badger

An underground mammal dwelling with a single entrance, classified as a badger sett, was recorded in a hedgerow located centrally within the proposed site. Monitoring was carried out at the sett entrance using a trail camera from 9 February 2022 to 3 March 2022 to determine the type and frequency of use of the sett. A badger investigated the sett entrance on 9 February at 1:12am. On 26 February at 9:08pm a badger investigated the sett entrance, entered the sett and departed again shortly afterwards. On 28 February at 9:07pm a badger investigated the sett entrance. Based on the size and context of the sett and its level of usage, the sett is considered to be a partially-used, 'outlier' badger sett in accordance with guidance from Scottish Badgers (2018).

Outlier badger setts may be occupied sporadically or seasonally, and use of individual outlier setts varies according to location and the badger group involved. The level of use, as evidenced by the camera footage, indicates that the sett was not being used for breeding purposes at the time of survey. If a female was using an outlier sett to rear cubs, it would be expected to observe a badger coming and going from the sett frequently. Badger latrines would also be expected near the sett, of which none were found.

Update Surveys

The survey in 2023 confirmed the continued presence of a single-entrance, active outlier badger sett at the location recorded in 2022.

The survey in 2025 noted that an additional entrance had been excavated at the same sett. In accordance with Scottish Badgers (2018) and Smal (1995), this does not affect the classification of the type of sett, because 2-entrance outlier setts are commonplace. Sett entrance locations are illustrated in Appendix 6E.

In response to observations received during the statutory consultation process, a Badger Mitigation Strategy has been prepared for the Proposed Development. The strategy sets out measures including pre-construction surveys, monitoring, ecological supervision, verification of sett status immediately prior to works and implementation of appropriate mitigation measures where required.

6.9.3.2 Other Mammals

The camera trap also recorded a fox and a rabbit investigating the badger sett. Fox and rabbit burrows were recorded within the survey area. Neither of these species is afforded any legal protection.

The survey did not yield any evidence of the presence of otter within the study area. It is nonetheless acknowledged that the nearby Cullenmore stream is suitable for commuting and foraging otters.

6.9.4 BATS

All Irish bat species are protected under the Wildlife Acts. All Irish bats are listed in Annex IV of the Habitats Directive, and the Lesser Horseshoe Bat (*Rhinolophus hipposideros*) is further listed under Annex II.

The National Biodiversity Data Centre holds previous records of bat presence from within the 10km square (O20; NBDC 2026) in which the proposed site is located. These records are for Common Pipistrelle (*Pipistrellus pipistrellus*), Soprano Pipistrelle (*Pipistrellus pygmaeus*), Daubenton's Bat (*Myotis daubentonii*), Brown Long-eared Bat (*Plecotus auritus*), Leisler's Bat (*Nyctalus leisleri*), Natterer's Bat (*Myotis nattereri*) and Whiskered Bat (*Myotis mystacinus*).

The overall bat suitability index value (40.11) according to 'Model of Bat Landscapes for Ireland' (Lundy et al. 2011) suggests the landscape in which the locality of the study area is of high suitability for bats in general. Species specific scores are provided in Table 6-9.

Table 6-9 - Suitability of the study area for the bat species according to 'Model of Bat Landscapes for Ireland' (Lundy et al. 2011).

Common name	Scientific name	Suitability index
All bats	-	40
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	52
Brown long-eared bat	<i>Plecotus auritus</i>	58
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	58
Lesser horseshoe bat	<i>Rhinolophus hipposideros</i>	2
Leisler's bat	<i>Nyctalus leisleri</i>	54
Whiskered bat	<i>Myotis mystacinus</i>	40
Daubenton's bat	<i>Myotis daubentonii</i>	35
Nathusius pipistrelle	<i>Pipistrellus nathusii</i>	9
Natterer's bat	<i>Myotis nattereri</i>	53

Bat Conservation Ireland (BCI) conducted a search of their records database at the request of O'Donnell Environmental on 8 February 2022. The relevant search area included a 1km radius from Site. No roost data exists within or in close proximity to the proposed site.

One sweet chestnut tree was considered to be of ‘high’ suitability for roosting bats (following Collins, 2016). Another sweet chestnut tree and one ash tree were considered to be of ‘moderate’ suitability. The tree-climbing survey did not find any evidence indicating that bats were currently roosting onsite.

The ruins of a derelict church located approximately 100 m north of the Application boundary were surveyed for suitability for roosting bats. The building will not be directly impacted by the proposed works. The remaining structure consists only of some incomplete stone walls of up to 2m in height. No evidence of bat presence or historic occupation was found. There are numerous crevices within the remaining stonework which offer potential roosting opportunities to individual or small numbers of crevice dwelling bat species. The derelict church offers ‘negligible’ suitability to be used as a maternity roost for any species. The structure is considered to be of ‘low’ suitability for roosting bats.

A further bat survey was undertaken on 1 June 2026 in accordance with Bat Conservation Trust guidance (Collins, 2023). Four trees containing Potential Roost Features were inspected in detail using endoscope equipment and climbed inspections where necessary. Full details of the survey are provided in Appendix 6D. Four trees containing Potential Roost Features were inspected in detail using endoscope equipment and climbed inspections where necessary.

The survey confirmed the presence of a number of Potential Roost Features suitable for use by bats. However, no bats and no evidence of current or recent occupation were identified. The absence of droppings, staining, feeding remains or other evidence of use, combined with the detailed inspection of all identified Potential Roost Features, indicates that no evidence of current roost occupation was identified at the time of survey. While tree roosts may be used intermittently by bats, the survey findings indicate a low likelihood of regular or established roost occupation within the surveyed trees.

6.10 ECOLOGICAL EVALUATION

The evaluation of ecological features (sites, habitats and species) which could be affected by the project proposals is presented in Table 6-10. The table includes:

- Any statutory designated areas (or areas proposed for designation), with the exception of Natura 2000 sites (addressed separately through the AA process), which are situated within the applicable zones of influence;
- Any habitat type recorded within the Site and zones of influence; and
- Any species of conservation importance which has been confirmed as occurring within the Site and zones of influence.

Table 6-10 - Classifying the Importance of Ecological Features within Zols

Key Ecological Features	Importance (NRA, 2009)	Rationale
Designated and Notable Sites (with connectivity and excluding Natura 2000 sites)		
The Murrough pNHA	National	pNHAs are afforded national importance, in the same vein as NHAs.
Habitats		

Key Ecological Features	Importance (NRA, 2009)	Rationale
Improved agricultural grassland (GA1)	Local (lower value)	This habitat is extensive within the Site. It is anthropogenic in origin and inherently low in terms of floral diversity.
Exposed sand, gravel or till (ED1)	Local (lower value)	This habitat is inherently devoid of vegetation and is a direct result of anthropogenic activity. There is inherent potential to accommodate nesting sand martins, particularly in finer sediment, but sand martin nesting holes were not observed during site surveys.
Spoil and bare ground (ED2)	Local (lower value)	This habitat is inherently devoid of vegetation and is a direct result of anthropogenic activity (soil disturbance).
Dry meadows and grassy verges (GS2)	Local (lower value)	Semi-natural and diverse grassland. However, although more diverse than GA1, this habitat is a common and widespread example of unimproved grassland around Ireland. The habitat did not contain any examples of 'lowland hay meadows (<i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i>)' which is a habitat listed in Annex I of the EU Habitats Directive.
Scrub (WS1)	Local (lower value)	The scrub that exists on this site comprises monostands of gorse, which is a common, fast-growing and widespread species.
Hedgerows (WL1)	Local (higher value)	Inherent value as a linear woodland habitat. Also valuable as ecological corridors between features of higher ecological value. Hedgerows on this site also contain a diverse assemblage of shrubs. The retention ("where possible") of hedgerows is an objective (CPO 17.23) of the Wicklow County Development Plan 2022-2028.
Watercourses (Cullenmore and Dunran Demesne)	Local (higher value)	Assigned 'Good' ecological status under the Water Framework Directive (2000/60/EC). They discharge into an area designated as an SAC/SPA and a proposed NHA.
Species		
Bats	Local (higher value)	The Site supports suitable roosting habitat. The size of the potential roosting cavities suggests that the resident population (if present) is limited to a local scale. The Site also supports suitable foraging and commuting habitat in terms of hedgerows and scrub.
Badger	Local (higher value)	The Site supports suitable foraging and sett-building habitat, and the presence of an active sett is confirmed within the project footprint (considered likely to be an outlier sett).
Otter	Local (lower value)	No evidence recorded indicating the use of the Site by otter. The Cullenmore stream, ~45 m from the southern boundary of the Site provides suitable commuting and foraging habitat.
Other Mammals	Local (lower value)	No evidence recorded indicating the use of the Site by other mammals. Hedgerows nonetheless provide suitable commuting, foraging and resting habitat.
Breeding Birds	Local (higher value)	The Site contains suitable habitat for breeding birds, notably including Yellowhammer (Red-listed per BoCCI 4 and observed onsite).
Wintering Birds	Local (lower value)	The site supports suitable foraging habitat for some wintering species known to forage on agricultural grassland. None of these species was recorded during the survey in February.

6.11 IMPACT ASSESSMENT

In accordance with the CIEEM (2022) guidelines, likely potential impacts were characterised by considering the parameters shown in Table 6-2.

Potential impacts may occur during the 'Works Phase' (the period during which enabling works and the filling will occur) and the 'Restoration Phase' (the period during which the Site will be landscaped and contoured to final specifications) Under the current programme, it is expected that the duration of operation of the soil recovery facility may last for between approximately 4 -10 years depending on availability of clean soil and stone to complete the Proposed Development. A restoration and aftercare phase for the Proposed Development has been considered along with the phasing of activities which is described in Chapter 3.0: Project Description.

For the purpose of clarity, this assessment uses the term 'works phase' to describe the period of time comprising the following construction activities:

- enabling works to provide facilities required for the operation of the soil recovery facility (I.e., entrance upgrades, establishment of office and welfare facilities, etc); and,
- the operation of the soil recovery facility (i.e. acceptance of clean soil and stone to Site and its subsequent emplacement within the fill area).

A restoration phase, broadly following the work phase (with some temporal overlap), will comprise the shaping on the final landform in the fill level, restoration of stored topsoil, seeding (where necessary), and planting with subsequent aftercare and maintenance.

Impacts may be indirect or direct. Direct impacts are directly attributable to an action associated with a development. Indirect impacts are often produced away from a development, or as a result of other initial impacts.

More than one potential impact acting on a feature simultaneously may have a cumulative impact that is greater than when the same impacts act in isolation. Cumulative impacts may entail the assessment of all the impacts of the scheme upon a feature (e.g. impacts at the construction and operation stage), or the combined impacts of a number of schemes that would affect the same area. The area affected may vary depending on the feature being considered.

6.11.1 IMPACTS TO EUROPEAN SITES

A Screening for Appropriate Assessment (AA Screening) has been produced separately by WSP to assess the likelihood of significant effects on European sites. The assessment considered all relevant impact pathways, including surface water, groundwater and hydrogeological interactions, disturbance effects and habitat loss. The AA Screening concluded that the proposal is not likely to lead to significant effects (directly or indirectly) on any European site, either alone or in combination with other plans or projects.

6.11.2 THE MURROUGH pNHA

In accordance with the zone of influence assigned for surface water contamination, The Murrough pNHA is not considered to have hydrological connectivity with the Site.

Whilst the Cullenmore watercourse is within the ZoI for dust emissions, the likely magnitude of dust emissions is such that environmentally significant dust deposition into the Cullenmore is unlikely. Significant impacts to The Murrough pNHA as a result of dust emissions are therefore also considered unlikely to occur.

6.11.3 IMPACTS TO HABITATS

The following impacts are considered likely without the implementation of mitigation measures.

6.11.3.1 Habitat Loss

The Proposed Development will involve clearance of the lands within the Application boundary, which in a habitat's context means that the existing habitats will be removed, at least temporarily. The completed site (after infilling works have ceased, and without any mitigation or compensation) will consist entirely of Improved Agricultural Grassland (GA1). This is based on the understanding that the proposed end-use of the Site is pastoral agriculture, and that there is no proposal at the outset to reinstate hedgerows.

The above scenario would result in the permanent loss of (approximately):

1. 800 m of Hedgerow (WL1);
2. 0.3 ha of Scrub (WS1);
3. 2.8 ha of Dry Meadows and Grassy Verges (GS2); and
4. 0.09 ha of disturbed ground (ED1/ED2).

The above scenario would also result in the temporary loss of approximately 11.5 hectares of existing Improved Agricultural Grassland, which would be temporarily removed during site preparatory works and would be occupied by bare ground during filling operations.

Significance

The loss of 800 m of Hedgerow is considered a permanent, negative impact, significant at a local (high) scale.

Considering the ecological evaluation of the area of Scrub within the Site (see Table 6-10), the loss of Scrub from the Site is considered a permanent, negative impact, but is not considered ecologically significant.

Similarly, considering the ecological evaluations of disturbed ground (ED1/ED2) within the Site (see Table 6-10, the permanent loss of these habitats from the Site is considered a permanent, neutral impact, and is therefore not considered ecologically significant.

Approximately 3 hectares of unimproved grassland, represented by Dry Meadows and Grassy Verges (GS2) will be removed and ultimately replaced by Improved Agricultural Grassland (GA1). Depending on the level of management to which the land is subjected post-filling, certain areas may revert to GS2. In the context of the surrounding environment and the wide distribution of GS2 locally and nationwide the significance of the loss of this habitat is somewhat diminished. This is considered a temporary, negative impact, but is not considered ecologically significant.

The temporary loss of Improved Agricultural Grassland, considering its inherently low ecological significance and its eventual proposed reinstatement, is considered a temporary, neutral impact, and is therefore not considered ecologically significant.

6.11.3.2 Dust and Noise Emissions

The habitats within the applicable zones of influence are considered sufficiently robust to dust and noise emissions, such that these emissions will not have a significant impact.

6.11.3.3 Impacts to the Cullenmore Watercourse

Whilst the Cullenmore watercourse is within the ZoI for dust emissions, the likely magnitude of dust emissions is such that significant dust deposition into the Cullenmore is unlikely. This is due largely

to the fact that there is a constant (albeit fluctuating in intensity) directional flow in linear watercourses, such that any dust particles that enters the watercourse is diluted and dispersed in a short timeframe. It should also be noted that the Cullenmore watercourse is screened from the Site by peripheral vegetation, such that the likelihood of the ingress of dust particles is further dampened.

The deposition of dust into the Cullenmore watercourse is therefore not considered ecologically significant.

6.11.4 IMPACTS TO BATS

The Proposed Development will involve clearance of the lands within the Application boundary, which includes all hedgerows, including three trees with potential as bat roosts.

Considering the nature of the proposal, the following impacts are considered likely without the implementation of mitigation measures.

6.11.4.1 Loss of Roosting Habitat

Surveys undertaken in 2022 and 2026 did not identify bats or evidence of current or recent roost occupation within any of the identified Potential Roost Features. However, having regard to the continued presence of suitable roost features and the possibility that such features may be used intermittently by bats, a precautionary approach has been adopted in the assessment.

On this basis, the loss of Potential Roost Features is considered a permanent negative impact of local importance in the absence of mitigation.

It should also be noted that the wilful disturbance or destruction of a bat roost (being the breeding or resting place of a protected wild animal) is an offence under Section 23 (5)(d) of the Wildlife Acts.

6.11.4.2 Loss of Commuting and Foraging Habitat

The loss of hedgerows also represents a loss of commuting and foraging habitat for local bat populations. It is acknowledged that the abundance of similar habitat in the surrounding landscape diminishes the significance of this impact. The affected hedgerows do not appear to be significant ecological corridors such that bats would become isolated from important resources in the event of the loss of this habitat. In this context, this represents a temporary to long-term negative impact during the operational phase of the Proposed Development. However, having regard to the availability of similar habitat in the surrounding landscape and the proposed replacement and enhancement of hedgerows as part of the restoration strategy, the impact is not considered ecologically significant.

6.11.4.3 Injury/Death of Roosting Bats

Surveys undertaken in 2022 and 2026 did not identify bats or evidence of current or recent occupation within any of the identified Potential Roost Features. However, given the continued presence of suitable roost features and the possibility that such features may be used intermittently by bats, a precautionary approach has been adopted within the assessment. In the absence of appropriate mitigation, the removal of trees containing Potential Roost Features could result in injury or death to bats should occupation occur prior to commencement of works.

This represents a permanent, negative impact, significant at a local (high) scale.

It should also be noted that causing injury to a bat is an offence under Section 23 (5)(c) of the Wildlife Acts.

6.11.4.4 Dust and Noise Emissions

The ground-level survey did not identify any potential roosts in the area surrounding the Application boundary. On this basis, and on the basis that bats are nocturnal (such that foraging or commuting bats will not be impacted by noise or dust emissions from works that will be restricted to daylight hours), any impacts from dust or noise emissions are not considered to be significant.

6.11.5 IMPACTS TO BADGER

The Proposed Development will involve clearance of the lands within the Application boundary, and the subsequent deposition of inert fill material, such that the ground level will increase by up to approximately 17 m in some locations. An active badger sett is located within the proposed fill area. The status of the sett has been confirmed through surveys undertaken in 2022, 2023 and 2025, and a Badger Mitigation Strategy has subsequently been prepared for the Proposed Development (Appendix 6E).

Considering the nature of the proposal, the following impacts are considered likely in the absence of mitigation measures.

6.11.5.1 Loss of Breeding or Resting Habitat

In the absence of mitigation, the proposed works would result in the destruction and/or burial of an active badger sett. However, given that the sett is an outlier, and based on camera footage is neither a breeding sett, nor used frequently by badgers, it is considered that this badger sett is not currently a significant resource for the local clan in whose territory it exists. However, the status of the sett may change prior to commencement of works. Accordingly, the Badger Mitigation Strategy provides for pre-construction surveys, monitoring and verification of sett status immediately in advance of works to ensure that appropriate mitigation measures are implemented.

In this context, the loss of an active breeding sett represents a permanent, negative impact, significant at a local (high) scale.

It should be noted that the wilful disturbance or destruction of an active badger sett is an offence under Section 23 (5)(d) of the Wildlife Acts.

6.11.5.2 Loss of Commuting and Foraging Habitat

Badgers tend to use hedgerows as a guide when travelling around their surrounding environment. It is typical to find badger paths running parallel to hedgerows. They do not rely on hedgerows specifically as a source of food, as a large portion of their diet consists of worms. However, their preference for hedgerows as commuting corridors means that they often forage in the vicinity of hedgerows also.

It is however acknowledged that the abundance of similar habitat in the surrounding landscape diminishes the significance of this impact. The affected hedgerows do not appear to be significant ecological corridors such that badgers would become isolated from important resources in the event of the loss of this habitat. In this context, this represents a permanent, negative impact, but is not considered ecologically significant.

6.11.5.3 Injury/Death of Badgers

Given that the badger sett at the Site has been confirmed as active, and that the proposed works will result in the destruction and/or burial of the sett in the absence of mitigation, there is a risk that

works affecting the sett could result in injury or death to badgers. This represents a permanent, negative impact, significant at a local (high) scale.

It should also be noted that causing injury to a badger is an offence under Section 23 (5)(c) of the Wildlife Acts.

6.11.5.4 Dust and Noise Emissions

The ecological survey did not identify any other evidence of the presence of badgers. On this basis, and on the basis that badgers are nocturnal (such that foraging or commuting badgers will not be impacted by noise or dust emissions from works that will be restricted to daylight hours), any impacts from dust or noise emissions are not considered to be significant.

6.11.6 IMPACTS TO BIRDS

The Proposed Development will involve clearance of the lands within the Site, which will include the removal of suitable breeding habitat (scrub and hedgerows) for a variety of passerine species. The proposal will also result in the removal of suitable breeding habitat for some ground-nesting species that build nests preferentially in long grass (such as curlew and skylark, both of which have been recorded within the 10km square in which the Proposed Site is located).

Considering the nature of the proposal, the following impacts are considered likely without the implementation of mitigation measures.

6.11.6.1 Loss of Breeding Habitat (Hedgerows and Scrub)

Approximately 800 metres of hedgerow, and 0.29 hectares of scrub are proposed for permanent removal. It is however acknowledged that the abundance of similar habitat in the surrounding landscape diminishes the significance of this impact.

The loss of hedgerows and scrub as breeding habitat is considered a permanent, negative impact, but in the context of the surrounding environment, it is not considered ecologically significant.

6.11.6.2 Loss of Breeding Habitat (Unimproved Grassland)

Approximately 3 hectares of unimproved grassland, represented by Dry Meadows and Grassy Verges (GS2) will be removed and ultimately replaced by Improved Agricultural Grassland (GA1). Depending on the level of management to which the land is subjected post-filling, certain areas may revert to GS2. In the context of the surrounding environment and the wide distribution of GS2 locally and nationwide the significance of the loss of this habitat is somewhat diminished. It is also acknowledged that GA1 can be suitable for ground nesting species if not extensively grazed. It is further acknowledged that the current status of the Site as a pastoral grassland means that the risk of trampling somewhat diminishes the value of the Site as a breeding site for ground-nesting species.

The loss of unimproved grassland as breeding habitat is therefore considered a temporary, neutral impact, and is not considered ecologically significant.

6.11.6.3 Injury/Death of Nesting Birds or Disturbance of Nests

The destruction or disturbance of nesting habitat during the breeding season (statutorily 1 March – 31 August) has the potential to result in the injury or death of wild birds that may be nesting in that habitat. The confirmed presence of yellowhammer at the Site adds weight to the significance of this impact.

This represents a permanent, negative impact, significant at a local (high) scale.

It should also be noted that causing injury to a wild bird and/or the destruction or disturbance of nests is an offence under Section 22 of the Wildlife Acts.

6.11.6.4 Dust and Noise Emissions

For the reasons outlined in Section 6.6.6, noise emissions are not considered likely to result in significant impacts to avifauna in the surrounding environment.

Dust impacts to birds have been scrutinised in the context of poultry farms (Moe et al., 2015), whereby individuals are kept indoors and are subject to unnaturally-high quantities of dust, and suffer negative consequences. However, this scenario does not apply to the proposed works at this Site. It is considered that the level of soil disturbance and loose soil exposure is akin to the ploughing of a tillage field. Given that this is a common practice and is common in the surrounding landscape, dust emissions are not considered likely to result in significant impacts to avifauna in the surrounding environment.

6.11.7 IMPORTATION OF INVASIVE SPECIES

The proposed importation of fill material brings with it the inherent risk that viable seeds and/or tissue of plants listed in the Third Schedule of the Birds and Natural Habitats Regulations (S.I. 477/2011) may be inadvertently introduced to the Site. Under the Regulations, it is an offence to plant, disperse, allow or cause to disperse, spread or otherwise cause to grow any of the scheduled species. The proliferation of (e.g.) Japanese knotweed (*Reynoutria japonica*) would have negative impacts on floral diversity, as it grows quickly and out-competes native flora. Considering the largely agricultural landscape that currently dominates the Site and surroundings, impacts to floral diversity are somewhat diminished.

In this context, the importation of invasive species is considered a permanent, negative impact, significant at a local (low) scale.

6.11.8 DO NOTHING SCENARIO

In the absence of any development, the lands will continue to be used for low quality agricultural purposes, and the use will continue to be mainly for sheep grazing.

6.12 MITIGATION, COMPENSATION AND MONITORING

6.12.1 LOSS OF HEDGEROWS

Where hedgerow removal is required, replacement hedgerows will be established using native species of local provenance in accordance with the restoration strategy and the relevant landscape plans.

Replacement planting will be undertaken on a phased basis, where practicable, as areas become available during the progression of the filling works. In addition to replacement planting, existing retained hedgerows within and adjacent to the Site will be strengthened through supplementary planting with native species to improve structure, connectivity and biodiversity value.

The species mix will be based on native species already present within the local landscape and will be consistent with Teagasc (2010) guidance and local biodiversity objectives. Hedgerows will be managed to promote their establishment and long-term ecological function.

These measures will maintain and enhance ecological connectivity across the Site and will provide habitat for birds, bats, invertebrates and other wildlife throughout the operational and restoration phases of the Proposed Development.

6.12.2 BATS

Additional bat surveys were undertaken on 1 June 2026 in accordance with Bat Conservation Trust guidance (Collins, 2023). The surveys included detailed inspection of all identified Potential Roost Features using endoscope equipment and climbed inspections where necessary. No bats or evidence of current or recent occupation were identified.

Notwithstanding these findings, a precautionary approach will be adopted. Prior to any works affecting trees containing Potential Roost Features, a suitably qualified bat ecologist will undertake a pre-construction inspection and advise on any additional measures required.

6.12.2.1 Loss of Roosting Habitat and Injury/Death of Roosting Bats

If roosting bats are confirmed, then the destruction or disturbance of the roosts would be considered an offence under Section 23 (5)(d) of the Wildlife Acts. In this scenario, a derogation licence would be required via application to the National Parks and Wildlife Service.

An ecological consultant may suggest the following measures, or a combination thereof.

1. During tree-climbing surveys, if PRFs are found not to be in use, these can be sealed off in order to prevent bats re-entering.
2. Restrict clearance works to September/October, in order to avoid the maternity and hibernation seasons, when bats are most vulnerable.
3. Carry out 'soft felling', such that tree limbs are cut, lowered gently to the ground and left grounded overnight to allow any bats to escape;
4. After bats have evacuated the roost, affix limbs that contain roosting features to existing trees that are proposed for retention, so that PRFs are retained within the Application boundary;
5. Affix bat roosting boxes to existing trees that are proposed for retention. This will result in a positive net gain in PRFs within the Site; and
6. Appoint a suitably-experienced bat ecologist to supervise the above works.

If, after sufficient surveys have been undertaken, roosting bats are not found onsite, then a derogation licence will **not** be required to facilitate clearance works. However, in order to offset the loss of potential roosting habitat, it is suggested that steps 4-6 above be implemented, so that PRFs are retained and supplemented within the Application boundary.

6.12.3 LOSS OF BADGER BREEDING HABITAT

Mitigation measures relating to badgers will be implemented in accordance with the Badger Mitigation Strategy provided in Appendix 6E.

In advance of the commencement of site works, pre-construction surveys and monitoring will be undertaken to confirm the current status of the known sett and to identify any additional badger

activity within the Site. This will include camera monitoring where appropriate and review by a suitably qualified and experienced ecologist.

The status of the sett will be verified immediately prior to works and any required mitigation measures will be implemented in accordance with the Wildlife Acts, relevant guidance and the procedures set out in the Badger Mitigation Strategy.

6.12.4 INJURY/DEATH OF BADGERS

Mitigation measures relating to sett closure and avoidance of injury or death to badgers will be implemented in accordance with the Badger Mitigation Strategy provided in Appendix 6E.

Mitigation measures relating to the avoidance of injury or death to badgers and any works affecting badger setts will be implemented in accordance with the Badger Mitigation Strategy provided in Appendix 6E.

The Badger Mitigation Strategy sets out the procedures to be followed prior to and during implementation of the Proposed Development, including pre-construction surveys, monitoring, verification of sett status, ecological supervision and any mitigation measures that may be required in relation to badger activity identified at the time of implementation.

The strategy recognises that badger activity may change over time and therefore relies upon verification of sett status immediately prior to the commencement of works to ensure that mitigation measures remain appropriate and effective at the time of implementation.

Subject to implementation of the Badger Mitigation Strategy, the residual impact on badgers is predicted to be Not Significant.

6.12.5 INJURY/DEATH OF NESTING BIRDS OR DISTURBANCE OF NESTS

To limit the potential impact of construction on breeding birds, removal of woody vegetation (hedgerows and scrub) should be restricted to the non-breeding season (September to February, inclusive). Where the construction programme does not allow this, an ecologist should undertake a breeding bird check immediately prior to vegetation clearance. Where no breeding birds are present, clearance may proceed without requiring a derogation licence from the NPWS.

If the applicant intends to carry out clearance works during the bird breeding season, guidance should be sought from the NPWS with regard to compliance with Section 40 (1) and Section 40 (2) (1) of the Wildlife Acts (see below):

'40. (1) (a) It shall be an offence for a person to cut, grub, burn or otherwise destroy, during the period beginning on the 1st day of March and ending on the 31st day of August in any year, any vegetation growing on any land not then cultivated.'

'(1) (b) It shall be an offence for a person to cut, grub, burn or otherwise destroy any vegetation growing in any hedge or ditch during the period mentioned in paragraph (a) of this subsection.'

'40. (2) Subsection (1) of this section shall not apply in relation to (e) the clearance of vegetation in the course of road or other construction works or in the development or preparation of sites on which any building or other structure is intended to be provided.'

The above sections of the Wildlife Acts should be read as an additional consideration, on top of Section 22 of the Acts, which pertains to disturbance/destruction of nests and injury/death of wild birds.

6.12.6 IMPORTATION OF INVASIVE SPECIES

The proposed importation of fill material brings an inherent risk that viable seeds and/or tissue of plants listed in the Third Schedule of the Birds and Natural Habitats Regulations (S.I. 477/2011) may be inadvertently introduced to the Site. Under the Regulations, it is an offence to plant, disperse, allow or cause to disperse, spread or otherwise cause to grow any of the scheduled species.

To mitigate this risk, biosecurity measures will be implemented in accordance with the **Invasive Species Management Plan (ISMP)** which has been provided as a standalone document in the SID application submission.

6.12.6.1 Biosecurity Measures

The following measures will be adopted to mitigate against the spread of invasive species into and from the Site, both during site preparatory works and during filling operations (i.e. works phase).

- Power washing of construction machinery prior to arrival at the Site.
- Use of wheel wash facilities for all vehicles entering and leaving the Site.
- Installation of boot cleaning stations for site personnel.
- Clear signage and awareness measures for all site users.
- Verification that suppliers of all imported material are aware of the prohibition on invasive species.

Other measures outlined in the ISMP will be adopted where relevant.

6.12.6.2 Monitoring for New Growth

Annual surveys will be undertaken during the works phase and restoration phase to detect any occurrence of Invasive Alien Plant Species (IAPS).

Post-restoration monitoring will include one survey during the growing season following completion of restoration.

If IAPS are detected during works phase and restoration phase or post-restoration, treatment will be implemented promptly and follow-up monitoring for two consecutive years will confirm eradication.

6.13 RESIDUAL EFFECTS

Table 6-10 provides a summary of the effects deemed significant by the impact assessment process, as well as the mitigation proposed and any residual effects following implementation of mitigation.

Table 6-11 - Summary of Significant Impacts, Mitigation and Residual Impacts

Process	Ecological Feature	Characterisation of Impact	Impact without Mitigation	Mitigation/Compensation	Residual Impacts – Significance of Effects after Mitigation
Clearance of hedgerows	Habitat	Loss of valuable habitat. Reduction in floral diversity.	Permanent, negative impact, significant at a local (high) scale.	Planting of a new hedgerow, the species assemblage of which shall consist of native species.	Temporary, neutral impact. Net area coverage of hedgerow will ultimately remain the same. Floral diversity is likely to be higher.
Clearance of hedgerows	Bats	Loss of roosting habitat. Injury/death of individuals.	Permanent, negative impact, significant at a local (high) scale.	Further surveys are required to confirm the presence or absence of roosting bats. In either case, several measures are proposed to ensure death/injury to bats is avoided, and roosting habitat is retained and supplemented. All to be under supervision from a suitably experienced bat ecologist. Derogation licence required if bat roosts are confirmed.	Temporary, neutral impact. There will be a brief period (1-2 days) where PRFs have been cut down and are grounded, prior to affixing to nearby vegetation. There will be no residual risk of injury or death to individuals.
Site preparatory works and operational phase (works phase)	Badgers	Injury/death of individuals	Permanent, negative impact, significant at a local (high) scale.	Exclusion of badger from the sett, followed by careful destruction under supervision from a suitably experienced badger ecologist.	Temporary, neutral impact. A badger may experience some mild discomfort or distress if attempting to enter the sett during the exclusion period. There will be no residual risk of injury or death to individuals.
		Loss of breeding habitat	Permanent, negative impact, significant at a local (high) scale.	Pre-works surveys to confirm whether the sett remains a non-breeding sett. Subsequent actions to be determined based on the results.	No residual impacts are foreseen.
Clearance of hedgerows	Birds	Injury/death of individuals, disturbance of nests.	Permanent, negative impact, significant at a local (high) scale.	Avoidance of clearance during breeding season. If unavoidable, pre-clearance checks for nesting birds.	No residual impacts are foreseen. There will be no residual risk of injury or death to individuals.

Process	Ecological Feature	Characterisation of Impact	Impact without Mitigation	Mitigation/Compensation	Residual Impacts – Significance of Effects after Mitigation
Operational phase (works phase)	Habitats, floral diversity	Native flora out-competed for resources.	Permanent, significant negative impact at a local (low) scale.	Biosecurity measures to be implemented during site works, and periodic monitoring for growth.	No residual impacts are foreseen.

6.14 CUMULATIVE EFFECTS

The cumulative effects associated with other permitted / under construction third-party developments have been considered in Chapter 15.0 of this EIAR. Cumulative effects are considered to be **Not Significant**.

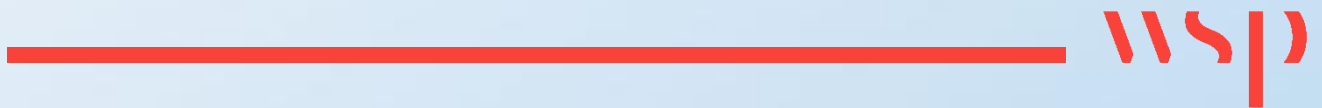
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Appendix 6A

**BAT SURVEY OF TREES (EIRE
ECOLOGY 2022)**





Environmental Consultants

EXAMINATION OF TREES WITH BAT ROOST POTENTIAL



DOCUMENT DETAILS

Client: WSP Golder.

Project Title: Kilmartin ecological surveys

Document Title: Bat Survey of Trees

Prepared By: John Curtin – Consultant Ecologist

Bats recorded: None

Date: 20/09/2022

Eire Ecology, Moyglass, Loughrea, Co. Galway

Tel +353 (085) 1179428 www.EireEcology.ie

1 Introduction

This report details the findings of a bat survey completed as part of an ecological assessment of fields in Coyne's Cross, Wicklow.

The survey aimed to;

- Examine trees for roosting potential.

The surveys undertaken are in line with recommendations in Chapter 11 of the Bat Conservation Trust 'Good Practice Guidelines, 3rd edition, 2016' (BCT, 2016) and The Irish Wildlife Manual No. 25' (Kelleher, 2006). The survey was designed and carried out by John Curtin B.Sc. (Env.). John has been carrying out bat surveys since 2012 and has completed over 100 surveys during this time. John has also completed the Bat Conservation Ireland, Bat Detector Workshop and Bat Handling Workshop which are the standard training for the carrying out of bat surveys in Ireland. He follows the Bat Conservation Ireland 'Good Practice Guidelines' (Aughney *et al.*, 2008). In addition, John is an active member of Bat Conservation Ireland, which monitor bat populations in Ireland, and facilitate the education of bat communities to the public.

Surveys previously conducted during 2022 included a preliminary ground level roost assessment assessed two Sweet Chestnuts of bat roost potential. At height tree surveys were conducted by Rik Pannett and overseen by John Curtin. John has found several tree roosts in the past and has taught on a Bat Conservation Ireland course on bat roosts in trees.

John holds the following licences.

Description	Licence No
Licence to capture protected wild animals for educational, scientific or other purposes (bats)	C231/2020
Roost disturbance (bats)	Der/Bat 2022-17
Licence to photograph / film wild animals (bats)	06/2021

2 DESKTOP STUDY

2.1 Bats in Ireland – Legislative Protection

There are two main pieces of legislation which cover wildlife protection in Ireland – the Wildlife Act and the Habitats Regulations. These are outlined below, with particular reference to the protection afforded to bat species in Ireland.

The Wildlife Acts 1976 and 2000

The primary pieces of national legislation for the protection of wildlife in Ireland are the Wildlife Act (1976) and the Wildlife [Amendment] Act (2000). All species of bats in Ireland are listed on Schedule 5 of the 1976 Act, and are therefore subject to the provisions of Section 23, which make it an offence to:

- Intentionally kill, injure or take a bat
- Possess or control any live or dead specimen or anything derived from a bat
- Wilfully interfere with any structure or place used for breeding or resting by a bat
- Wilfully interfere with a bat while it is occupying a structure or place which it uses for that purpose

The Habitats Regulations 1997-2005

The EC Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (Habitats Directive 1992) seeks to protect rare and vulnerable species and the habitats in which they are commonly found, and requires that appropriate monitoring of populations be undertaken. All bat species found in Ireland are listed under Annex IV of the Directive, while the lesser horseshoe bat is afforded further protection under Annex II. The Habitats Directive has been transposed into Irish law by the European Communities (Natural Habitats) Regulations 1997. All bat species are listed on the First Schedule and Section 23 of the regulations makes it an offence to:

- Deliberately capture or kill a bat
- Deliberately disturb a bat
- Damage or destroy a breeding site or resting place of a bat

Provision is made in the Regulations for the Environment Minister to grant, in strictly specified circumstances set out in that Regulation, a derogation license permitting any of the above activities “where there is no satisfactory alternative and the derogation is not detrimental to the maintenance of the populations of the species to which the Habitats Directive relates at a favourable conservation status in their natural range”.

2.2 Site Location

The proposed site lies in the townland of Kilmartin, Co. Wicklow.

2.3 Usage of trees by bats

Trees are a highly important feature of landscapes in that they provide roost sites throughout the year as well as being essential sources of insect prey. Therefore, the removal of such trees reduces the availability of shelter and feeding sites for bats (NRA 2005). The use of trees as roost sites is well established. Discovery of such roosts may be established by a variety of means including the use of a bat detector survey or alternatively by examination of all suitable crevices and cavities; commonly referred as Potential Roost Features (PRF's). Trees most likely to serve as bat roosts should be identified by a bat specialist from a walk-through of the route, from aerial photography or from a tree survey report.

3 SURVEY FINDINGS

A daytime assessment of trees within the proposed development site was undertaken on the 17th of September 2021 following reference to the following guidance documents.

- Andrews H. (2018) *"Bat Roosts in Trees – A Guide to Identification and Assessment for Tree-Care and Ecology Professionals"* - Bat Tree Habitat Key. Pelagic Publishing
- Collins, J. (ed.) (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edn). The Bat Conservation Trust, London
- Andrews H. *Surveying Trees for Bat Roosts: Encounter Probability v. Survey Effort* 2015
- Andrews H et al. 2013. *Bat Tree Habitat Key*. AEcol, Bridgwater
- Hundt L. (2012) *Bat Surveys: Good Practice Guidelines*, 2nd edition, Bat Conservation Trust, London
- Kelleher, C. & Marnell, F. (2006) *Bat Mitigation Guidelines for Ireland*. Irish Wildlife Manuals, No. 25. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.
- National Roads Authority (2005), *Guidelines for the Treatments of Bats Prior to the Construction of National Road Schemes*.
- Mitchell-Jones, Tony & McLeish, Andrew. (2004). *Bat Workers' Manual*.

Conditions were dry and sunny. All trees were assessed from ground level using binoculars while an arborist climbed each tree using torch and inspection camera (Rigid CA-300) examining for high potential roost features (PRF's). Such features include;

Knot-Holes – dead branch

Flush-Cuts – chainsaw cut of branch

Tear-Outs – wind or snow, often well below canopy

Double-Leaders - 2 stems of equal diameter emerge from same spot, cavity is located below split. Increased chance of roost where entrance hole is small

Wounds & Cankers - Rough edge, indistinct shape of entrance

Butt-Rot - decay at the base of a tree

Hazard-Beams - longitudinal splits in lateral limbs and (less frequently) upright stems allowing light to be seen through the gap typically found on Quercus, Salix and horse chestnut

Subsidence, Shearing & Helical-Splits - typically on the convex side of a bend

Lightning-Strikes - from crown to base.

Impact-Shatters - branch hit by falling tree etc.

Desiccation-Fissures - dead wood

Transverse-Snaps - branch / stem snapped however still attached

Lifting-bark

Unions - 2 independent branches (or double leader) fuses. Frequently Beech and Scots pine

Ivy - typically where the root forms a mat against the tree - rare for bat usage.

All trees within the subject site were ranked from 1 to 4 (see table 3-1).

Table 3-1: Categorise each tree according to Bat Conservation Trust 2 ed. (Hundt et al, 2012):

Tree Category	Description
1	Trees with multiple, highly suitable features capable of supporting larger roosts
2	Trees with definite bat potential but supporting features suitable for use by singleton bats;
3	Trees have no obvious potential although the tree is of a size and age that elevated surveys may result in cracks or crevices being found or the tree supports some features which may have limited potential to support bats;
4	Trees have no potential.

Evidence of bat usage sought during the surveys include:

- Bat droppings (these will accumulate under an established roost or under access points);
- Insect remains (under feeding perches);
- Oil (from fur) and urine stains;
- Scratch marks; and
- Bat corpses.

Tree 1. Overall assessment: High potential tree with several cavities suitable to host multiple bats. No evidence of bats recorded. Category 1.

Date: 16th of September 2022

Tree 1: Sweet Chestnut

Location: 53.04605335, -6.083504185. Southern tree



Peeling bark found at the base of the tree to the east, open to the top somewhat lowering potential.

Two further small cavities at base (c.10cm) suitable for single bats

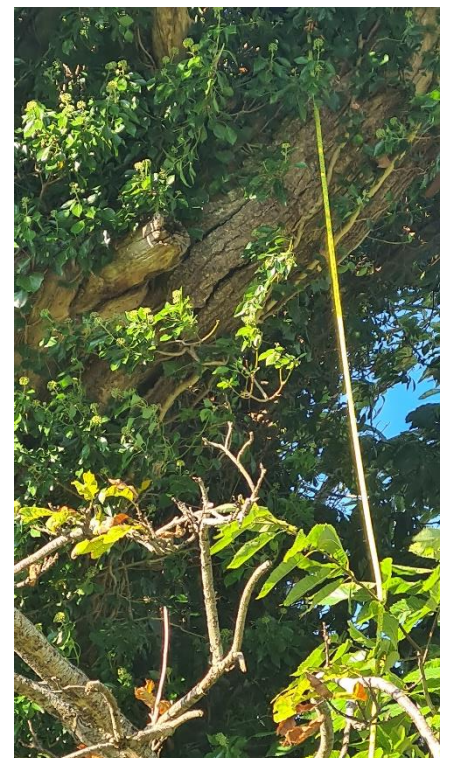
At western end a basal cavity continues into a burrow (+1m) while cavity continues up for 50cm.



Two cavities above (3) 25cm – no bats.



Peeling bark on stem with dead top. Open to side allowing water ingress reducing potential.



Date: 16th of September 2022

Tree 1: Sweet Chestnut

Location: 53.04605335, -6.083504185. Southern tree

Hole in dead branch. Travels up 15cm and down 80cm. Dry inside and is good potential.



To west. Knot hole c30cm deep. Dry. High potential. Has clear landing area devoid of leaves



Several other small cavities – no bats



Tree 2. Overall assessment: Mature tree with ivy cover. Ivy was examined however the roots do not form mats thick enough to form cavities thus potential of ivy was low. Tree has multiple tiny cracks of low potential. Other potential features did not form cavities. Overall category 3, of limited potential to support bats.

Date: 16th of September 2022

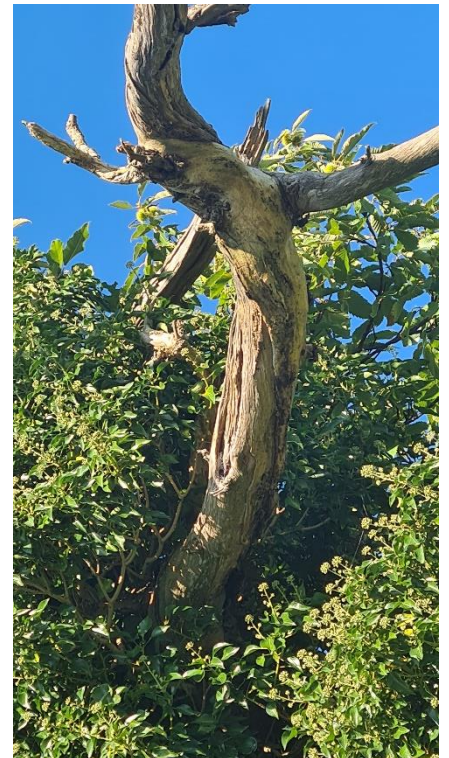
Tree 2: Sweet Chestnut

Location: 53.04655442, -6.083383821.

Ivy roots do not form mats



Dead branch with tear off does not form cavity.



Tree 3. Overall assessment: Tree contains two basal cavities that have potential to host bats although it less likely than at higher points in the tree. Category 2.

Date: 16th of September 2022

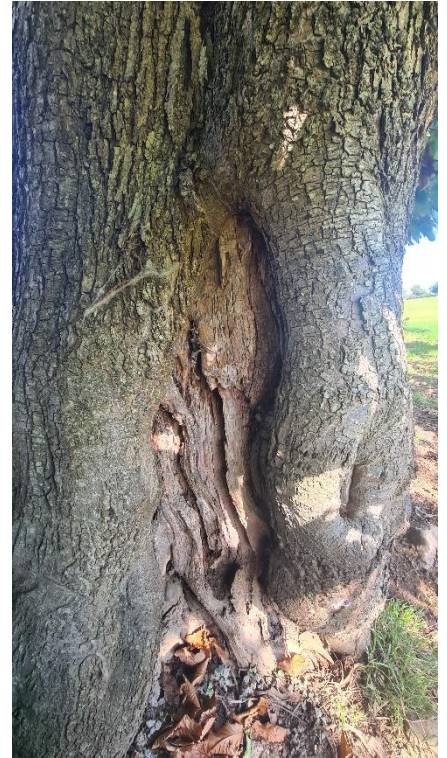
Tree 3: Sweet Chestnut

Location: 53.046779, -6.083326

Basal cavity 25cm deep has some potential however no evidence of bats was found.



Basal cavity 30cm deep has some potential however no evidence of bats was found.



Tree 4. Overall assessment: Tree contains cracks with potential for 1 or so bats but so shallow its unlikely. Category 2.

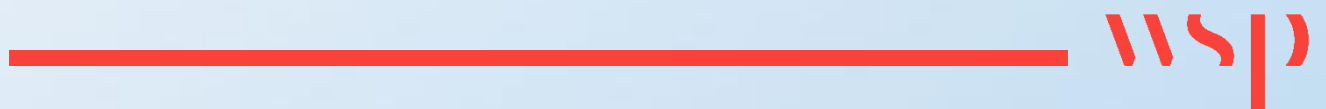
Date: 16 th of September 2022		
Tree 3: Ash		
Location: 53.04676397 -6.083358541		
Cracks in trunk		
		

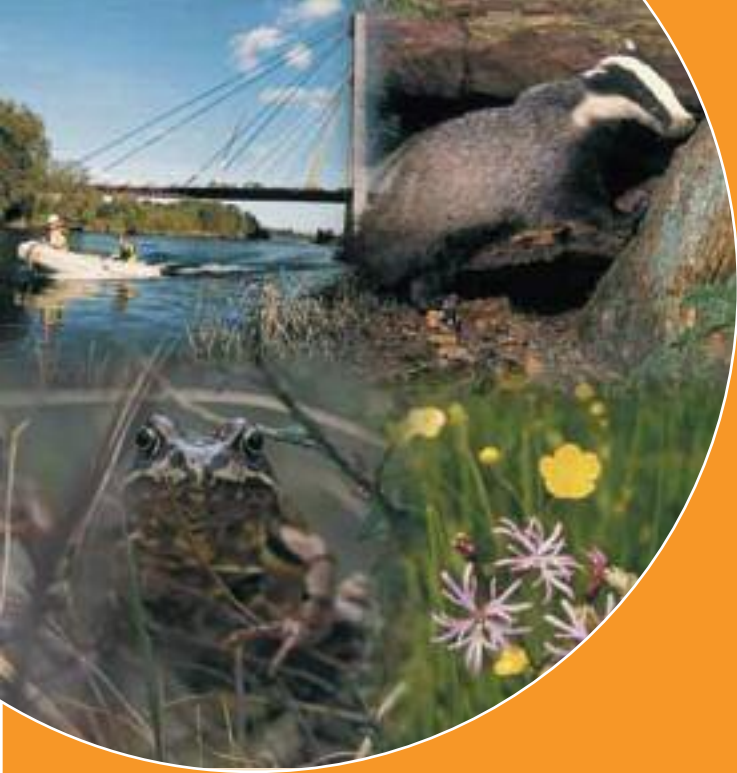
4 Conclusion.

This report details the findings of a bat survey conducted on trees in Kilmartin, Co. Wicklow. Two sweet chestnut trees were previously noted as having good bat potential based on a preliminary inspection when the trees had no leaves. These were examined at height however no bats or evidence of previous occupation was noted. After the at-height inspection tree one is placed as Category 1; good potential. Tree two has lowest potential (category 3) whilst trees three and four are both category 2 trees.

Appendix 6B

GUIDELINES FOR ASSESSMENT OF ECOLOGICAL IMPACTS OF NATIONAL ROADS SCHEMES





National Roads Authority

Guidelines for Assessment of Ecological Impacts of National Roads Schemes

Guidelines for Assessment of Ecological Impacts of National Road Schemes



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Guidelines for Assessment of Ecological Impacts of National Road Schemes

REVISION

This document was revised in 2009 to align it with changes in legislative, best practice and policy requirements with regard to Ecological Impact Assessment arising since the previous revision in March, 2006.

With regard to best practice and policy requirements the revisions take account of the procedure for the ecological component of Environmental Impact Assessment laid down in the Institute of Ecology and Environmental Management's (IEEM) (2006) *Guidelines for Ecological Impact Assessment in the United Kingdom*.

These Guidelines have also been revised to synchronise them with the supplementary guidance document: the NRA's *Ecological Surveying Techniques for Protected Flora & Fauna during the Planning of National Road Schemes* published in 2008.

With regard to legislative requirements, the Guidelines provide more detailed information on certain relevant environmental law provisions, including: Articles 25 and 30/33 of the Habitats Regulations, 1997; Articles 6(3) and 6(4) of the Habitats Directive; and the Environmental Liability Directive.

ACKNOWLEDGEMENTS

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The Authority wishes to express its appreciation to the following organisations for providing constructive comments in relation to the original document: National Parks and Wildlife Service; Environmental Protection Agency; Heritage Council; Department of Environment, Heritage and Local Government; Central Fisheries Board; South Western Regional Fisheries Board; Southern Regional Fisheries Board; Eastern Regional Fisheries Board; BirdWatch Ireland; An Taisce; Irish Peatland Conservation Council; CoastWatch Ireland; and members of the COST Action 341.

DISCLAIMER

While every care has been taken to ensure that the content is useful and accurate, the National Roads Authority and any contributing third party shall have no legal responsibility for the content or the accuracy of the information so provided or for any loss or damage arising directly or indirectly in connection with reliance on the use of such information.

CHAPTER 1
INTRODUCTION

Guidelines for Assessment of Ecological Impacts of National Road Schemes

1 INTRODUCTION

1.1 Background and rationale

The procedures followed by the National Roads Authority (NRA) and local authorities in the planning, design and implementation of road schemes are specified in the Roads Act, 1993, as amended, and in the NRA's (2000) *National Roads Project Management Guidelines* ('NRPMG'). A key objective of the NRPMG is to ensure the efficient delivery of the national roads programme in a manner which minimises adverse human and environmental effects while maximising the benefits of the new road infrastructure and respecting all applicable legislation.

The aim of this document (hereafter referred to as the 'Ecology Guidelines') is to provide guidance on the assessment of impacts on the natural environment during the planning and design of national road schemes. It elaborates on the references to ecology (habitats, flora and fauna) contained in the NRPMG, which provides the overall framework for managing the planning and design of national road schemes. In particular, the guidelines expand on the ecological work to be undertaken at the Constraints Study (CS) phase, Route Corridor Selection (RCS) phase and the subsequent preparation of the Environmental Impact Statement (EIS).

National road schemes are large developments that have potential impacts on the natural environment (habitats, flora and fauna, including fisheries) along their entire length. Concomitant with the need for new and safer roads, there has been a growing awareness of the need to conserve and protect Ireland's natural heritage and biodiversity. One of the objectives of the planning stages of road schemes is to avoid or reduce the negative impacts of the final route on the natural environment. This is achieved in part through the Environmental Impact Assessment (EIA) process that, for road schemes, is carried out in a series of project management phases, including CS, RCS and EIS (See Section 1.3).

When impacts on the natural environment are unavoidable, a variety of measures can be introduced to reduce, remedy or off-set these impacts. Principles and general guidance with regard to mitigation, compensation and enhancement measures are presented in this document. More detailed guidance with regard to individual habitats and species is available in the relevant supplementary guidance documents set out in Section 1.6.

The National Biodiversity Plan (Department of Arts, Heritage, Gaeltacht and the Islands, 2002) includes a requirement for all statutory agencies to prepare "guides to best practice" for any activities that have an impact on biodiversity conservation. These guidelines form part of the NRA response to the National Biodiversity Plan.

1.2 Environmental Impact Assessment

General guidance on the scope and detail of environmental impact assessment is available in *Guidelines on the information to be contained in Environmental Impact Statements* (Environmental Protection Agency, 2002), and the NRA's (2008a) *Environmental Impact Assessment of National Road Schemes - A Practical Guide*, helps to interpret this guidance in the context of road projects. The 'Ecology Guidelines' adopt the principles presented in these

guidance documents, whilst integrating the approach to impact assessment detailed in the Institute of Ecology and Environmental Management's (2006) *Guidelines for Ecological Impact Assessment*.

1.3 Outline of project management phases

In the *National Roads Project Management Guidelines* (NRPMG) (NRA, 2000), planning for road schemes in general is divided into four phases. Phase 1 involves the overall planning of the scheme, including defining the road need, obtaining NRA formal approval to carry out the further phases, appointing consultants, if programmed, and setting out to incorporate the need in the local development plan once approval for planning has been obtained from the NRA. Phases 2 and 3, the Constraints and RCS studies, are primarily concerned with the avoidance of impacts (i.e., where feasible) and the consideration of alternatives, two fundamental components of the EIA process. Phase 4 includes preparing the EIS for the preferred route. As the scheme progresses through the stages (from 2-4), the area of study generally decreases, or becomes more focused, while the level of detail in the study increases. The natural environment section of the CS phase involves a desk study only, while the RCS phase also includes fieldwork. The preparation of the natural environment section of the EIS requires an in-depth study of the preferred route corridor, including both desk study and field study. This is summarised graphically in Figure 1.

Guidelines for Assessment of Ecological Impacts of National Road Schemes

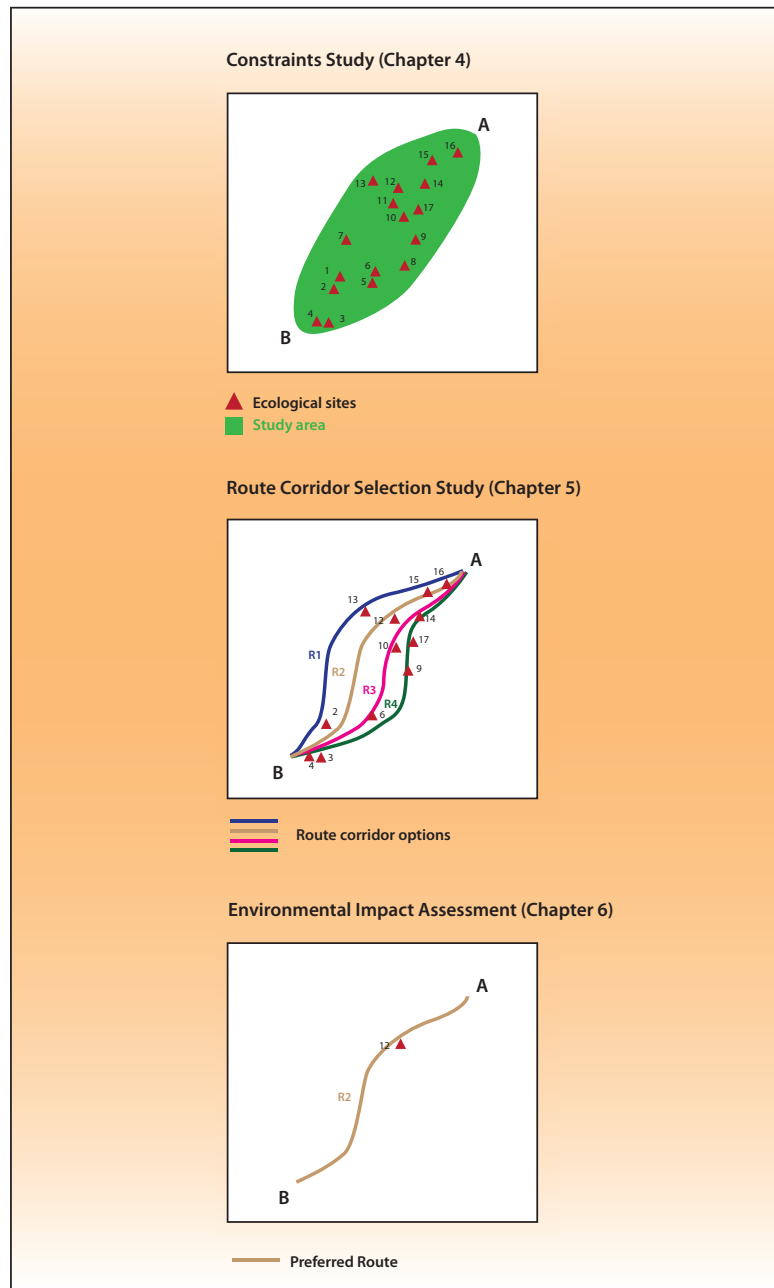


Figure 1: The phases of planning for ecological assessment of national road schemes showing a typical study area and route corridors

1.4 Consultees

Consultees in the EIA process include authorities or agencies with statutory responsibility for the protection of the natural environment, including the collection and provision of data and information, and those to whom ecological aspects of the proposed development may be referred for comment. For the natural environment, the main statutory bodies are the National Parks and Wildlife section of the Department of Environment, Heritage and Local Government, and the

Central and Regional Fisheries Boards¹ (Department of Communications, Energy and Natural Resources). These agencies have special responsibilities to respond to the procedural and pragmatic demands of EIA. They should be approached initially at an early stage in the planning process to inform them of the development proposals, to seek data or information about the existence or significance of ecological or natural resources and, later, to seek evaluations of the likely acceptability of residual impacts or mitigation proposals. The EPA and the Heritage Council may also be consulted on certain issues affecting the natural environment.

Of the voluntary groups, only An Taisce is prescribed under planning legislation to have special rights as a statutory consultee, while it and other Non-Governmental Organisations (NGOs) have responsibilities that can interact with the EIA process in a number of ways. Early, open and constructive engagement has frequently proven to be beneficial to both the protection of the environment and to the quality of development projects (EPA, 2002). The main NGOs with an interest in the natural environment include An Taisce, BirdWatch Ireland, the Irish Wildlife Trust, the Irish Peatland Conservation Council, CoastWatch Ireland and Bat Conservation Ireland. These organisations, and others, can provide an informed and experienced focus and, where appropriate, their views should be sought at an early stage. They can help to identify additional sources of data/information and can ensure that potential issues, which might lead to costly work at a later stage, are not overlooked.

1.5 REQUIREMENTS OF AN ECOLOGIST

The survey and assessment of the natural environment for the purpose of these guidelines requires expertise, experience, independence and objectivity. The ecologist should hold appropriate academic qualifications, have relevant experience and be accredited by a recognised professional body. The EPA (2002) provides guidance on the requirements of environmental specialists and this includes the need for qualified ecologists to carry out the environmental assessment of road schemes. In summary, the ecologist should be capable of characterising the existing environment and evaluating its importance. The ecologist must also be able to predict how the proposed road scheme will interact with the receiving environment. Where mitigation measures are required, the ecologist must be capable of assisting in designing such measures. The ecologist should have a knowledge of the relevant legislation and standards that apply to the subject; be familiar with the relevant standards and criteria for evaluation and classification of significance of impacts; be able to interpret the specialised documentation of the construction sector, in so far as it is relevant to the natural environment; and be able to clearly and comprehensively present the findings. One individual ecologist is unlikely to have all the expertise necessary and various specialists may be required to carry out detailed surveys of fauna (e.g. bats, birds or invertebrates), flora (e.g. rare plants), vegetation communities, or of marine or freshwater habitats.

1.6 SCOPE AND STRUCTURE OF THE 'ECOLOGY GUIDELINES' AND SUPPLEMENTARY DOCUMENTS

Chapter 2 of this document presents a general overview of ecological resources in Ireland, their conservation status, and the legal and policy framework for their protection.

Chapter 3 provides guidance on ecological impact assessment procedures.

¹ The Regional Fisheries Boards have a statutory duty, under the Fisheries (Consolidation) Act, 1959, to conserve, protect, develop, manage and promote inland fisheries, including the conservation of fish, other species, habitats and the biodiversity of inland water ecosystems

Guidelines for Assessment of Ecological Impacts of National Road Schemes

Chapter 4, Chapter 5 and Chapter 6 set out the scope and detail of ecological surveys and impact assessments associated with each of the project management phases: CS, RCS study and EIS.

Appendix I identifies designated conservation areas in the Republic of Ireland.

Appendix II provides advice in relation to Appropriate Assessment (for those instances where road projects could affect European sites).

Appendix III provides advice on derogation licensing procedures in relation to protected flora and fauna.

Appendix IV discusses the provisions of the Environmental Liability Directive.

Appendix V deals with the issue of local authority works affecting Nature Reserves, Nature Refuges and Natural Heritage Areas (NHAs).

Guidance on ecological surveys is presented in a supplementary document: *Ecological Surveying Techniques for Protected Flora & Fauna during the Planning of National Road Schemes* (NRA, 2008b); hereafter referred to as the 'Survey Guidelines'. The appendices to this document present a suggested list of desk study contacts and key consultees; details of optimum seasonal survey timings; and legal, policy and conservation status of sites, habitats and species in Ireland. Further species and group-specific guidance on surveys and mitigation is presented in: *Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes* (NRA, 2006a); *Guidelines for the Treatment of Bats During the Construction of National Road Schemes* (NRA, 2005a); *Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes* (NRA, 2006b); and *Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes* (NRA, 2005b). Two further documents contain general guidance relevant to the issues addressed by the 'Ecology Guidelines', particularly in relation to mitigation measures: *A Guide to Landscape Treatments for the National Road Schemes in Ireland* (NRA, 2006c) and *Guidelines for the Crossing of Watercourses During the Construction of National Road Schemes* (NRA, 2005c). The NRA's (2006d) *Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, During and Post Construction of National Road Schemes* also contain relevant information.

CHAPTER 2

The Natural Environment

Guidelines for Assessment of Ecological Impacts of National Road Schemes

CHAPTER 2 THE NATURAL ENVIRONMENT

2.1 Introduction

Ecology is the study of the relationships between living organisms and between them and their physical environment, their energy flows and their interactions with their surroundings (EPA, 2002). Thus, the natural environment includes ecosystems, habitats and species of terrestrial, freshwater and marine environments, or the full range of biological diversity (biodiversity for short).

The framework for the identification and protection of these ecological resources is set out below.

2.2 Designated conservation areas

The national network of designated areas for nature conservation covers approximately 14% of the national territory of Ireland and includes the following site designations: Natural Heritage Area (NHA), Special Area of Conservation (SAC), Special Protection Area (SPA), National Park, Nature Reserve, Refuge for Fauna, Refuge for Flora, Wildfowl Sanctuary, Ramsar Site, Biogenetic Reserve and UNESCO Biosphere Reserve. Sites are designated by the Department of Environment, Heritage and Local Government under national legislation or EU directives and other international conventions, and are considered to be of prime importance for the conservation of valuable components of the natural environment (biodiversity, ecosystems, habitats and species). Many sites have multiple designations and the process of site selection and designation is ongoing. Designated areas fall into a hierarchy in terms of their importance for conservation and priority for protection, as outlined in Appendix I. The degree of protection afforded designated areas varies considerably but most are either legally protected, protected through ownership by the State, or their existence is recognised for most administrative purposes.

For the protection of fisheries, Ireland also supports a network of Salmonid Waters designated by the Department of Environment, Heritage and Local Government under the EU Freshwater Fish Directive (78/659/EEC).² These rivers, and a number of other non-designated waters, are important for salmonids (salmon and trout) and, accordingly, their water quality and fish habitat must be maintained.

The EU Water Framework Directive (2000/60/EC) establishes a framework for action to achieve a sustainable water policy. The Directive covers all community waters, including surface waters (e.g. rivers and lakes), transitional waters, coastal waters and groundwaters. A primary objective of the Directive is to ensure that no deterioration occurs in relation to the existing status of waters and that at least “good status” (based on ecological and chemical ‘status’) is achieved for all waters by 2015. Scannell (2006, p. 290) indicates that ‘*Under Art.6(1), Ireland must have ensured that registers of areas designated as requiring special protection under Community legislation and for the protection of surface or groundwater or habitats and species depending on water were established for each river basin district by December 22, 2004.*’ For more information on these issues readers are directed to *Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes* (National Roads Authority, 2008c).

² Council Directive of 18 July 1978 on the quality of fresh waters needing protection or improvement in order to support fish life (78/659/EEC), implemented in Ireland under the European Communities (Quality of Salmonid Waters) Regulations, 1988 (S.I. No. 84 of 1988)

Macken (2007, p. 7/23) states that under Part XIII of the Planning and Development Act, 2000, planning authorities have the power to designate ‘areas of special amenity’. These are designated by reason of an area’s outstanding natural beauty or its special recreational value and having regard to any benefits for natural conservation.

Planning authorities may also make an order for the preservation of ‘*any tree, group of trees or woodlands*’ if they consider that it is expedient in the interest of amenity or the environment to make such an order, for stated reasons (Macken, 2007, p. 7/25). The orders may prohibit, subject to any conditions or exemptions for which provision is made in the order, the cutting down, topping, lopping, or willful destruction of trees.

Planning authorities will often designate conservation areas under their County Development Plans. For example, Westmeath County Council’s *Draft County Development Plan 2008-2014* (WCC, 2008) proposes the designation of a number of ‘areas of high amenity.’ The draft objectives for these areas are: (1) To conserve the natural resources of each area in terms of landscape character, scenic quality, habitat value and water quality; (2) To provide for the use of each area for recreational purposes by local communities; and (3) To provide for the development of sustainable and natural resource tourism. A number of other County Development Plans contain similar designations with similar objectives.

2.3 Non-designated areas

The designated area network in Ireland is neither exhaustive nor static and there are many areas of semi-natural habitat outside these sites that are important for wildlife. These areas must be taken into consideration if the ecological resources of the wider countryside are to be maintained and protected. Section 3.3 provides guidance on the valuation of non-designated ecological resources.

2.4 Rare and protected species

Special consideration must be given in the planning of national road projects to protected species. Several species of flora and fauna are afforded protection under national, European and international law. At a national level, species are protected under, *inter alia*, the Wildlife Acts. At a European level, species are protected under, *inter alia*, the Birds Directive (Council Directive 79/409/EEC) and Habitats Directive (Council Directive 92/43/EEC), which are transposed into national law by various measures including the European Communities (Natural Habitats) Regulations, 1997-2005, and the European Communities (Conservation of Wild Birds) Regulations, 1985. In many cases a derogation licence will be required to remove or disturb these legally protected species or their habitats (see Appendix III).

Additionally, special consideration must be given in the planning of national road projects to species of conservation concern. The conservation status of a number of species is reviewed in the Red Data Books (Curtis & McGough, 1988, Stewart & Church, 1992, Whilde, 1993) where they are listed as rare, endangered, threatened or indeterminate, although these reviews are now somewhat out-of-date. More recent data on birds of conservation concern in Ireland is given in Lynas *et al* (2007). The Red Data Book (Vascular Plants) is currently being updated by Curtis *et*

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al. The conservation status of EU protected habitats and species is presented in *The Status of EU Protected Habitats and Species in Ireland* (DoEHLG, 2008a).

Guidance is presented in Section 3.3 on how to value rare and protected species in the context of EIAs for road projects. Information on the status of protected species and species of conservation concern is also collated and summarised in Appendix III of the ‘Survey Guidelines’.

CHAPTER 3

**Ecological Impact
Assessment**

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CHAPTER 3 ECOLOGICAL IMPACT ASSESSMENT

3.1 Introduction

Ecological impact assessment (EcIA) is a tool to identify, estimate and evaluate the consequences of proposed actions on the natural environment. It has been defined as “*the process of identifying, quantifying and evaluating the potential impacts of defined actions on ecosystems or their components*” (Treweek, 1999).

In the context of this document ‘ecological resources’ relate to sites, habitats, features, assemblages, species or individuals that occur in the vicinity of a project and upon which impacts are possible. The term ‘ecological receptors’ is used when impacts upon them are likely. The term ‘resources/receptors of ecological value’ is intended to refer to those that are judged to be of importance at a particular geographic scale (e.g. at an international, national, county scale – this is explained further in Section 3.3).

A range of activities tend to be associated with the construction, improvement, operation, maintenance and decommissioning of roads. Each of these will potentially give rise to changes in the natural environment that could have impacts upon resources of ecological value. It is possible to identify several broad impact types that are most often associated with road projects: habitat loss, habitat degradation, habitat fragmentation, disturbance, construction- and road traffic- related mortality. There are also opportunities throughout the different phases of national road development projects to generate positive impacts on ecological resources through habitat enhancement.

The approach to EcIA set out in the subsequent sections applies to each of the project management phases: CS, RCS and EIS, although the evaluation of ecological resources and investigation of potential impacts will be undertaken in increasing detail as the road project is refined. The principles and assessment methodologies are therefore set out in the remaining parts of Chapter 3, with guidance on how these should be applied within each project management phase given as appropriate in Chapter 4, Chapter 5 and Chapter 6.

3.2 Scoping for Ecological Impact Assessment

Scoping is the process by which the necessary information to be gathered during the environmental assessment of a road project is refined, ensuring that there is an efficient and economic use of resources, while gathering adequate information to fully inform the assessment of impacts upon the key ecological receptors.

It is an iterative procedure which should take place throughout each phase of the project management process, with the information gathered at each phase of project development being used to inform the requirements for survey and assessment at the next stage. As more information is collected, this should be used to amend the scope of the RCS study and, subsequently the EIS, as appropriate.

Effective consultation is also key within the scoping process. Engagement of stakeholders and statutory consultees helps to ensure that the key ecological issues are being adequately addressed and that the methodologies for data collection and impact assessment are appropriate. It is

important, therefore, that a framework for consultation is set out at an early stage of a national road development project and that discussions and reviews continue, as appropriate, throughout the project management phases.

3.2.1 Understanding a road project and predicting its likely impacts

Predicting the likely impacts of a road project requires a thorough understanding of the construction activities and project programme. It is necessary to review the various activities associated with road construction and operation that are likely to cause biophysical changes that would result in ecological impacts. As part of this, information will need to be obtained on the spatial extent, timing, frequency and duration of these activities. It is necessary also to consider activities throughout the lifetime of the project.

For a road project, the key construction activities that may result in ecological impacts are:

- ⊙ vegetation and soil stripping;
- ⊙ other earthworks;
- ⊙ blasting and other excavations causing high levels of noise and vibration;
- ⊙ construction of structures and hard surfaces;
- ⊙ construction of barriers to wildlife movements such as berms, fences, median barriers;
- ⊙ construction site drainage;
- ⊙ demolition operations;
- ⊙ air pollution and dust deposition;
- ⊙ work associated with site compounds and storage areas;
- ⊙ temporary access routes;
- ⊙ lighting;
- ⊙ movement of plant and vehicles;
- ⊙ disturbance associated with the presence of construction staff;
- ⊙ new planting; and
- ⊙ environmental incidents and accidents.

Key operational-phase activities include:

- ⊙ traffic use;
- ⊙ operational drainage;
- ⊙ lighting;

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- ⦿ management of new planting; and
- ⦿ maintenance operations.

3.2.2 Establishing a 'zone of influence' for the project

It is important to establish, on a project-by-project and phase-by-phase basis, the receiving environment for the activities associated with the project and the biophysical changes that are likely to result. It is important for each of these activities and the associated changes, to estimate an 'effect area' over which the change is likely to occur. Wherever possible, it is helpful to map the location of the various activities and their 'effect areas,' for example, zones within which noise is expected to increase, or the anticipated locations of drainage outfalls and the receiving watercourses. It is then necessary to identify, as part of this mapping exercise, the ecological areas and features (i.e. the ecological resources/receptors) likely to be affected by the biophysical changes caused by the project, however remote from the route. From this it will be possible to establish a 'zone of influence' for the project that encompasses all of its potential impacts. The 'zone of influence' should be reviewed as the project develops, through each of the project management phases.

3.2.3 Identifying the ecological 'resources' and requirements for detailed assessment

Ecological resources within the 'zone of influence' should be identified initially by desk studies and consultations and then by limited site inspections and walkover surveys, as appropriate. Guidance on when to undertake these investigations during the different project management phases is set out in Chapter 4, Chapter 5 and Chapter 6. As part of the desk studies, it is also important to collate contextual information wherever possible, to provide a background for subsequent elements of the assessment process. For example, in order to value a particular ecological resource within an appropriate geographic frame of reference (as explained in Section 3.3), it may be necessary to review the distribution and abundance of that resource on a national, county or local basis.

Whether further surveys then need to be undertaken, and the extent of these, will depend upon whether designated sites or protected species (or other sites, species or assemblages of ecological value) are likely to be affected significantly by any aspect of the project in question. The aim of the procedure should be to focus the assessment only on the likely significant impacts of the project (guidance on determining significance is presented in Section 3.4.4).

In making this decision, it is important to consider both direct and indirect impacts that could arise from the various project activities and their associated biophysical changes. For example, depending upon its location, the direct impact of vegetation clearance and earthworks on a site might be the loss of an area of valuable woodland habitat that supports a population of protected plants. The indirect impacts associated with this activity might be less obvious. This loss of habitat may, for example, change the dynamics or viability of a population of a protected animal species which forages within it, perhaps only on a seasonal basis. It might also, for example, have effects on the local hydrology that could affect plant species composition in adjacent areas. In addition, the loss of sheltering trees could increase the likelihood of windthrow in the future, potentially affecting a different group of protected species.

This part of the process culminates in the selection of those ‘key ecological receptors’ for which detailed assessment is required and the design of any further surveys that may be necessary to underpin this assessment. Further advice on the scope, detail, techniques and boundaries of ecological surveys is presented in the ‘Survey Guidelines’.

Whilst the EcIA process should focus only on likely significant impacts, *any* effects on a European site may need to be the subject of further investigations and actions; guidance on dealing with European sites is presented in Appendix II and, as appropriate, in Chapter 4, Chapter 5 and Chapter 6.

3.3 Valuing ecological resources

3.3.1 Geographic context for determining value

The following geographic frame of reference should be used when determining value:

- ⊙ International importance
- ⊙ National importance
- ⊙ County importance (or vice-county in the case of plant or insect species)³
- ⊙ Local importance (higher value)
- ⊙ Local importance (lower value)

The collection of adequate contextual information is crucial in determining the value of ecological resources at the lower end of the geographic scale. For example, when dealing with locally important resources, it is often not possible to rely on or refer to designated sites or equivalent criteria. So, to value a site, area of habitat, or species population in a meaningful way, it is necessary to have some understanding of the distribution and abundance of that resource on a local and county basis.

Table 1 provides Examples of valuation at different geographical scales. Examples of the valuation and selection of ecological receptors are provided in Table 2. It should be noted that such examples are indicative and that all ecological resources should be valued and selected by competent experts having regard to the guidance provided in Section 3.3.

³ For further information on the vice-county system in Ireland see:
<http://www.botanicgardens.ie/herb/census/webbvcs.htm>
<http://www.mothsireland.com/vcmap.htm>

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Ecological valuation: Examples

International Importance:

- ☐ 'European Site' including Special Area of Conservation (SAC), Site of Community Importance (SCI), Special Protection Area (SPA) or proposed Special Area of Conservation.
- ☐ Proposed Special Protection Area (pSPA).
- ☐ Site that fulfills the criteria for designation as a 'European Site' (see Annex III of the Habitats Directive, as amended).
- ☐ Features essential to maintaining the coherence of the Natura 2000 Network.⁴
- ☐ Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive.
- ☐ Resident or regularly occurring populations (assessed to be important at the national level)⁵ of the following:
 - ☐ Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or
 - ☐ Species of animal and plants listed in Annex II and/or IV of the Habitats Directive.
- ☐ Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971).
- ☐ World Heritage Site (Convention for the Protection of World Cultural & Natural Heritage, 1972).
- ☐ Biosphere Reserve (UNESCO Man & The Biosphere Programme).
- ☐ Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979).
- ☐ Site hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979).
- ☐ Biogenetic Reserve under the Council of Europe.
- ☐ European Diploma Site under the Council of Europe.
- ☐ Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988, (S.I. No. 293 of 1988).⁶

National Importance:

- ☐ Site designated or proposed as a Natural Heritage Area (NHA).
- ☐ Statutory Nature Reserve.
- ☐ Refuge for Fauna and Flora protected under the Wildlife Acts.
- ☐ National Park.
- ☐ Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA); Statutory Nature Reserve; Refuge for Fauna and Flora protected under the Wildlife Act; and/or a National Park.
- ☐ Resident or regularly occurring populations (assessed to be important at the national level)⁷ of the following:
 - ☐ Species protected under the Wildlife Acts; and/or
 - ☐ Species listed on the relevant Red Data list.
- ☐ Site containing 'viable areas'⁸ of the habitat types listed in Annex I of the Habitats Directive.

⁴ See Articles 3 and 10 of the Habitats Directive.

⁵ It is suggested that, in general, 1% of the national population of such species qualifies as an internationally important population. However, a smaller population may qualify as internationally important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

⁶ Note that such waters are designated based on these waters' capabilities of supporting salmon (*Salmo salar*), trout (*Salmo trutta*), char (*Salvelinus*) and whitefish (*Coregonus*).

⁷ It is suggested that, in general, 1% of the national population of such species qualifies as a nationally important population. However, a smaller population may qualify as nationally important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

⁸ A 'viable area' is defined as an area of a habitat that, given the particular characteristics of that habitat, was of a sufficient size and shape, such that its integrity (in terms of species composition, and ecological processes and function) would be maintained in the face of stochastic change (for example, as a result of climatic variation).

County Importance:

- ☐ Area of Special Amenity.⁹
- ☐ Area subject to a Tree Preservation Order.
- ☐ Area of High Amenity, or equivalent, designated under the County Development Plan.
- ☐ Resident or regularly occurring populations (assessed to be important at the County level)¹⁰ of the following:
 - ☐ Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;
 - ☐ Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;
 - ☐ Species protected under the Wildlife Acts; and/or
 - ☐ Species listed on the relevant Red Data list.
- ☐ Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.
- ☐ County important populations of species, or viable areas of semi-natural habitats or natural heritage features identified in the National or Local BAP,¹¹ if this has been prepared.
- ☐ Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county.
- ☐ Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.

Local Importance (higher value):

- ☐ Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared;
- ☐ Resident or regularly occurring populations (assessed to be important at the Local level)¹² of the following:
 - ☐ Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;
 - ☐ Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;
 - ☐ Species protected under the Wildlife Acts; and/or
 - ☐ Species listed on the relevant Red Data list.
- ☐ Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality;
- ☐ Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value.

Local Importance (lower value):

- ☐ Sites containing small areas of semi-natural habitat that are of some local importance for wildlife;
- ☐ Sites or features containing non-native species that are of some importance in maintaining habitat links.

Table 1: *Examples of valuation at different geographical scales*

⁹ It should be noted that whilst areas such as Areas of Special Amenity, areas subject to a Tree Preservation Order and Areas of High Amenity are often designated on the basis of their ecological value, they may also be designated for other reasons, such as their amenity or recreational value. Therefore, it should not be automatically assumed that such sites are of County importance from an ecological perspective.

¹⁰ It is suggested that, in general, 1% of the County population of such species qualifies as a County important population. However, a smaller population may qualify as County important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

¹¹ BAP: Biodiversity Action Plan

¹² It is suggested that, in general, 1% of the local population of such species qualifies as a locally important population. However, a smaller population may qualify as locally important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

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Ecological receptors subject to impacts associated with a new road scheme	Summary descriptions of the ecological receptors	Value of the ecological receptors	Selection as key ecological receptors
Hedgerow network (managed by regular cutting to a height of approximately 1.5m)	The hedgerows comprise mainly hawthorn (<i>Crataegus monogyna</i>), with ash (<i>Fraxinus excelsior</i>) and occasional sycamore (<i>Acer pseudoplatanus</i>). Dog-rose (<i>Rosa canina</i>) and ivy (<i>Hedera helix</i>) are common and frequently grow extensively up into the canopy, along with brambles (<i>Rubus fruticosus</i> Agg.). The ground flora is relatively species-poor and includes cow parsley (<i>Anthriscus sylvestris</i>), hart's tongue-fern (<i>Phyllitis scolopendrium</i>), ivy and herb-robert (<i>Geranium robertianum</i>).	These hedgerows are not particularly species-rich and are of limited intrinsic ecological value. They also do not link other features of particular ecological importance and, thus, the local hedgerow network should be valued as of Local Importance (lower value).	As set out in Section 3.4.1, in the context of national road projects ecological resources of below Local Importance (Higher Value) do not represent 'key ecological receptors' for which detailed assessment is required.
Two fields of species-poor damp grassland (each 0.5ha in size)	This area of grassland is subject to periodic flooding, is grazed irregularly and is dominated by rushes (<i>Juncus spp.</i>). Meadow-grasses (<i>Poa spp.</i>) dominate the grass sward, with yorkshire-fog (<i>Holcus lanatus</i>) also present. The fields support a low diversity of common herb species. A limited assemblage of invertebrates was noted during the walkover surveys and no other records of animal or plant species exist for this area.	This small area of grassland is likely to be of some local importance for wildlife but lacks the diversity and other characteristics of a more valuable site and should therefore be valued as of Local Importance (lower value).	As set out in Section 3.4.1, in the context of national road projects ecological resources of below Local Importance (Higher Value) do not represent 'key ecological receptors' for which detailed assessment is required.
Relict demesne woodland approximately 40 Ha in size with mixed deciduous/coniferous trees, an associated stream, and supporting rare/protected species.	This woodland contains a mix of native and non-native tree species including oak (<i>Quercus sp.</i>), ash, sycamore, beech (<i>Fagus sylvatica</i>), hazel (<i>Corylus avellana</i>) and yew (<i>Taxus baccata</i>). The ground flora is dominated by ivy with wood speedwell (<i>Veronica montana</i>), wood avens (<i>Geum urbanum</i>), dog-violet (<i>Viola riviniana</i>), wild angelica (<i>Angelica sylvestris</i>) and ramsons (<i>Allium ursinum</i>) also present. A moderately polluted (Q-value 3) stream, approximately 1m wide and 30cm deep runs through the woodland. Hairy St. John's wort (<i>Hypericum hirsutum</i>), a species legally protected under the Flora Protection Order, 1999, and green figwort (<i>Scrophularia umbrosa</i>) (listed in the Irish Red Data Book 1: Vascular Plants), have both been recorded near the stream in the recent past. There is a resident population of red squirrel present within the woodland and a 'main' badger sett has been found on one of the woodland boundaries. These species are protected under the Wildlife (Amendment) Act, 2000.	The site does not fulfill the relevant criteria for designation as a site of National Importance, nor is it likely to support protected species in nationally-important numbers. However, on the basis of the woodland's size and quality, the population of red squirrels is likely to be of County Importance in terms of its size. In addition, this represents a substantial area of semi-natural habitat with high intrinsic biodiversity. It also supports rare/declining species. On this basis, it should be valued as of County Importance.	As this site has been identified as being of County Importance, and a significant impact upon it is possible, it should be selected as a 'key ecological receptor' and as such requires detailed assessment.

Table 2: Examples of the valuation and selection of ecological receptors

3.3.2 Designated sites and features

In the case of designated sites or features, it is appropriate to recognise the level of ecological value accorded by that designation and value the site or feature accordingly within the subsequent assessment; the reasons for the designation then need to be taken fully into account within the impact assessment process. In addition, sites for which the process of designation has commenced should be valued equivalently. In the event that surveys reveal that designated sites no longer meet their criteria for designation, the potential for them to be re-established should be assessed and their current value interpreted in consultation with the relevant designating authority.

3.3.3 Un-designated sites and features that meet the relevant criteria for designation

As identified in Chapter 2, the network of site designation in Ireland is not exhaustive and it is important that the valuation process does not overly rely on existing site designation. Surveys may reveal sites and features that appear to meet the criteria for designation at a particular level. In this case, the resources should be valued accordingly and their importance confirmed with DoEHLG/NPWS and/or the potential designating authority.

3.3.4 Other resources of nature conservation value

Where areas of a particular habitat do not obviously meet criteria for selection as a designated site, or where it is appropriate to value an assemblage, species or population, it is important to consider the features that tend to characterise valuable ecological resources.

These include:

- ⊙ Species that are rare at a particular geographic scale, and the habitats or features upon which they depend;
- ⊙ species undergoing substantial declines in abundance and distribution;
- ⊙ endemic species;
- ⊙ species on the edge of their natural range or distribution, particularly where this is contracting;
- ⊙ large populations of uncommon species;
- ⊙ species-rich assemblages;
- ⊙ features exhibiting a high degree of habitat diversity, structural diversity, connectivity and/or valuable juxtapositions of otherwise less intrinsically valuable habitats, that create conditions favourable for rare or protected species.

Wherever possible, values should be assigned to ecological resources on the basis of their known (or perceived) rarity, status and distribution, and hence collating contextual information for the resource at different geographic 'levels' is particularly relevant. In many cases it is appropriate to assign a value to assemblages of species, and these can be of greater value than their constituent parts.

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3.3.5 Other considerations

For sites, features, habitats and populations that are currently below favourable conservation status, their potential to be restored and the potential value they could reasonably attain should be taken into account, and described, in the valuation process. In addition, some features that are of limited intrinsic ecological value may perform important ecological functions for adjacent designated sites (e.g. buffer zones). This should also be taken into account, and explained, in the valuation process.

3.3.6 Other attributes of ecological resources

People derive benefits from ecological resources in a variety of ways. Some elements of social value are likely to have formed part of the designation criteria for sites identified as important at a county level. For other, non designated sites, it is also appropriate to take account of considerations of social value, as far as this relates to ecology and nature conservation. For example, a local nature reserve or site of value for conservation education should be taken into account. It is important to ensure appropriate integration with the other relevant topic areas with regard to this issue.

Impacts on certain ecological resources may have financial implications. Whilst it is not intended that economic value be subsumed within the valuation of ecological resources, it is important to recognise, within the ecology and nature conservation topic, these financial implications and to ensure effective integration with other related topic areas.

The likely impacts on some species and groups (e.g. deer) need to inform project design and mitigation as a result of potential road safety and animal welfare issues, even when these are not selected as key receptors and/or the impacts upon their populations are not assessed as significant.

3.4 Impact assessment

3.4.1 General guidance

It is necessary to assess impacts, on an iterative basis, at several stages during project development: guidance is presented in Section 3.2 on the broad assessments necessary during the initial project management phases and to underpin selecting the key ecological receptors for which detailed assessment is required, on the basis of ecological value and likely significant impacts. More detailed impact assessment is then required during the latter stages of project development, in order to identify the need to avoid impacts, to help design mitigation measures and inform the assessment process. This should be reviewed as the project progresses to take account of design changes. As the impact assessment process continues, it will be necessary to distinguish between those design changes seeking to avoid or reduce impacts that go on to form an integral part of project design (and should therefore be assessed as part of the ‘unmitigated project’), and those that represent additional mitigation measures. Wherever possible all mitigation measures should be incorporated in project design, as that design progresses, on an iterative basis; however, for impact assessment purposes the ‘unmitigated project’ should include those measures where delivery is unequivocal and success is highly likely. Where more uncertainty exists, the

measures should be assessed as ‘mitigation’. For example, alterations in vertical adjustment and/or land-take to avoid impacts on an area of valuable habitat would properly be identified as an integral part of scheme design (and thus part of the ‘unmitigated project’). An operation to translocate an area of habitat that would otherwise be destroyed during site clearance would be an additional ‘mitigation’ measure. Once the mitigation measures have been refined and their likely success considered, it is necessary to assess any residual impacts. If significant adverse impacts remain likely, it may be appropriate to design measures to off-set these; once again, the positive impacts of these measures should also be assessed. (These issues are also addressed, in relation to impacts on European sites, in Section App.II.iv.c.)

The basis of the impact assessment should be a determination of which ecological resources within the ‘zone of influence’ are both of sufficient value to be material in decision making and, therefore, included in the assessment (valuation is described in Section 3.3) and likely to be affected significantly (determination of impact significance is addressed in Section 3.4.4). In the context of national road projects, ecological resources of below ‘Local Importance (higher value)’ should not be selected as ‘key ecological receptors’ for which detailed assessment is required.

3.4.2 Baseline conditions and cumulative impact assessment

The impact assessment should be undertaken in relation to baseline conditions within the zone of influence at the time of the proposed activities, in the absence of the project. Construction-phase impacts should relate to the date by which construction activities are anticipated to commence and their likely duration. Similarly, operational impacts should refer to predicted baseline conditions during the design life of the national road project.

It is necessary to predict future baseline conditions on the basis of:

- ⊙ environmental trends, including climate change;
- ⊙ locally-important factors such as changes associated with likely future management and land-use;
- ⊙ completed developments or developments currently under construction that could affect resources within the zone of influence in the future; and
- ⊙ other developments for which planning consent has been granted that also could affect resources within the zone of influence in future.

3.4.3 Characterising impacts

Having identified the project activities likely to give rise to significant impacts (as described in Section 3.2.1), it is then necessary to describe the resultant biophysical changes and to characterise the impacts on the ‘key ecological receptors’. In doing so, it will be important to liaise with colleagues in the project team, to ensure that the implications of these changes, e.g. in hydrology, noise or air quality, are fully understood and that there is appropriate integration between disciplines. It is necessary to ensure that any assessment of impact is sufficiently comprehensive:

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it needs to take account of impacts associated with construction and operation; direct, indirect and synergistic¹³ impacts; and those that are temporary, reversible and irreversible.

It is important that when identifying impacts, explicit reference is made to the aspects of ecological structure and function on which the key receptor depends, and that these are followed-through during the characterisation procedure.

The process of impact characterisation helps to build-up a balanced understanding of the nature of each impact and receptor. Consideration should be given during this process to the interactions between ecological receptors. For example, the loss of a particular habitat may have implications not just for those species directly living within or using that habitat, but also for others that may interact with those species.

When characterising impacts, wherever possible reference should be made to the following parameters:

3.4.3.1 *Magnitude*

‘Magnitude’ should be predicted in a quantified manner wherever possible and relates to the quantum of an impact, for example the number of individuals affected by an activity.

3.4.3.2 *Extent*

‘Extent’ should also be predicted in a quantified manner and relates to the area over which the impact occurs. Where the receptor is in an area of a particular plant community for example, Extent=Magnitude.

3.4.3.3 *Duration*

‘Duration’ is intended to refer to the time during which the impact is predicted to continue, until recovery or re-instatement (which may be longer than the impact-causing activity). This should be quantified wherever possible, and interpreted in relation to the ecological processes involved rather than on a human timescale.

3.4.3.4 *Reversibility*

‘Reversibility’ should be addressed by identifying whether an impact is ecologically reversible (either spontaneously or through specific action) and whether such an outcome is likely.

3.4.3.5 *Timing and frequency*

The timing of impacts in relation to important seasonal and/or life-cycle constraints should be evaluated. Similarly, the frequency with which activities (and concomitant impacts) would take place can be an important determinant of the impact on receptors and should also be assessed and described.

¹³ Synergistic impacts occur where two or more impacts/impact types act together to create a combined effect on one or more receptors greater than the sum of their separate effects.

3.4.3.6 Integration of impact characteristics

An informed integration, for each potentially significant impact, of each of these impact characteristics is necessary in order to underpin the determination of impact significance set out below.

In each case, it is important to assess the likelihood that the change will occur as anticipated and that the impact on ecological structure and function will manifest as predicted. Wherever possible, this should be based on previous evidence. The following scale should be applied (adapted from IEEM 2006):

Near-certain:	>95% chance of occurring as predicted
Probable:	50-95% chance of occurring as predicted
Unlikely:	5-50% chance of occurring as predicted
Extremely unlikely:	<5% chance of occurring as predicted

3.4.4 Determining impact significance

3.4.4.1 Effects on conservation status of 'key ecological receptors'

A likely change in 'conservation status' should be used as a measure to determine whether an impact on a habitat or species is likely to be significant, and it should be evaluated at whichever geographic scale is appropriate (see below).

In the context of ecological impact assessment of national road development projects, conservation status of a natural habitat means the sum of the influences acting on a natural habitat and its typical species that may affect its long-term natural distribution, structure and functions as well as the long-term survival of its typical species within a given geographical area. Thus, an impact will be significant if it would affect the long-term distribution, structure or function of the habitat in question as well as the long-term survival of its associated species, at the appropriate geographical scale.

Similarly, the conservation status of a species means the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within the appropriate geographic scale. Thus, an impact will be significant if it would affect the long-term distribution or abundance of the species' populations at the appropriate geographic scale.

For those species or habitats for which conservation objectives or targets have been set, then any impact which would inhibit the achievement of those targets would also be considered significant, at the geographic scale at which the target has been set.

Guidelines for Assessment of Ecological Impacts of National Road Schemes

3.4.4.2 *Effects on integrity of 'key ecological receptors'*

Likely effects on 'integrity' should be used as a measure to determine whether an impact on a site is likely to be significant. For this to be a valid approach, the site in question needs to be sufficiently complex to recognise ecosystem processes and functions. Otherwise it will be more appropriate to consider potential changes in the conservation status of the site's component habitats and species (see above).

In the context of ecological impact assessment for national road development projects, 'integrity' should be regarded as the coherence of ecological structure and function, across the entirety of a site, that enables it to sustain all of the ecological resources for which it has been valued. Impacts resulting in adverse changes to those ecological structures and functions would be considered to be significant.

3.4.4.3 *Process of assessing significance*

In this process, significance of ecological impact is determined empirically, on the basis of an analysis of the factors which characterise it, irrespective of the value of the receptor. Significance is determined by effects on conservation status or integrity, regardless of the geographical level at which these would be relevant.

If impacts are not found to be significant at the highest geographical level at which the resource has been valued, they may be significant at a lower level, and this should be tested sequentially. Similarly, impacts that do not affect the integrity of a site, may nevertheless affect the conservation status of a valuable constituent habitat or species, at a lower geographic scale. An equivalent approach also needs to be applied to mitigation and enhancement measures, which may have a significant beneficial impact, but at a higher or lower geographic scale than the value of the receptor to which they have been applied.

Key Ecological Receptor: principal elements of ecological value	Construction-phase Impacts	Operational Impacts	Ecological Significance if Unmitigated
Mixed deciduous/coniferous woodland habitat	There would be permanent loss of approximately 4 ha of woodland habitat along a boundary of the wood associated with land-take for the scheme (the road would be in a shallow cutting at this point). There would also be the potential for direct/indirect impacts on woodland habitat immediately adjacent to the land-take area as a result of physical damage to trees and compaction of the ground in the vicinity of the roots; increased exposure to windthrow in the future; trampling of ground flora associated with construction activities; and alterations in local hydrology. In the absence of mitigation, it is probable that this would occur, and would affect a further approximately 2 ha of woodland habitat.	Deposition of airborne pollutants (NO _x , ammonia, metals) and salt spray drift onto vegetation and soils adjoining the verge.	In this case it would be most appropriate to consider the significance of these impacts in combination, in terms of integrity of the site as a whole. It is considered that the impact on the site would be significant, primarily on the basis that: approximately 10% of the valuable woodland habitat would be lost, with a further 5% affected indirectly, meaning that ecological structure and function would be affected across a substantial proportion of the site. This loss of habitat could also threaten the viability of the red squirrel population; an important element of the ecological resources for which the site has been valued.
Stream	Potential indirect, temporary impacts as a result of hydrocarbon contamination and siltation associated with installation of a new culvert upstream (beyond the woodland boundary). In the absence of mitigation, it is probable that this will occur.	None. No operational discharge is proposed to this stream.	
Rare/protected plant species	No impacts envisaged as no specimens occur within or close to the land-take area.	None.	
Red squirrel	Individuals within the population would be affected by permanent losses of feeding resources and existing/potential prey sites. There would be the potential for the incidental mortality of individuals, including dependant offspring associated with site clearance (timed for September/October). On the basis of the detailed surveys completed to date, the risks of direct mortality are likely to be low. Disturbance to individual squirrels through construction noise and visual disturbance, and lighting is considered likely. Given that habitat loss would occur along a woodland boundary, no additional impacts of fragmentation are predicted, associated with the woodland population. Similarly, no habitat features linking these animals with a wider squirrel population would be severed by the scheme and thus there would be no additional fragmentation effects.	Some possibility of future road traffic-related mortality of small numbers of squirrels, but this is considered unlikely. No continuing effects of fragmentation.	

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Key Ecological Receptor: principal elements of ecological value	Construction-phase Impacts	Operational Impacts	Ecological Significance if Unmitigated
Badger	Main sett would not be affected directly as >30m from land-take. Some temporary disturbance of individuals when foraging as a result of construction noise and visual disturbance, and lighting, for those periods where night-time working is necessary. Land-take would entail some loss of foraging resources and would fragment the resident social group's existing territory.	The resident badgers would be expected to continue to access their territory but would be at increased risk of road traffic-related mortality. An increase in local mortality rate is considered 'probable'. ¹⁴	There would be no direct impacts on the main sett within the wood and thus badgers do not contribute to the assessment of significance outlined above. The impact on this social group would be a likely increase in the number of badger road deaths, and the majority of these are likely to occur beyond the site boundaries. It is also likely that other nearby groups would experience an increase in mortality rate associated with the new road scheme; it would therefore be appropriate to deal with badgers as a separate receptor, but on a scheme-wide basis.

Table 3: An illustrative example of impact characterisation and determining significance

¹⁴ Had a median barrier been included in the design of this part of the new road, it would have been necessary to take account of the fragmentation of territorial resources as well as increased rates of mortality.

3.5 Mitigation measures

The development of mitigation measures should be an iterative process, throughout project design. These measures need to be fully integrated into the project proposals and should involve elements of avoidance, reduction and restoration, in that order of priority. Mitigation measures should be developed primarily to address any significant impacts on key ecological receptors that have been revealed during the impact assessment process. However, some measures may also be necessary to ensure legislative and policy compliance; for example, when dealing with protected species that have not been identified as key ecological receptors, or for which significant impacts are not anticipated.

In each case, the appropriate form of mitigation should be tailored to the nature of the receptor and the impact being mitigated. Furthermore, the measures should be designed and presented in terms of the integrity or conservation status of the resources or features to which they apply. This ensures that the mitigation measures address significant impacts directly; allows them to be assessed more readily in terms of residual impact significance (see below); and monitoring, and remedial actions can be more effectively targeted. Decisions on the design of mitigation should be reached through consultation with the appropriate statutory and non-statutory bodies. It is imperative that the proposed mitigation can be justified in terms of likely success and cost-effectiveness.

It is important to set aims for mitigation measures at an early stage. Where mitigation measures are developed to address impacts on key ecological receptors, the aims should be determined on a case-by-case basis and as a minimum, and where appropriate, should seek to ensure that any residual impacts would not be significant. In some situations, it may be appropriate to set an aim of returning a receptor to pre-construction conditions. In specific circumstances, some mitigation measures may need to involve additional resources, on a precautionary basis, to take account of uncertainty with regard to the success of the proposals, but again the cost-effectiveness of such an approach should be ascertained.

In each case, it will be necessary to appraise the likely success of mitigation measures against the aims that have been set for them, ideally with reference to equivalent measures that have been employed in similar situations on previous projects. This appraisal should then inform:

- (a) decisions concerning the extent and type of mitigation to be employed, for example, it may be appropriate to specify a greater extent and number of alternative treatments for mitigation measures with a more uncertain outcome; and
- (b) the assessment of residual impacts.

In addition to potential deficiencies inherent in the mitigation measures themselves, it is necessary to identify external factors that also contribute to uncertainty of outcome. In situations where, for example, sites may be impacted by climate change consideration should be given to the use of less climate change sensitive options.

The assessment should only take account of mitigation proposals that have been fully agreed and incorporated within the design and construction process. Mitigation that cannot be guaranteed to be delivered should be clearly identified as such and should not be taken into account when assessing residual impacts.

Guidelines for Assessment of Ecological Impacts of National Road Schemes

3.6 Residual impacts

The significance of any residual impacts should be assessed by evaluating the likely effectiveness of the proposed mitigation in addressing the impacts on integrity and conservation status of each of the key ecological receptors. In doing so, the projected outcome and uncertainty of the mitigation measures should be taken into account.

Key Ecological Receptor: principal elements of ecological value	Mitigation	Residual Impact
Mixed deciduous/coniferous woodland habitat	Habitat loss would be minimised by reducing land-take through the construction of a retaining wall in place of a graded cutting slope; amount of woodland habitat removed now approximately 0.25ha. Hydrological (draw-down) effects would be minimised through the installation of a clay seal along the edge of the land-take parallel to the woodland. This measure would have a probable chance of success. The likelihood of future windthrow would be reduced by coppicing selected shrubs and trees in advance of site clearance, to establish a new woodland edge as rapidly as possible. This measure would also have a probable chance of success. The likelihood of damage to adjoining woodland habitat would be avoided by the use of protective fencing established at the outset and 'tool-box talks' to contractors (see NRA 2007); all construction works to be undertaken in strict compliance with NRA Guidelines (e.g. NRA 2006d). These measures have a probable chance of success. Landscape planting undertaken in this location to comprise an appropriate species-rich mixture of locally-provenant trees and shrubs, and designed to link with the existing woodland habitat and, in the longer-term provide linear extension to the woodland along the verge to either direction, comprising approximately 2ha.	The impact on this feature would no longer be significant, primarily on the basis that: now 0.6% of the woodland habitat would be lost and it is unlikely that there would be substantial indirect effects on the remainder. Thus ecological structure and function would be expected to remain unaffected. In the longer-term, the area of new planting may actually represent a net beneficial effect. Similarly, it is likely that the red squirrel population would remain viable: given the size of their home ranges and the fact that a narrow strip of habitat removal along the edge of a wood would probably involve very small losses from several ranges, it is likely the loss of resources from any individual squirrels would be insignificant. NB. Having assessed the residual impacts on the site of County Importance to be not significant, it would be appropriate also to consider separately the residual impacts on semi-natural woodland habitat, red squirrels and badgers, in the context of their local conservation status, in the event that there would be a significant impact at that (lower) level. In this case, however, it is unlikely that any of these impacts would be significant, even at the local level.
Stream	Culvert construction in compliance with NRA Guidelines (2005c), incorporating effective pollution controls. These have a 'probable' likelihood of success.	
Rare/protected plant species	No additional measures required; already avoided.	
Red squirrel	The measures above would also serve to mitigate the majority of the impacts on red squirrels. In addition, the felling and removal of trees would be undertaken in a manner that minimises the likelihood of killing adult squirrels and would now take place in December, further reducing the likelihood of encountering dependent young. This would increase the confidence in avoiding squirrel mortality during construction to near-certain.	
Badger	Future road traffic-related mortality of badgers would be minimised through the provision of badger-resistant highway fencing to direct the animals to a nearby mammal underpass. This measure would be focussed in part on mitigating the effects of road operation on the woodland site and its constituent species, but would also form part of a wider, scheme-wide provision, with the intention of minimising impacts on the local badger population and improving road safety on the new scheme.	

Table 4: An example illustrating mitigation options and residual impact assessment

Guidelines for Assessment of Ecological Impacts of National Road Schemes

3.7 Informing project appraisal and integration with other topics

Reference should be had to the NRA's *Project Appraisal Guidelines* (2008d) and *National Roads Project Management Guidelines* (2000) (and any relevant revisions or amendments to these documents) on the issue of 'informing project appraisal and integration with other topics.'

In summary, the residual impacts identified (in the manner outlined above) should be interpreted in the context of the geographic scale at which the receptor they affect has been valued. The analysis of all residual impacts will then form the basis of a quantitative statement (NRA, 2008d). This quantitative statement, along with required qualitative statements, will form part of the Project Appraisal Balance Sheet ('PABS') (NRA, 2008d).¹⁵ The quantitative and qualitative statements will then be interpreted and a scaling statement devised that ranks the complete selected route on a seven-point scale.

3.8 Compensation and related measures

In the context of assessment procedures for national road projects, 'compensation' refers to measures to address residual impacts on European sites (e.g. Special Area of Conservation (SAC), Site of Community Importance (SCI), Special Protection Area (SPA) or *proposed* Special Areas of Conservation) or protected species. This is set out in more detail in Appendix II and Appendix III.

3.9 Enhancement measures

Road projects routinely present opportunities to enhance ecological resources in their immediate vicinity, for example, through the creation of habitat features parallel to the scheme that link otherwise fragmented sites, or through improvements in pollution controls. These often do not address specific (or significant) adverse impacts, but may nevertheless be considered worthwhile. Where these contribute to project objectives and/or national or local policies, they should be adopted in a cost-effective manner, with priority given to those measures that would make a meaningful contribution to the local conservation status of the habitats or species in question.

¹⁵ The PABS will provide an overview of the costs and benefits of the road project.

CHAPTER 4

**Constraints Study
(Natural Environment
Section)**

Guidelines for Assessment of Ecological Impacts of National Road Schemes

CHAPTER 4 CONSTRAINTS STUDY (NATURAL ENVIRONMENT SECTION)

4.1 Objectives

The objective of the natural environment section of the CS is to identify the international, national, county and local issues that must be taken into account when planning and designing roads so that the phases which follow (RCS study and EIS) can be planned properly. For the natural environment, this includes the main ecological constraints that should be avoided or that could affect the design of the scheme, delay progress or influence the costs.

4.2 Approach

The natural environment section of the CS is primarily a desk exercise that comprises a search for available information, or information that can be readily obtained.

One of the first exercises to be completed during the CS phase is defining the CS area. In terms of the natural environment (note that other disciplines may required additional areas to be considered), the extent of the CS area should based on the broad corridor within which route corridor options are likely to be located and their potential zones of influence (see Section 3.2.2). In defining the CS area one should take into account the full range of impacts that could arise including, for example, indirect impacts on wetlands and river systems or impacts on highly mobile groups such as bats and birds that could be associated with important sites some distance from the project.

Following definition of the CS area a review of available information should be completed, after which the ecological resources present in the CS study area should be presented in the CS Report. The CS Report should include summary details of the ecological resources within the study area and a map that shows the location and extent of these constraints.

Consultations with the Department of Environment, Heritage and Local Government and the relevant Regional Fisheries Board should be initiated. Details of the statutory designations and protection for sites and species, or legislative requirements regarding the environment, should be established.

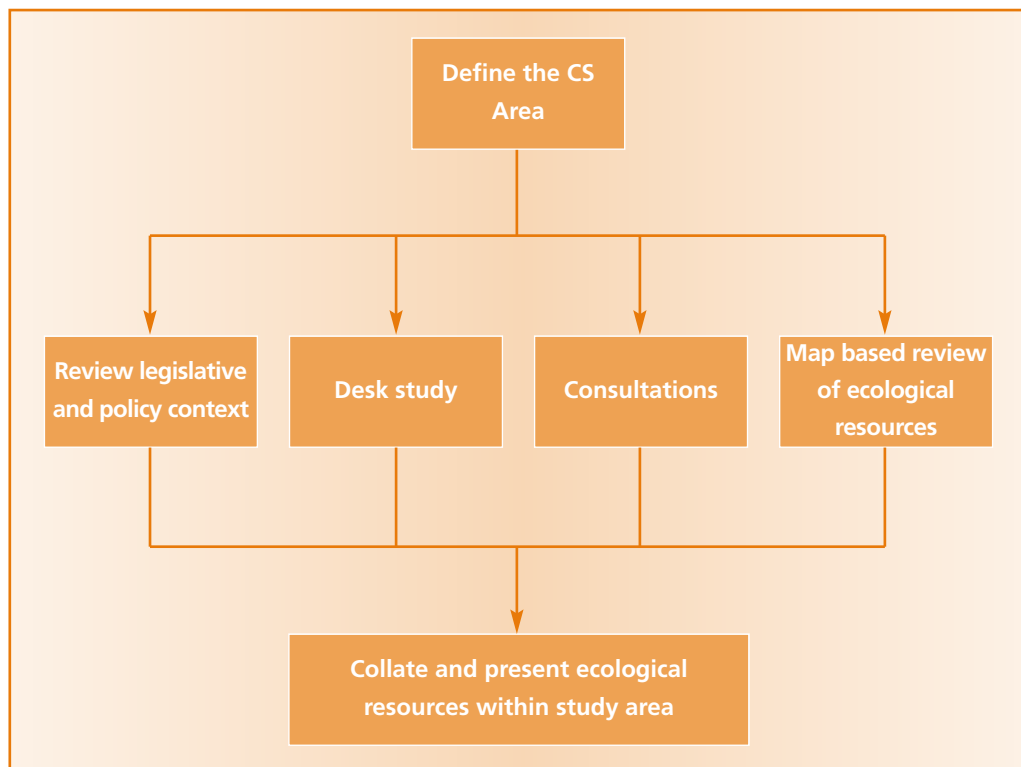


Figure 2: Constraints Study Procedure

4.3 Contents of the Constraints Study (Natural Environment Section) Report

4.3.1 Methodology

The CS should include a statement of how the natural environment section of the CS was prepared, including data and information sources, consultations with relevant agencies, methods and dates of any field surveys and how the ecological resources have been valued. Any limitations in the methodology or in the approach adopted should be highlighted.

4.3.2 Background information on the study area

The CS should include a brief overview of the existing environment and ecological resources within the study area, including topography and landscape features, the main land uses, designated conservation areas, the main habitats of conservation value and the main water or drainage features.

The CS Report should consider and provide summary details of the following ecological constraints (where applicable):

- ⦿ Designated conservation areas and sites proposed for designation (see Section 2.2) within the study area,
- ⦿ All the main inland surface waters (e.g. rivers, streams, canals, lakes and reservoirs) that are intersected by the study area, including their fisheries value and any relevant designations,

Guidelines for Assessment of Ecological Impacts of National Road Schemes

- ⦿ All major aquifers and dependent ecosystems (cooperation will be required with hydrogeologists working on the project),
- ⦿ Any intertidal and marine areas within the study area,
- ⦿ Any known or potentially important sites for rare or protected flora or fauna that occur within, or in close proximity to, the study area,
- ⦿ Any other sites of ecological value, identified from aerial photographs, within or in close proximity to the study area (see Section 2.3),
- ⦿ Any other relevant conservation designations or programmes (e.g. catchment management schemes, habitat restoration or creation projects, community conservation projects, etc),
- ⦿ Any other features of particular ecological or conservation importance within the study area.

The legal status of all the ecological constraints and the implications for new road schemes should be clearly identified. Any other information relevant to the ecological constraints should also be set out.

4.3.3 Details of ecological constraints

Designated conservation areas should be listed with their site name, site code(s), conservation status/designations, county, location relative to the study area and a brief description of the main features of the site, including the key habitats and species present (see example in Box 1). The CS report should contain a map of all designated conservation areas which could be affected, either directly or indirectly, by a national road project within the study area. Indirect effects could include hydrogeological impacts on groundwater dependant sites or water quality/quantity impacts on water bodies.

It is essential that the location and extent of designated conservation areas are updated throughout all phases of project planning. This information can be checked online at <http://www.npws.ie/en/MapsData/>. However, regular communication with the Site Designations and Plans Unit of the National Parks and Wildlife Service is recommended.

As outlined in Appendix II, European sites warrant additional consideration over and above other designated conservation areas. Figure 3 illustrates a flowchart relating to the consideration of European sites during the CS phase. In addition to the information required for other designated conservation areas, the CS report should, where practicable, contain a map of the European sites indicating those parts of the sites containing Annex I priority and non-priority habitats and Annex II non-priority species. Regard should be had to the practicability of collecting this information and this work should generally be confined to desktop studies/collection of information from NPWS.

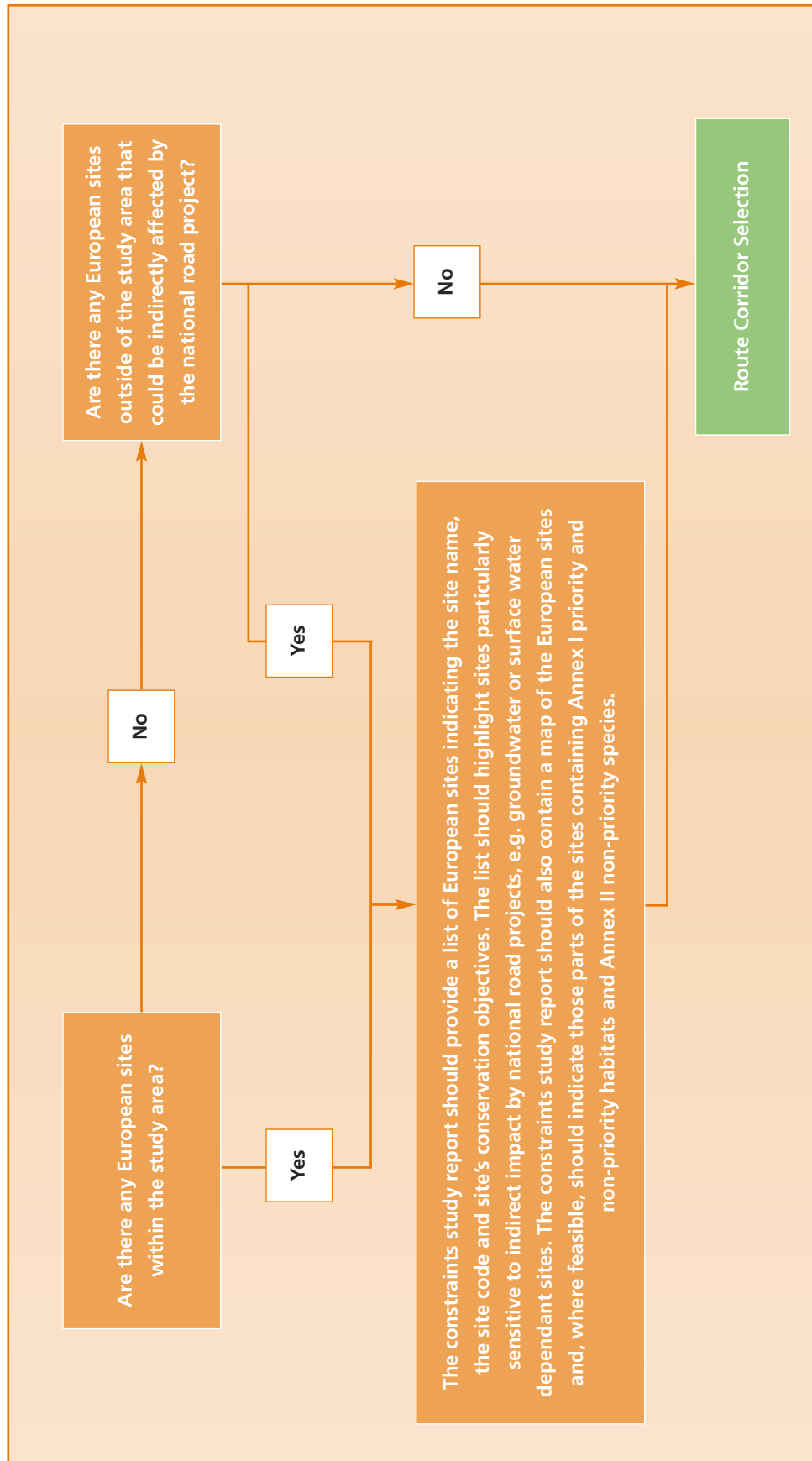


Figure 3: Consideration of European sites during Constraints Study

Guidelines for Assessment of Ecological Impacts of National Road Schemes

Site name	Code	Status	Features of conservation interest/description
Michelstown Cave	651	pNHA	Limestone caves. Important for invertebrates, particularly rare spider species.
Scaragh Wood	971	pNHA	Six blocks of acid oak woodland within a conifer plantation on the south-eastern slopes of the Galtee Mountains.
Aherlow River	2133	cSAC	Designated Salmonid Water (EU Freshwater Fish Directive). River also supports populations of the legally protected species freshwater pearl-mussel and white-clawed crayfish.

Box 1: Example of a list of designated sites/features

All other sites of potential ecological value, including important sites for flora or fauna, should be listed with a site name and a map reference to the feature, with a description of the key features of ecological value as derived from desk studies (particularly aerial photograph interpretation) and any other available information sources. Site details should be tabulated where practicable for ease of reference (see example in Box 2.).

Site no. (map reference)	Site name	Site description/habitat(s)
1	Rock of Cashel	Semi-natural dry grassland on hill; scrub; wet grassland near stream
2	Lough Nahinch	Lakes (partially infilled) with wetland fringe; treelines of broadleaved trees
3	Deerpark	Broadleaved woodland and treeline on old estate
4	Outbuildings at Lismoore	Known maternity colony of common pipistrelle bats
5	Hedgerows north of Broadford.	Network of species-rich, overgrown hedgerows with trees

Box 2: Example of a list of non-designated sites/features

Any documented rare or protected plants within the study area should be listed by species name (common and scientific) and conservation status (see Section 2.4). The general locations of the rare plant sites should be given (site name and grid reference, or site name and code in the case of designated areas), as should an indication of the habitat requirements for each species. Exact locations should not be given to protect rare species from unlicensed collection.

Any documented rare or protected animals should be listed by species name (common and scientific) and conservation status (see Section 2.4). Any other notable populations of animals should also be listed. The general locations of sites, or river/lake systems in the case of aquatic species, or the intertidal or marine area in the case of estuarine or marine species, should be given (site name and grid reference, or site name and code in the case of designated areas), as should an indication of the habitat requirements for each species.

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Inland surface waters should be described in relation to their hydrometric or catchment area numbers, water quality (EPA data where available), drainage characteristics, fisheries value and any other relevant features.

A list of information sources cited in the text should be included.

4.3.4 Figures/maps

Figures to accompany the report should include a map (scale 1:50,000 or larger) of the study area boundaries, ecological sites/features within and in close proximity to the study area (with identifying site codes, site names or numbers), the main surface waters referred to in the text and the general locations of rare or protected species (if they occur outside designated areas). Other figures should be included where necessary, e.g. to clarify details of site boundaries where sites have multiple designations. Up-to-date maps of designated site boundaries should be included in appendices.

Checklist for Constraints Study

- ⦿ List of designated areas (including proposed designations) within the study area - SACs, NHAs, etc.
- ⦿ Any other known sites or features of ecological value
- ⦿ Documented rare and protected species
- ⦿ Documented fisheries value of watercourses
- ⦿ Documented bird sites (IWeBS or other data)
- ⦿ List other important sites from aerial photography
- ⦿ Note major features to be avoided
- ⦿ Highlight any issues for special attention in later phases
- ⦿ Prepare final report
- ⦿ Map of designated areas (including proposed designations) with Annexed Habitats and Species indicated in relation to European sites (where practicable).

Guidelines for Assessment of Ecological Impacts of National Road Schemes

CHAPTER 5

Route Corridor Selection Study (Natural Environment Section)

Guidelines for Assessment of Ecological Impacts of National Road Schemes

CHAPTER 5 ROUTE CORRIDOR SELECTION STUDY (NATURAL ENVIRONMENT SECTION)

5.1 Objectives

RCS typically involves a comparative evaluation of route corridor options. The objective of the study is to evaluate and compare the alternative route corridor options taking account of engineering, environmental, traffic and cost considerations. The ecological impacts for each of the options are identified so that those with unacceptably high levels of impact can be avoided to the extent feasible as part of the overall route assessment process. RCS is the single most effective means of avoiding or reducing ecological impacts.

The NRA's approach to sustainable development requires that economic growth supports social progress while respecting the environment; that social policy underpins economic performance; and that environmental policy is cost effective. Ecological impacts thus have to be seen in the broader perspective of engineering constraints, costs, landscape, cultural heritage, recreation, agriculture and forestry. Each RCS process within the country will have unique features and the constraints may vary. In some cases the optimum route from an ecological perspective may not be the overall optimum route when other impacts and considerations are evaluated. However, ecological considerations should receive detailed consideration and, in some cases, these may be the most important factors to be considered during RCS and subsequent design of the road scheme.

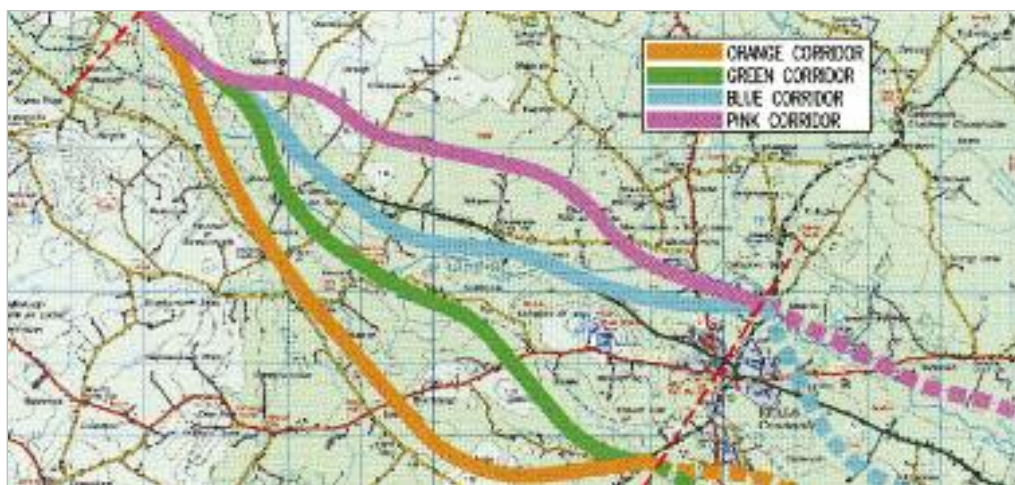


Figure 4: Example of Route Corridor under Review

5.2 Consideration of European sites

A possible case where ecological considerations may constitute the most important factor in RCS is where consideration has to be given to European sites.

In considering European sites during the RCS phase, regard should be had to the flow diagram outlined in Figure 5 and to Appendix II.

At the start of the RCS phase all reasonably practicable efforts should be made to ensure that the initial route corridors selected avoid significant effects on European sites.

ROUTE CORRIDOR SELECTION STUDY (NATURAL ENVIRONMENT SECTION)

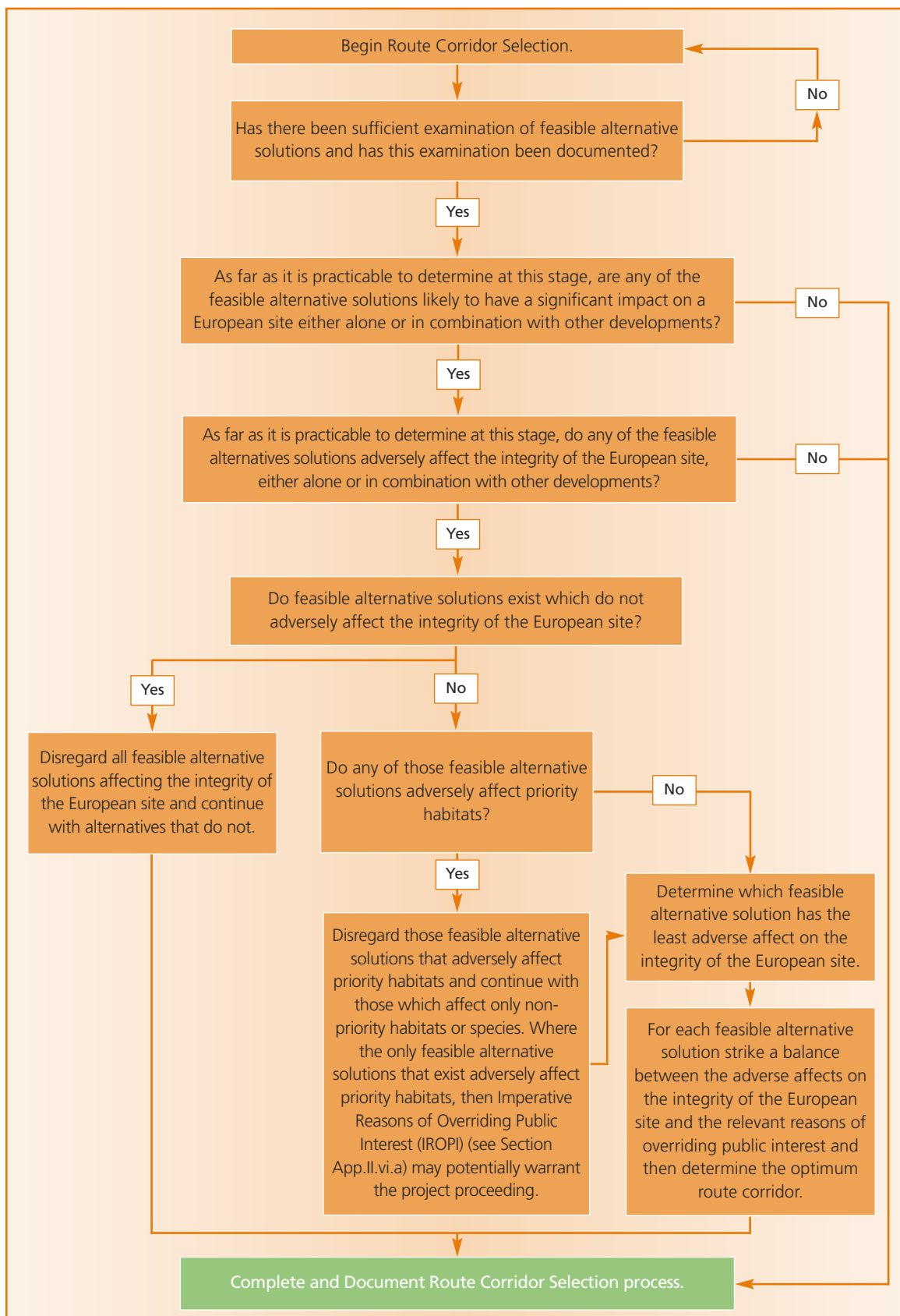


Figure 5: Consideration of European sites during Route Corridor Selection

Guidelines for Assessment of Ecological Impacts of National Road Schemes

5.3 Approach

The Natural Environment section of the RCS study involves the identification of ecological resources/receptors along each of the route option corridors and a broad assessment of the likely impacts upon them. The zone(s) of influence for the route options should take account of the range of impacts likely to arise from construction and operation of them. Following on from the earlier CS, the RCS study should involve a combination of desk study and field survey. At this stage the desk study should be more comprehensive than during the previous phase (a list of sources of information is presented in Appendix I of the 'Survey Guidelines').

In those situations where a large number of route options are still being considered (or during the earlier stages of the process), it will not be appropriate to investigate the full length of each route in the field, but rather to restrict field surveys to key sites, features or route sections that appear to be of particular ecological value, to assess the potential impacts of the route(s) upon them. It will also be appropriate to undertake 'vantage point' surveys of the remainder of the routes: visual inspections from strategic locations for which access is available, supplemented by, for example, scrutiny of aerial photographs, to ensure that hitherto undisclosed potential constraints are not missed. However, in those situations where a smaller number of options are being considered (or towards the end of the process), it may be more effective to undertake a more comprehensive assessment of each route, in the form of a 'multi-disciplinary walkover survey' (the scope and detail of multi-disciplinary walkover surveys are presented in the 'Survey Guidelines'). Since the aim of this approach is reliably to scope all subsequent surveys and to restrict them to specific locations, this can offer advantages in accelerating the impact assessment process in the latter stages of scheme design.

Further consultations with statutory agencies, including the Department of Environment, Heritage and Local Government and the appropriate Regional Fisheries Board, should be undertaken to seek their views on the proposed routes and on any other issues of concern. Any relevant information about recent or proposed changes in site designations, site boundaries or in the conservation status of species or habitats, should be sought.

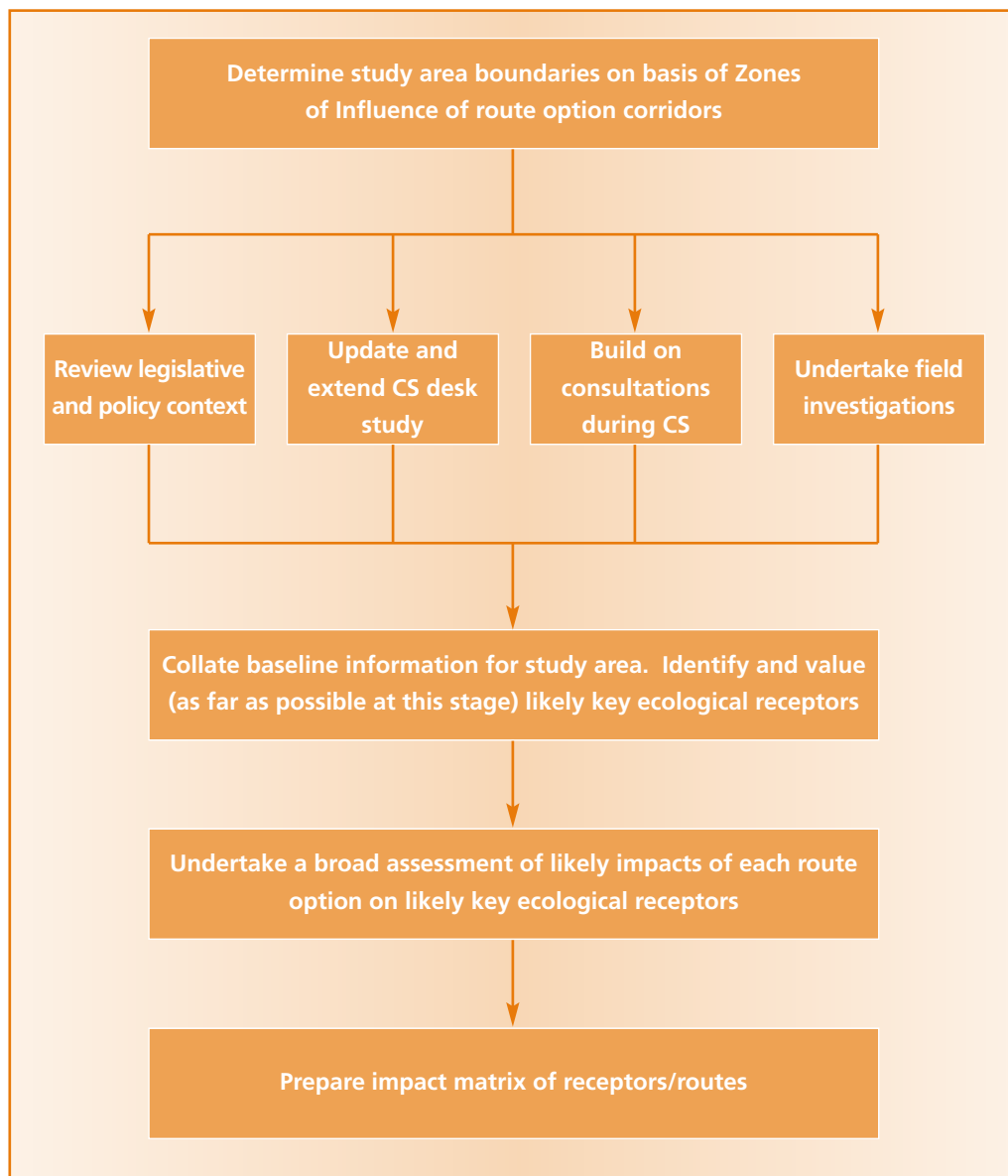


Figure 6: *Route Corridor Selection Procedure*

5.4 Contents of the Route Corridor Selection Study (Natural Environment Section) Report

5.4.1 Methodology

This should include the scope and detail of the desk study and field surveys, including an evaluation of any limitations on this phase of the assessment. This section should also refer to the approach and methods set out in Chapter 3, with regard to scoping, valuation and impact assessment, and indicate how these were applied, in particular, how the boundaries of the study area were chosen.

Guidelines for Assessment of Ecological Impacts of National Road Schemes

5.4.2 Baseline information on the study area

This should begin with a brief overview of ecological resources within the study area, along with an update of the relevant information presented in the CS.

The RCS report should include details and descriptions of the following (where applicable):

- ⦿ Designated conservation areas and sites proposed for designation (see Section 2.2) within the zone(s) of influence of any of the route options,
- ⦿ All the main inland surface waters (e.g. rivers, streams, canals, lakes and reservoirs) that are intersected by any of the route corridor options, including their fisheries value and any relevant designations,
- ⦿ Aquifers and dependent systems and turloughs and their subterranean water systems,
- ⦿ Any intertidal and marine areas along any of the route corridor options,
- ⦿ Any known or potentially important sites for rare or protected flora or fauna that occur along or within the zone(s) of influence of any of the route options,
- ⦿ Any other sites of ecological value, that are not designated, along or in close proximity to any of the route corridor options (see Section 2.3),
- ⦿ Any other relevant conservation designations or programmes (e.g. catchment management schemes, habitat restoration or creation projects, community conservation projects, etc),
- ⦿ Any other features of particular ecological or conservation significance along any of the route options.

A preliminary list of key ecological receptors should be compiled for each option, with an indication as to their likely value in a geographical context in some cases, pending a more comprehensive assessment at a later phase of project development. For ease of reference, details of sites and watercourses should be summarised in tables or appendices, together with their site ratings. Updated drawings of boundaries of designated areas are needed.

5.4.3 Assessment of impacts

A broad assessment should be undertaken of the likely impacts of each of the route options on the key ecological receptors, with an indication as to which, if any, of these are likely to be significant, and at what geographical level. The impacts associated with each route option should be tabulated (see Box 3). (For details on overall project appraisal see Section 3.7.)

In the example given in Box 3, three of the sites identified in the CS (see Box 1 & Box 2) are affected by one of the route corridor options (hereafter referred to as Option 1).

ROUTE CORRIDOR SELECTION STUDY (NATURAL ENVIRONMENT SECTION)

Site no.	Site name	Site description/ habitat(s)	Receptor importance	Impact significance
971	Scaragh Wood pNHA	Six blocks of acid oak woodland within a conifer plantation on the south-eastern slopes of the Galtee Mountains	National	Significant negative impact
3	Deerpark	Broadleaved woodland and treeline on old estate	County	Significant negative impact
5	Hedgerows North of Broadford	Network of species-rich, overgrown hedgerows with trees	Local (Higher value)	Significant negative impact

Box 3: Example of some sites (designated and non-designated), the Constraints Study, that would be affected by a possible route corridor option (Option 1)

In the example given in Box 4, the number of significant impacts, at each geographic level, associated with Option 1 (see Box 3) is compared with the number and level of corresponding impacts associated with each of two other illustrative options. This allows an order of preference, from an ecological standpoint, to be determined. In those cases where multiple options would all involve significant impacts on one or more receptors valued at the same geographic level (receptors of international or national importance, in particular), it is not appropriate simply to assign an order of preference on the basis of the number affected. Instead, it will be necessary to characterise the impacts upon them (as far as possible at this stage, using the approach set out in Section 3.4.3) and to apply professional judgement, as appropriate.

Impact Level	Route Corridor Options		
	Option 1 (see Box 3)	Option 2	Option 3
Significant impact on feature of National Importance	1	0	0
Significant impact on feature of County Importance	1	2	0
Significant impact on feature of Local (higher value)	1	4	1
Order of preference	3rd	2nd	1st

Box 4: Summary comparison of impacts on ecological sites of three route corridor options

The levels of impact assigned to particular routes make the assumption that general mitigation measures will be implemented and *this should be clearly stated*. However, site-specific mitigation measures are normally excluded in the assessment of impacts of the scheme, at this stage. Section 3.4.1 presents guidance on distinguishing between routine measures delivered as part of scheme design and additional mitigation.

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Checklist for route corridor selection study

Includes desk study and field survey

- ⦿ Define sites from aerial photography,
- ⦿ List of designated sites (including proposed designations) affected by any route corridor,
- ⦿ Field visits to designated sites and adjoining habitats, and other sites/features of ecological value; walkover surveys of entire routes as appropriate,
- ⦿ Brief description and valuation of all ecological resources likely to be affected,
- ⦿ Adequate documentation of the consideration of European sites,
- ⦿ Consult the Department of Environment, Heritage and Local Government/National Parks and Wildlife Service on protected species and sites,
- ⦿ Consult Regional Fisheries Board on fisheries waters,
- ⦿ Assess likely significance of impacts on affected sites,
- ⦿ Prepare impact matrix of sites/routes,
- ⦿ Prepare final report.

CHAPTER 6

**Environmental
Impact Statement
(Natural Environment
Section)**

Guidelines for Assessment of Ecological Impacts of National Road Schemes

CHAPTER 6 ENVIRONMENTAL IMPACT STATEMENT (NATURAL ENVIRONMENT SECTION)

6.1 Objectives

The objective of the EIS is to undertake sufficient assessment to identify and quantify any significant impacts on the natural environment likely to arise from construction and operation of the preferred route. The baseline ecological conditions in the area of the proposed road project are described, based on information provided by consultees, background sources of information and the results of surveys carried out for the EIS. In those situations where European sites need also to be considered, additional investigations may need to be undertaken in parallel with the preparation of the EIS, as detailed in Section 6.2.

6.2 Consideration of European sites

The reader should refer to other sections (including Appendix II) dealing with the consideration of European sites.

6.2.1 Screening

The consideration of European sites during the Environmental Impact Assessment phase begins with a thorough review of the RCS report.

Figure 7 illustrates the flow path for the consideration of European sites during Environmental Impact Assessment.

The first stage of this consideration involves a thorough review of all existing or planned (i.e. in receipt of the relevant consent) developments that might act in combination with the proposed road development to produce a likelihood of significant impact on the European sites, if present. Then one should proceed to screen the project and determine if it can be excluded, on the basis of objective information, that the proposed road development will have a significant impact on the European site, either individually or in combination with other plans or projects. Here the precautionary principle operates (see Section App.II.iv.a). Where it can be objectively demonstrated that there is no likelihood of significant effects, then a 'Findings of No Significant Effects Report' should be completed in line with the guidance provided by the Commission. This report should be annexed, as appropriate, to the EIS. Where it cannot be demonstrated that there is no likelihood of significant effects, then efforts should be made to refine the preliminary design by way of realignment, method of construction and/or scheduling proposals to avoid or reduce impacts. Screening should be carried out on this new alternative. This iterative exercise should be carried out until either no further feasible refinement is possible; or until it can be demonstrated that there is no likelihood of significant effects. If it cannot be demonstrated that there is no likelihood of significant effects then appropriate assessment should be carried out. Appropriate assessment is dealt with under Article 6(3) of the Habitats Directive and Regulation 30 of the Habitats Regulations, 1997.

6.2.2 Article 6(3) and Appropriate Assessment

Appropriate assessment must answer the question ‘*is there conclusive evidence, after applying the precautionary principle, that the integrity of the European site will not be adversely affected by the national road project?*’ If the answer to this question is yes, then this ‘positive’ appropriate assessment should be distinctly documented within the EIS. If the answer is no, then mitigation measures should be designed and residual effects predicted. It should then be determined whether the mitigated national road project has an adverse effect on the integrity of the European site. This iterative loop continues until such time as either a positive appropriate assessment can be made; or until no further mitigation is possible and a ‘negative’ appropriate assessment results. Where a ‘negative’ appropriate assessment results, Article 6(4) of the Habitats Directive will apply. The ‘negative’ appropriate assessment should be distinctly documented within the EIS.

[It should be noted that it is in actual fact An Bord Pleanála who carry out the appropriate assessment, not the project proponent. However, the project proponent should provide the information necessary to complete the appropriate assessment within the national road development project EIS and should document their own determination as to whether the assessment is positive or negative. Readers are referred to Section App.II.v regarding these issues.]

6.2.3 Article 6(4)

Readers are referred to Sections App.II.vi and App.II.vii, which outline the requirements imposed by Article 6(4) and discuss ‘Overriding Public Interest,’ ‘Assessment of Alternative Solutions’ and compensatory measures.

6.2.3.1 Overriding Public Interest

It is important that the EIS clearly and distinctly outlines the factors that may be relevant to a determination by the competent authority that the national road project should proceed, notwithstanding an adverse effect, on the basis of imperative reasons of overriding public interest. It is also important to note that where priority habitat are affected, then, subject to a statement on the specific case from the Commission to the contrary, overriding public interest can only be related to human health or public safety, or to beneficial consequences of primary importance for the environment.

6.2.3.2 Assessment of Alternative Solutions

The EIS should detail the assessment of alternative solutions, which will have taken place during the RCS and EIA phases.

6.2.3.3 Compensation

Where no alternative solutions are deemed to exist and where adverse impacts remain, the proposed national road project may still proceed if imperative reasons of overriding public interest warrant it. However, in such circumstances compensatory measures will be required. In designing and assessing such measures; establishing implementation procedures; and designing monitoring plans, close liaison with National Parks and Wildlife Service is required.

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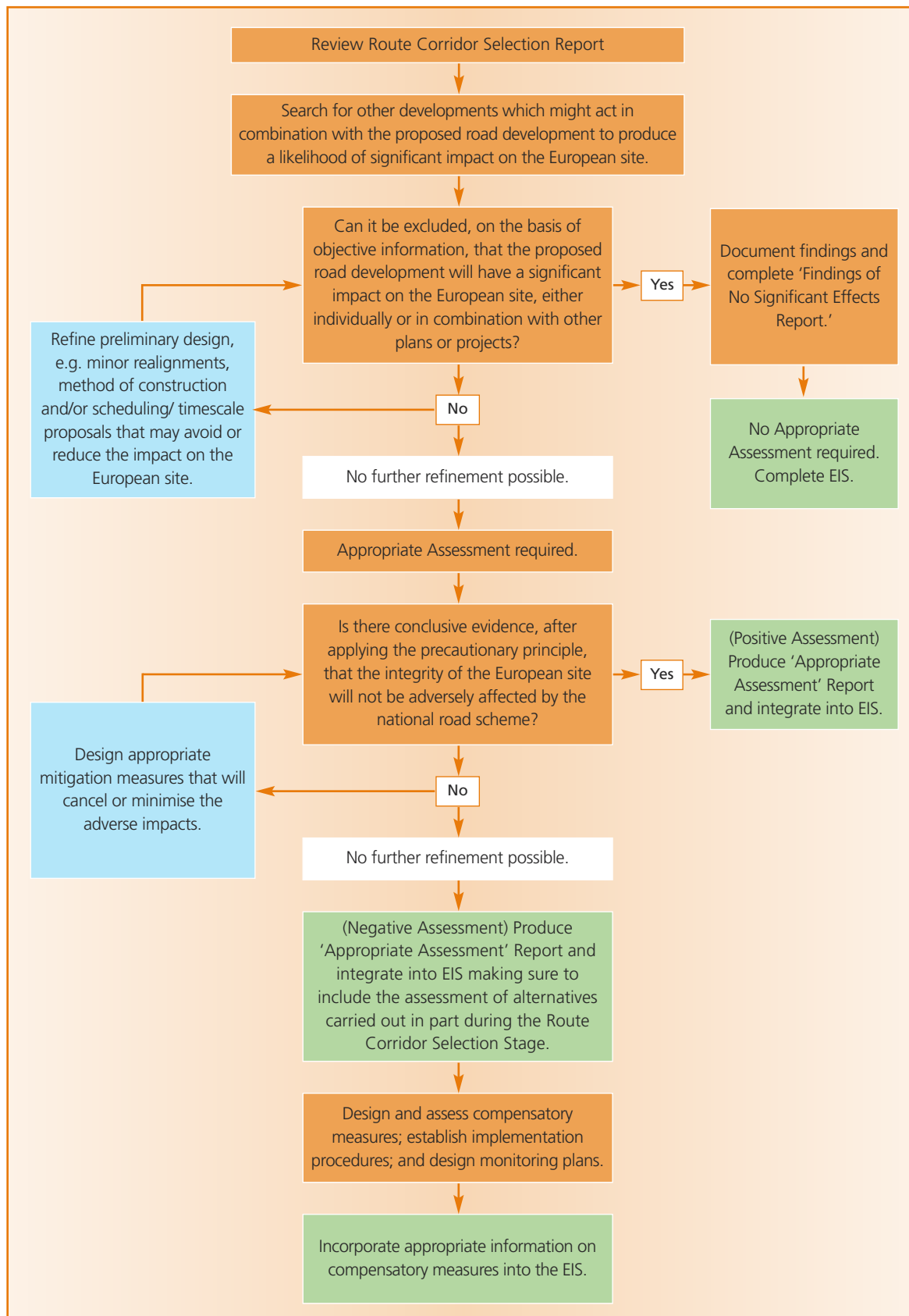


Figure 7: Consideration of European sites during Environmental Impact Assessment

6.3 Approach

In terms of the Natural Environmental section, the EIS has several important roles. The first is to present, within a single document, information that underpins the assessment of the impacts that the construction and operation of a road project will have. The second is to provide information to the general public on the findings of ecological surveys and to interpret for them the likely impacts of the road project in question. Therefore, the EIS needs to include all relevant information to allow the reader to fully understand why particular ecological features have been valued in accordance with the advice in Section 3.3, what the anticipated impacts of the scheme are, in terms of their magnitude, intensity and duration, and what the consequences of these impacts are upon the key ecological receptors and/or protected species that have been identified. It should be clear to the reader how the conclusions have been reached following the guidance set out in Section 3.4.

The natural environment section of the EIS builds on the information contained in the earlier CS and the RCS Study and should involve the following:

- ◉ Scoping,
- ◉ Consultations,
- ◉ Desk study, including review of published/unpublished sources/literature,
- ◉ Field/walkover survey with habitat mapping of entire route, link roads, realigned roads and any other areas likely to be affected,
- ◉ Further surveys of ecological receptors,
- ◉ Assessment and valuation of ecological resources,
- ◉ Impact characterisation and assessment,
- ◉ Mitigation measures to address significant adverse impacts,
- ◉ Measures to off-set significant residual impacts,
- ◉ Enhancement measures (where required).

The approach to scoping the EIS should accord with the guidance presented in Section 3.2; this should be followed by a general description of ecological resources in the zone of influence and a clear description of baseline conditions for each of the key ecological resources selected for detailed assessment. Valuation of these key resources should follow the guidance set out in Section 3.3. Impact assessment, the development of mitigation and the treatment of residual impacts should also be undertaken in accordance with Sections 3.4, 3.5 and 3.6.

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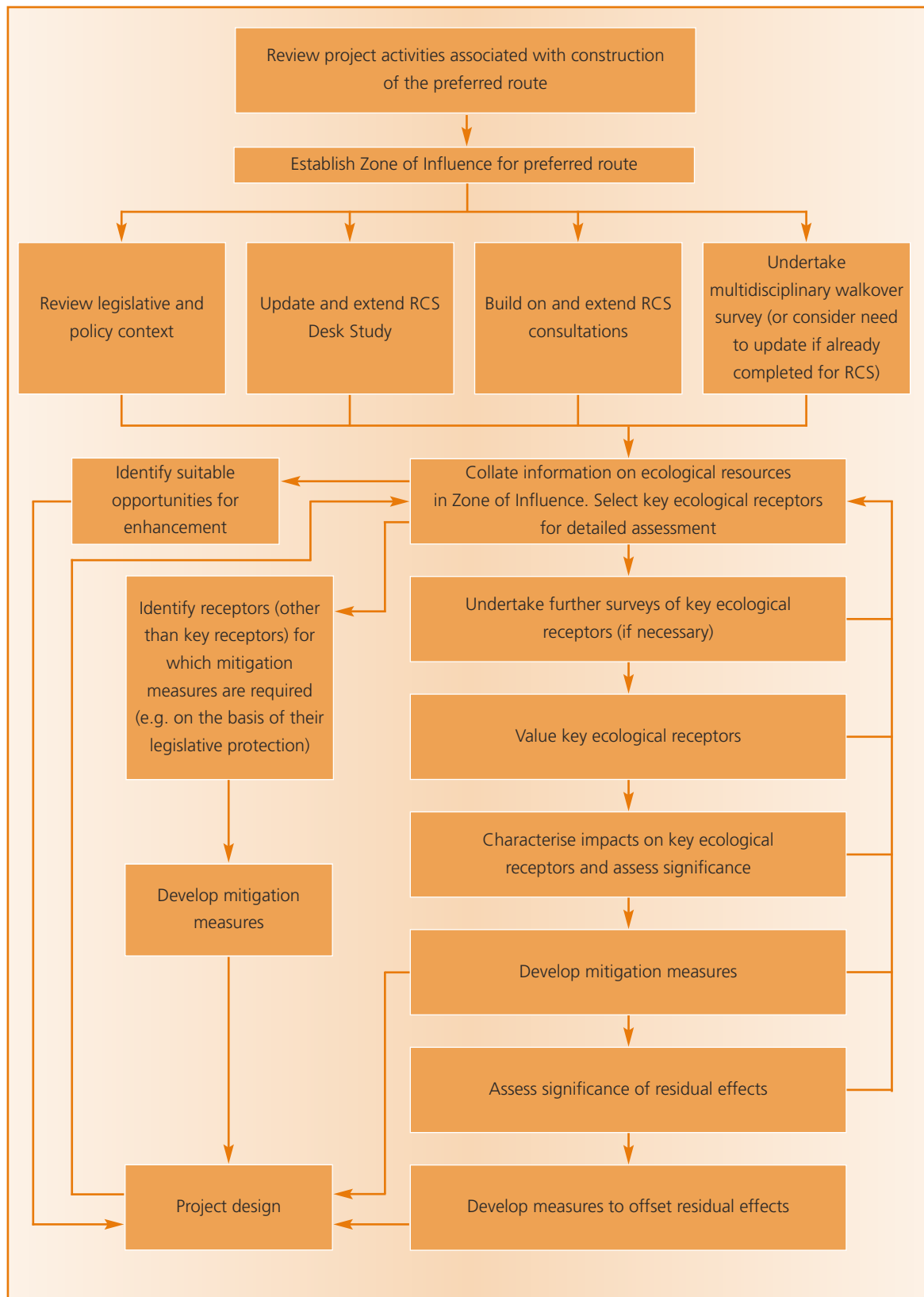


Figure 8: Overview of Ecological Impact Assessment Procedure

6.4 Methodology

6.4.1 Desk study

The desk studies undertaken for the CS and RCS study should be reviewed and up-dated, with further specialist sources of information approached as necessary, depending upon the results of the on-going scoping exercise. Further guidance on refining the scope of desk studies and a list of suggested contacts, is presented in the 'Survey Guidelines'.



Figure 9: Example of habitat mapping using aerial photography for an EIS on a road scheme (Habitat codes from Fossitt (2000))

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6.4.2 Field survey

6.4.2.1 Multi-disciplinary walkover survey

If a multi-disciplinary walkover survey has not already been undertaken as part of the RCS study, this should be undertaken at the outset, to help refine the scope of any further surveys, and to underpin the selection of the 'key ecological receptors'. Guidance on undertaking multi-disciplinary walkover surveys is presented in the 'Survey Guidelines'. For many receptors, sufficient information will be collected from this survey to inform the remainder of the impact assessment.

6.4.2.2 Further Surveys

In the case of some key receptors, further habitat-, group-, or species-specific surveys may be necessary in order reliably to confirm their presence, their value and/or to help characterise the impacts upon them. Guidance on survey techniques for flora and fauna in the context of EISs for National Road Schemes is presented in the 'Survey Guidelines'.

6.4.3 Impact Assessment and mitigation

The impact assessment methodology and approach to mitigation should follow the procedures detailed in Sections 3.4 and 3.5.

6.4.4 Non-technical summary (natural environment section)

This is required under the EIA legislation. The natural environment section of the non-technical summary may comprise just a few paragraphs and should be laid out in a similar but condensed format to that in the main EIS. It should be short and avoid technical terms but should make reference to all the above information. It may be produced as a separate and self-contained document that can be widely distributed to the general public.

Checklist for Environmental Impact Assessment

Includes desk study and field survey of entire route

- ⊙ Updated desk study,
- ⊙ Multi-disciplinary walkover survey (including habitat survey of entire route),
- ⊙ Further surveys of key ecological receptors (if required),
- ⊙ Selection of key ecological receptors for detailed assessment,
- ⊙ Presentation of baseline conditions, incorporating collated results of desk study, walkover survey and further surveys (summary in EIS text, detail in Technical Appendices),
- ⊙ List survey/assessment limitations,
- ⊙ Comprehensive impact assessment,
- ⊙ List of significant impacts,
- ⊙ Mitigation measures,
- ⊙ List of significant residual impacts,
- ⊙ Measures to off-set residual impacts,
- ⊙ Enhancement measures (where required).

CHAPTER 7

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APPENDICES

Guidelines for Assessment of Ecological Impacts of National Road Schemes

APPENDIX I DESIGNATED CONSERVATION AREAS IN THE REPUBLIC OF IRELAND

For more information on these designations see Hickie (1996) and/or consult the Department of Environment, Heritage and Local Government.

Abbreviation	Full title	Status	Supporting legislation or convention (if any)
SAC	Special Area of Conservation	International	EU Habitats Directive (92/43/ECC)/Habitats Regulations, 1997 to 2005
SPA	Special Protection Area	International	EU Birds Directive (79/409/ECC)/Habitats Regulations, 1997 to 2005
None	Ramsar Site	International	Ramsar Convention on Wetlands
None	Biogenetic Reserve	International	None
None	UNESCO Biosphere Reserve	International	None
None	Salmonid Water	International	EU Freshwater Fish Directive (78/659/EEC)/European Communities (Quality of Salmonid Waters) Regulations, 1988
NHA	Natural Heritage Area	National	Wildlife Act, 1976 and Wildlife (Amendment) Act, 2000
SNR	Statutory Nature Reserve	National	Wildlife Act, 1976 and Wildlife (Amendment) Act, 2000
NP	National Park	National	none
None	Refuge for Fauna and Flora	National	Wildlife Act, 1976 and Wildlife (Amendment) Act, 2000
None	Wildfowl Sanctuary	National	none

APPENDIX II APPROPRIATE ASSESSMENT

App.II.i Introduction

The Habitats Directive¹⁶ requires an ‘appropriate assessment’ to be carried out where a development, such as a national road project, is likely to have significant impacts on SACs, SPAs and/or Sites of Community Importance (SCIs).¹⁷ With regard to proposed road developments, the requirements of Articles 6(3) and 6(4) of the Habitats Directive have been transposed into Irish legislation by means of Regulations 30 and 33 of the Habitats Regulations, 1997 (S.I. No. 94 of 1997). It is important that Regulations 30 and 33 be interpreted having regard to the Habitats Directive and all relevant national and European case law.

The texts of Articles 6(3) and 6(4) of the Habitats Directive and Regulations 30 and 33 of the Habitats Regulations, 1997, are reproduced in Box 5, Box 6 and Box 7 respectively.

Article 6 (3)

Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to *appropriate assessment* of its implications for the site in view of the site’s conservation objectives.

In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.

Article 6 (4)

If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.

Where the site concerned hosts a priority natural habitat type and /or a priority species the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion of the Commission, to other reasons of overriding public interest.

Box 5: Text of Articles 6(3) and 6(4) of the Habitats Directive

¹⁶ Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.

¹⁷ (European Commission 2007a, 3n)

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- (1) Where a proposed road development in respect of which an application for the approval of the Minister for the Environment has been made in accordance with section 51 of the Roads Act, 1993, is neither directly connected with nor necessary to the management of a European site but likely to have a significant effect thereon either individually or in combination with other developments, the Minister for the Environment shall ensure that an appropriate assessment of the implications for the site in view of the site's conservation objectives is undertaken.
- (2) An environmental impact assessment as required under subsection (2) of section 51 of the Roads Act, 1993, in respect of a proposed road development referred to in paragraph (1) shall be an appropriate assessment for the purposes of this Regulation.
- (3) The Minister for the Environment shall, having regard to the conclusions of the assessment undertaken under paragraph (1), agree to the proposed road development only after having ascertained that it will not adversely affect the integrity of the European site concerned.
- (4) In considering whether the proposed road development will adversely affect the integrity of the European site concerned, the Minister for the Environment shall have regard to the manner in which the proposed development is being carried out or to any conditions or restrictions subject to which the approval is given.
- (5) The Minister for the Environment may, notwithstanding a negative assessment and where that Minister is satisfied that there are no alternative solutions, decide to agree to the proposed road development where the proposed road development has to be carried out for imperative reasons of overriding public interest.
- (6)
 - (a) Subject to paragraph (b) imperative reasons of overriding public interest shall include reasons of a social or economic nature;
 - (b) If the site concerned hosts a priority natural habitat type or a priority species, the only considerations of overriding public interest shall be—
 - (i) those relating to human health or public safety,
 - (ii) beneficial consequences of primary importance for the environment, or
 - (iii) further to an opinion from the Commission to other imperative reasons of overriding public interest.

Box 6: *Text of Regulation 30 of the Habitats Regulations, 1997*

Where in accordance with Regulations 27 (5), 28 (5), 29 (4), 30 (5), 31 (5) or 32 (5) an operation or activity is agreed to, notwithstanding a negative assessment of the implications for a European site, the Minister shall ensure that the necessary compensatory measures are taken to ensure that the overall coherence of Natura 2000 is protected.

Box 7: *Text of Regulation 33 of the Habitats Regulations, 1997*

App.II.ii Definition of a 'European site'

Article 6(3) and 6(4) of the Habitats Directive only apply in relation to SACs, SPAs and Sites of Community Importance (SCIs).¹⁸ However, it is important to note that the definition of a 'European site' under the transposing regulations includes *proposed* SACs.¹⁹ Notably, however, the definition does not include *proposed* SPAs. Notwithstanding this, it is recommended that a procedure identical to that required under Regulation 30 should be followed in relation to *proposed* SPAs.

App.II.iii General Approach to Appropriate Assessment

The following general approach to appropriate assessment has been derived having regard to the published guidance from the European Commission (2000b, 2001 and 2007a), case law of the European Court of Justice and other relevant material. Project managers and relevant experts involved in the planning of national road projects should be familiar with this material. Recommended reading is outlined in Box 8.

Managing Natura 2000 sites: The provision of Article 6 of the 'Habitats' Directive 92/43/EEC (European Commission, 2000b).

Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC (European Commission, 2001).

Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC. Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the Commission (European Commission, 2007a).

Methodological Guideline for Impact Assessment of Transportation Infrastructure Significantly Affecting Natura 2000 Sites (Guideline for IA) Guidance on the provisions of Article 6(3, 4) of the Habitats Directive (Ministry of Transport, Building and Housing of the Federal Republic of Germany, 2004)

Nature and Biodiversity Cases – Ruling of the European Court of Justice (European Commission, 2006).

Box 8: Recommended Reading

It is important to recognise from the outset that the general approach outlined by the European Commission in its guidelines relates to the decision-making flow path for competent authorities, e.g. of An Bord Pleanála. However, it is recommended that those involved in the planning of national road projects should be familiar with the content of these guidelines. As the Commission's guidance is directed at competent authorities, it was necessary to integrate this recommended approach into NRA Project Management Phases. This integration is illustrated in Figure 3, Figure 5 and Figure 7.

¹⁸ (European Commission 2007a, 3n)

¹⁹ See Article 2 of the Habitats Regulations, 1997, as substituted by section 75 of the Wildlife (Amendment) Act, 2000.

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App.II.iii.a Consultation

There should be consultation with National Parks and Wildlife Service (NPWS) of the Department of the Environment, Heritage and Local Government at all phases of national road development planning.

App.II.iv Stage 1: Screening

Regulation 30 of the Habitats Regulations, 1997, indicates that appropriate assessment is only required where a project, either individually or in combination with other developments, is likely to have a significant effect on a 'European site'. Therefore, where there is no likelihood of a significant effect a project does not fall within the realms of Regulation 30.

App.II.iv.a The Precautionary Principle

The precautionary principle is a principle of EU law.²⁰ It has been defined as the principle that if an action might cause severe or irreversible harm to the public or to the environment, then in the absence of a scientific consensus that harm would not ensue, the burden of proof falls on those who would advocate taking the action (Raffensberger & Tickner, 1999). The ECJ applied the precautionary principle in their interpretation of Article 6(3) when they stated in the *Waddenzee* case that '*any plan or project not directly connected with or necessary to the management of the site is to be subject to an appropriate assessment of its implications for the site in view of the site's conservation objectives if it cannot be excluded, on the basis of objective information, that it will have a significant effect on that site, either individually or in combination with other plans or projects.*'²¹ Thus, if it cannot be demonstrated at the screening stage, on the basis of objective information, that the project will not have a significant effect on the site, either individually or in combination with other developments, then an appropriate assessment must be undertaken.

App.II.iv.b Cumulative Effects

It should be noted from the wording of Regulation 30 of the Habitats Regulations, 1997, that it is necessary to consider whether the national road project is likely to have a significant effect alone or in combination with other developments. Therefore, it is important to consider all existing developments, as well as all proposed projects or activities which have received the required consent, but are not yet in existence.

App.II.iv.c In the Absence of any Consideration of Mitigation Measures

The Commission has advised:

*[I]t is important to recognise that the screening assessment should be carried out in the absence of any consideration of mitigation measures that form part of a project or plan and are designed to avoid or reduce the impact of a project or plan on a Natura 2000 site.*²²

²⁰ See, generally, European Commission (2000a, p.1)

²¹ C-127/02 *Landelijke Vereniging tot Behoud van de Waddenzee, Nederlandse Vereniging tot Bescherming van Vogels v Staatssecretaris van Landbouw, Natuurbeheer en Visserij* [2005] 2 CMLR 31, 31

²² (European Commission 2001, p. 14)

Further, the Commission has defined mitigation as:

[M]easures aimed at minimising or even cancelling the negative impact of a plan or project, during or after its completion.²³

However, care is needed to distinguish mitigation measures from elements that would be more correctly defined as forming an integral part of the ‘alternative solution.’ For example, the Commission has indicated that the route, method of construction (e.g. silent piling) and scheduling & timescale proposals may constitute parts of the ‘alternative solution.’ (See Section 3.4.1 generally).

App.II.iv.d Assessment of Significance

It is recommended that the Commission’s Guidance be followed in determining and documenting the likelihood of significant effects. In summary, this involves initially describing the development (and other developments, where cumulative impacts are relevant). Next, the ‘Qualifying Interests’ of the site should be determined and the site’s ‘Conservation Objectives’ should be reviewed. The ‘Qualifying Interests’ are the reasons the site has been designated. In relation to SACs, these will be Annex I habitats and/or Annex II species listed in the Habitats Directive. For SPAs, these will be bird species listed in Annex I and/or referred to in Article 4(2) of the Birds Directive, as well as the habitats of those species of bird. Where they are defined, the ‘Conservation Objectives’ detail the aims for the protection and management of the ‘Qualifying Interests’. The environmental conditions which support site integrity should then be established. The possible impacts on the ‘Qualifying Interests’ or implications for the achievement of the site’s ‘Conservation Objectives’, arising from the development (or other developments where this is relevant), should then be assessed. Finally, there should be an assessment as to whether there is a likelihood of significant effects either alone or in combination with other developments.

So, for example, if the site has been designated due to the presence of a groundwater dependent species listed in Annex II of the Habitats Directive, then this is one of the site’s qualifying interests. The environmental specialist must establish the key environmental conditions which support this species. A possible condition could be the maintenance of the hydrogeological regime, both in terms of quality and quantity of groundwater, supporting this species. It should be considered whether the project has the potential to impact the hydrogeological regime for example, by affecting the aquifer which supplies the European Site. If so, then an assessment as to whether this impact is likely to be significant should be made. If the likelihood of significant impacts cannot be ruled out, then the project should be subject to appropriate assessment.

App.II.iv.e Finding of No Significant Effects Report

Where it is concluded that there are unlikely to be significant environmental effects on the ‘European site’ it is recommended that this be documented in ‘a finding of no significant effects report.’ Such ‘a finding of no significant effects report’ should be made available to all relevant stakeholders, including the public and should be included as an appendix to the EIS.²⁴

²³ (European Commission 2000b, para. 4.5.2); Cf. *Hart District Council v. Secretary of State for Communities and Local Government* [2008] All ER (D) 21 (May)

²⁴ Where an EIS is not being prepared the ‘finding of no significant effects’ report should be included as an appendix to a report prepared pursuant to Part 8 of the Planning and Development Regulations, 2001 (S.I. No. 600 of 2001), as appropriate

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App.II.iv.f Application of Article 6(3) screening in relation to national road projects

In terms of the planning of national road projects, Article 6(3) screening should be carried out in relation to all route corridors being considered at RCS (see Figure 5) and in relation to the Preliminary Design during the Preliminary Design/EIA phase (see Figure 7).

App.II.v Stage 2: Appropriate Assessment

Appropriate assessment involves the consideration of the impact of the national road project on the integrity of the European site, either alone or in combination with other projects or plans, with respect to the European site's structure and function and its conservation objectives (See Section 3.4.4 concerning 'determining impact significance' which defines terms such as 'integrity,' 'conservation status,' etc.). Additionally, where there are adverse impacts, appropriate assessment involves an assessment of the potential mitigation of those impacts.

Again, the precautionary principle flows through the appropriate assessment procedure. The *Waddenzee* case highlights the need for '*best scientific knowledge in the field*' in appropriate assessment.²⁵ It is, therefore, important that ecologists with sufficient training, expertise and knowledge in the relevant areas are employed in the appropriate assessment of national road development projects.

Waddenzee also highlights that the onus of proof is on the project proponent to demonstrate whether the project is not having an adverse affect. Additionally, *Waddenzee* indicates that the burden of proof is high, suggesting that where 'reasonable scientific doubt' remains, then a negative assessment must be presumed.²⁶

In relation to the planning of national road development projects, appropriate assessment will be required at the EIA stage where the likelihood of significant effects on a European site, either alone or in combination with other development, cannot be disproved (see Figure 7). At RCS stage it will be necessary for national road developers to determine, as far as it is practicable to determine at this stage, whether any of the feasible route corridors adversely affect the integrity of the European site, either alone or in combination with other developments, where the likelihood of significant effects on a European site cannot be disproved for the respective route corridors (see Figure 5). This latter assessment is not an appropriate assessment as it is made by the developer and not the competent authority. However, the same principles and guidance should apply in making the determination.

Appropriate assessment will involve the gathering and consideration of information from many sources. Communication with other members of the National Road design team is extremely important. Consultation with National Parks and Wildlife Service should be undertaken. Ecological interest groups, such as BirdWatch Ireland, Bat Conservation Ireland, Coast Watch, Irish Peatland Conservation Council, Irish Wildlife Trust, may be useful sources of information and expert opinion.

²⁵ C-127/02 *Landelijke Vereniging tot Behoud van de Waddenzee, Nederlandse Vereniging tot Bescherming van Vogels v Staatssecretaris van Landbouw, Natuurbeheer en Visserij* [2005] 2 CMLR 31, 31

²⁶ *Ibid* at 31

App.II.v.a Who carries out the Appropriate Assessment?

The European Commission guidance (EC, 2001) states '*it is the competent authority's responsibility to carry out the appropriate assessment.*' In the case of national road projects the competent authority is An Bord Pleanála.²⁷ It is in fact the Board who carry out the appropriate assessment. Notwithstanding this, the reports which form the basis for this assessment should be prepared by the proponent of the national road project. It is therefore recommended that any information within an EIS being provided in relation to an appropriate assessment specifically state that this information is being provided to assist An Bord Pleanála in performing an appropriate assessment pursuant to Regulation 30 of the Habitats Regulations, 1997.

App.II.v.b Format of the Appropriate Assessment

When an appropriate assessment is required, the question arises as to the format in which the road developer should provide finalised information to the competent authority. Regulation 30(2) of the Habitats Regulations, 1997, provides '*An environmental impact assessment as required under subsection (2) of section 51 of the Roads Act, 1993, in respect of a proposed road development referred to in paragraph (1) shall be an appropriate assessment for the purposes of this Regulation.*' Thus, it is entirely acceptable that information provided by the road project developer pursuant to a Regulation 30 appropriate assessment should be contained within the EIS. Having regard to the Commission's guidance on this matter,²⁸ this information should be clearly distinguishable from other elements of the EIS. It is recommended that the information should preferably be contained within an Appendix to the EIS and cross-referenced to the main text.

App.II.vi Stage 3: Overriding Public Interest and the Assessment of Alternative Solutions

Article 6(4) of the Habitats Directive (see Regulation 30(5) of the Habitats Regulations, 1997) states that in spite of a '*negative assessment of the implications for the site,*' and where an '*absence of alternative solutions*' exists, a project may still be granted consent where it '*must nevertheless be carried out for imperative reasons of overriding public interest.*' In essence, in order to grant consent for a national road development project which adversely affects the integrity of a European site, the competent authority, An Bord Pleanála, must decide that imperative reasons of overriding public interest (IROPI) exist (see Section App.II.vi.a) and that there is an absence of alternative solutions (see Section App.II.vi.b). National road developers will require an understanding of these concepts during RCS (see Section 5.2) and EIA phases (see Section 6.2).

App.II.vi.a An Introduction to Imperative Reasons of Overriding Public Interest (IROPI)

As will be seen in Section App.II.vi.b, IROPI are also considered in assessing alternative solutions.

²⁷ Regulation 30 of the Habitats Regulations, 1997, (S.I. No. 94 of 1997); Regulation 4 of the Environment (Alteration of Name of Department and Title of Minister) Order, 1997 (S.I. No. 322 of 1997); Section 215 of the Planning and Development Act, 2000

²⁸ (European Commission 2001, Section 2.4)

'the assessment required by Article 6 should be clearly distinguishable and identified within an environmental statement or reported separately.'

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IROPI are deemed to exist when reasons of public interest in carrying out the project can imperatively override the protection of a European site.²⁹ Whilst each case is judged on its own merits, the following guiding principles may be relevant in deciding whether IROPI are demonstrated (Scottish Government, 2000):

- a need to address a serious risk to human health and public safety;
- national security and defence considerations; or
- a clear and demonstrable direct environmental benefit on a national or international scale; or
- a vital contribution to strategic economic development or regeneration; or
- where failure to proceed would have unacceptable social/economic consequences.

It is extremely important to note that the elements which constitute IROPI may depend on whether the habitats or species affected are *priority* or not (see Article 6(4) of the Habitats Directive and Regulation 30(6) of the Habitats Regulations, 1997). ‘Priority natural habitat types’ means natural habitat types in danger of disappearance; these priority natural habitat types are indicated by an asterisk (*) in Annex I of the Habitats Directive.³⁰ ‘Priority species’ are endangered species or those at the edge of their geographic range; these priority species are indicated by an asterisk (*) in Annex II of the Habitats Directive. It should be noted, however, that none of the species listed as priority in Annex II of the Habitats Directive are known to occur in Ireland. Where priority habitat types are affected, then IROPI can only relate to human health or public safety, or to beneficial consequences of primary importance for the environment, unless the European Commission has forwarded its Opinion identifying other IROPI.³¹ If no priority habitats are affected, then IROPI may also include, *inter alia*, social or economic considerations.

For a fuller understanding of the concept of IROPI the following documents should be consulted:

- *Guidance document on Article 6(4) of the ‘Habitats Directive’ 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the Commission* (European Commission, 2007a); and
- “European Commission’s Opinions under Article 6(4) of the Habitats Directive” (Kramer, 2009).

App.II.vi.b Assessment of Alternative Solutions

In relation to national road developments, the Commission (2001, p.35) states that alternative solutions may be composed of, *inter alia*, alternative:

- routes;
- methods of construction; and
- scheduling and timescale proposals.

It should be noted that a national road developer will consider alternative solutions during both the RCS and EIA phases (see Sections 5.2 and 6.2).

²⁹ See the Opinion of Advocate General Kokott delivered on the 27th of April, 2006, in relation to Case C-239/04 *Commission of the European Communities v. Portuguese Republic* Para. 45.

³⁰ Article 1(d) of the ‘Habitats Directive.’

³¹ The Commission have provided a number of Opinions under Article 6(4), including: Commission Opinion (EC) 96/15 of 18 December 1995 [1996] OJ L6/14; Commission Opinion (EC) of 27 April 1995 [1995] OJ C178/3; Commission, C(2000) 1079 of 14 April 2000; Commission, C(2003) 1303 of 24 April 2003; Commission, C(2003) 1304 of 24 April 2003; Commission, K(2003) 1309 of 24 April 2003; Commission, C(2004) 3460 of 17 September 2004; Commission, C(2004) 1797 of 14 May 2004; Commission K(2005) 1641 of 6 June 2006; and Commission, C(2006) 5190 of 6 November 2006.

The phrase ‘absence of alternative solutions’ could be interpreted as requiring that the infinite number of alternative solutions, feasible and unfeasible, be assessed. However, only feasible alternative solutions should be assessed (European Commission, 2007a, p.4), with manifestly unfeasible alternative solutions needing no further examination.³² Of the feasible alternative solutions, Kramer (2009) states, ‘*It simply does not make sense to ask for an examination of all of them, with an environmental impact assessment made for each of them.*’ Therefore, only reasonably alternative solutions representative of the infinite number of feasible alternative solutions should be assessed. It is important that this assessment is documented. In essence, the notion of ‘*absence of alternative solutions*’ in Article 6(4) of the Habitats Directive and in Regulation 30(5) of the Habitats Regulations, 1997, has to be read as meaning ‘*absence of reasonably alternative solutions*’ (Kramer, 2009).

In the ‘Castro Verde’ case, Advocate General Kokott stated that the alternative solution selected does not ‘*inevitably have to be determined by which alternative least adversely affects the site concerned.*’³³ Instead, she suggests ‘*the choice requires a balance to be struck between the adverse effect on the integrity of the [European site] and the relevant reasons of overriding public interest.*’³⁴ The Advocate General continues ‘*The decisive factor is therefore whether imperative reasons of overriding public interest require the implementation of specifically that alternative or whether they can also be satisfied by another alternative with less of an adverse effect on the [European site].*’³⁵

The following points may be derived from: Advocate General Kokott’s Opinion in the ‘Castro Verde’ case; relevant ECJ case law; European Commission guidance; and relevant academic literature:

1. It is important to ensure that there has been sufficient examination of feasible alternative solutions and that this examination has been documented;
2. Where feasible alternative solutions exist which would not have an adverse effect on the integrity of a European site, then any feasible alternative solutions which do should not be considered further;
3. Where there are no feasible alternative solutions which would not have an adverse effect on the European site, then strong consideration should be given to choosing the feasible alternative solution which has the least adverse effect on the European site;
4. Where the IROPI requires the choice of a feasible alternative solution other than that having the least effect only then may the feasible alternative solution having least effect not be chosen.

The importance of demonstrating that there has been sufficient examination of feasible alternative solutions and documenting this examination during these phases is highlighted. Where feasible alternative solutions exist which do not have an adverse effect on the integrity of a European site, then those which do should be eliminated. Where no feasible alternative solutions exist which do not adversely affect the integrity of a European site, then priority should be given to the feasible alternative solution having the least adverse impact. It is only in exceptional circumstances that

³² C-239/04 *Commission of the European Communities v. Portuguese Republic* Para. 38.

³³ Opinion of Advocate General Kokott delivered on the 27th of April, 2006, in relation to Case C-239/04 *Commission of the European Communities v. Portuguese Republic* Para. 44.

³⁴ Opinion of Advocate General Kokott delivered on the 27th of April, 2006, in relation to Case C-239/04 *Commission of the European Communities v. Portuguese Republic* Para. 44.

³⁵ Opinion of Advocate General Kokott delivered on the 27th of April, 2006, in relation to Case C-239/04 *Commission of the European Communities v. Portuguese Republic* Para. 46.

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IROPI will dictate the choice of a feasible alternative solution that does not have the least adverse impact. The principle of proportionality should be applied.

App.II.vii Stage 4: Assessment where no alternative solutions exist and where adverse impacts remain

Regulation 33 of the Habitats Regulations, 1997, states that where a national road development is agreed to, notwithstanding a negative assessment of the implications for a European site, the competent authority, An Bord Pleanála, ‘*shall ensure that the necessary compensatory measures are taken to ensure that the overall coherence of Natura 2000 is protected.*’

ATECMA (2005), in its *Study to provide guidelines for application of compensatory measures under Article 6(4) of the Habitats Directive 94/43/EEC*, state compensatory measures:

1. involve independent actions intended to offset the negative effects of the plan or project that would remain owing to the limited effectiveness of mitigation, so that the overall ecological coherence of the Natura 2000 network is maintained;
2. are an option when residual impacts of a plan or project are still deemed significant after relocation, redesign or mitigation options have been implemented; and
3. are independent measures adopted to offset these impacts.

Compensatory measures may include (European Commission, 2007, p.14):

1. Restoration or enhancement in existing sites; and/or
2. Habitat recreation in existing or new sites.

If compensatory measures are required, significant time and expert advice will be required by the project planning team to ensure that the measures are adequate and are properly planned and implemented. Some guidance on ecological restoration and creation of habitats is given in Gilbert and Anderson (1998).

In designing and assessing compensation measures, establishing implementation procedures, and designing monitoring plans, consultation with the National Parks and Wildlife Service is required.

APPENDIX III DEROGATION LICENSING PROCEDURES IN RELATION TO PROTECTED SPECIES

As indicated in Section 1.6 the Authority has published *Ecological Surveying Techniques for protected flora and fauna during the planning of National Road Schemes* (the ‘Survey Guidelines’) (National Road Authority, 2008b), which supplement these guidelines by providing advice on procedures and survey techniques for rare and protected habitats and species.

Special consideration must be given in the planning of national road schemes to any species of flora or fauna that are protected by national or international legislation or that are considered to be rare in a national or international context. Legally protected flora or fauna are normally specified in a schedule or Annex to the legislation. The main legal instruments for the protection of species are listed in Appendix III of the ‘Survey Guidelines’.

In some cases, a licence may be required to remove, or disturb the habitat of, these protected species. The principal licensing authority is the Department of Environment, Heritage and Local Government.

App.III.i Derogation licences

The European Court of Justice has indicated that the practice of requiring information on protected species only after development consent has been granted undermines the EIA process.³⁶ In order to rectify this situation the Department of Environment, Heritage and Local Government has advised that ‘[a]n application for [a derogation licence] should be made in advance of seeking any necessary approval for development/planning permission for works. This will ensure that full consideration can be given to the impacts of the proposed project on the species and to avoid the possibility of delay to the proposed project or of a refusal of a derogation licence which would prevent the works being carried out as planned.’³⁷ Therefore, it is recommended that, where feasible, derogation licences be applied for in advance of the granting of EIA consent. Whilst this is particularly the case in relation to species protected under EU law, e.g. species protected under Annex IV (A) of the Habitats Directive requiring a derogation licence pursuant to Regulation 25 of the Habitats Regulations, 1997,³⁸ this recommendation also applies in relation to species protected under national legislation such as the Wildlife Acts, 1976 and 2000.

App.III.i.a Regulation 25 Derogation Licences

Readers are directed to *Guidance document on the strict protection of animal species of Community interests under the Habitats Directive 92/42/EEC* (European Commission, 2007b) for more detailed information on Regulation 25 derogation licences.

³⁶ Case C-183/05 *Commission of the European Communities v. Ireland* [2007] ECR I-0000 para. 51

³⁷ (Department of the Environment, Heritage and Local Government, 2008d)

³⁸ See, generally, (European Commission, 2007b)

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Regulation 23(3) of the Habitats Regulations, 1997, provides:

A person who in respect of the species set out in Part I of the First Schedule—

- (a) deliberately captures or kills any specimen of these species in the wild,*
- (b) deliberately disturbs these species particularly during the period of breeding, rearing, hibernation and migration,*
- (c) deliberately takes or destroys the eggs from the wild, or*
- (d) damages or destroys a breeding site or resting place of such an animal,*

shall be guilty of an offence.

Part I of the First Schedule of the Habitats Regulations, 1997, lists all species specified in Annex IV (A) of the Habitats Directive.³⁹ Regulation 25 of the Habitats Regulations, 1997, allows the Minister for Environment, Heritage and Local Government to permit derogation from complying with the provisions of Regulation 23. Regulation 25(1) of the Habitats Regulations, 1997, may be broken down into the following three tests:⁴⁰

- 1) the demonstration of one or more of the reasons listed in Regulation 25(1) (a)-(e);*
- 2) the absence of a satisfactory alternative; and*
- 3) the assurance that a derogation is not detrimental to the maintenance of populations at a favourable conservation status.*

It is apparent that the tests here are similar/analogous to those applied in relation to Article 6(4) of the Habitats Directive. Appropriate regard should, therefore, be had to Appendix II and Sections 4.3.3, 5.2 and 6.2 in the planning of national road projects and in the making of Regulation 25 derogation licence applications. The three tests are outlined in more detail below.

Test One: of one or more of the reasons listed in Regulation 25(1) (a)-(e)

Given that the ECJ has indicated that the grounds for derogation should be construed narrowly, generally the primary ground under which a national road scheme may be granted a derogation is under Regulation 25(1)(c), namely: ‘*in the interests of public health and public safety, or for other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment.*’ Section App.II.vi.a should be consulted for a fuller understanding of the concept of imperative reasons of overriding public interest (IROPI).

Test Two: Absence of a satisfactory alternative

Regulation 25(1) requires that there be an absence of a satisfactory alternative. Again, whilst Appendix II and Sections 4.3.3, 5.2 and 6.2. deal specifically with Articles 6(3) and 6(4) of the Habitats Directive/Regulations 30 and 33 of the Habitats Regulations, 1997, these sections contain useful information on this test.

³⁹ Regulation 3(12) of the European Communities (Natural Habitats) (Amendment) Regulations, 2005

⁴⁰ (European Commission 2007b, p. 54)

Test Three: Not detrimental to the maintenance of populations at a favourable conservation status

Regulation 25(1) provides that the granting of the derogation licence must not be detrimental to the maintenance of populations at a favourable conservation status. The conservation status of all EU protected habitats and species is outlined in DoEHLG's (2008a) *The Status of EU Protected Habitats and Species in Ireland*. This document indicates that many habitats and species are not currently at favourable conservation status. Thus, the question arises whether or not the granting of a derogation licence can be justified in such circumstances. In this regard the Commission suggest that '*the less favourable the conservation status and trends, the less likely will the granting of derogations be justified apart from in the most exceptional circumstances.*'⁴¹ However, the Commission also suggest that '[c]ompensation measures may, under certain circumstances, be used to offset the impact of a derogation on breeding sites and resting places...'⁴²

⁴¹ (European Commission 2007b, p. 65)

⁴² Ibid at 65

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APPENDIX IV DAMAGE TO PROTECTED HABITATS AND SPECIES: THE ENVIRONMENTAL LIABILITY DIRECTIVE

App.IV.i Introduction

As of April, 2009, Ireland is in the process of preparing legislation to transpose the Environmental Liability Directive (ELD).⁴³ The European Communities (Environmental Liability) Regulations, 2008 (S.I. No. 547 of 2008) ('Environmental Liability Regulations'), were published in *Iris Oifigiúil* of the 23rd of December, 2008. The Environmental Liability Bill is listed in Section A ('Bills expected to be published from the start of the Dáil Session up to the beginning of the next Session') of the Government Legislation Programme.⁴⁴

The following guidance is written having regard to the contents of the ELD, and to existing and proposed transposing measures and associated documentation.⁴⁵

The Environmental Liability Directive specifies that Member States should, *inter alia*, establish a civil liability regime whereby operators of specified activities which cause environmental damage are financially liable for remedying this damage. The Directive also aims to hold those responsible for certain activities which have caused an imminent threat of environmental damage liable for taking preventive actions.

⁴³ Directive 2004/35/CE of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage

⁴⁴ <http://www.taoiseach.gov.ie/index.asp?docID=2579>

⁴⁵ See *Environmental Liability Directive – Screening Regulatory Impact Analysis* (DoEHLG, 2008b); *Guidance – Draft Legislation transposing the Environmental Liability Directive* (DoEHLG, 2008c)

App.IV.ii Environmental Damage

A significant feature of the Directive is that it defines ‘environmental damage’ as damage to protected species and natural habitats, ‘water damage’⁴⁶ and ‘land damage’.⁴⁷ In the context of damage to protected species and natural habitats, damage occurs where there is a significant adverse effect on reaching or maintaining the favourable conservation status of such habitats or species.

App.IV.iii Species and Habitats Protected

The species and habitats protected under the ELD include the following:

- Species of bird, listed in Annex I and referred to in Article 4(2) of the Birds Directive;⁴⁸
- Species of animals and plants listed in Annex II and IV of the Habitats Directive;⁴⁹
- Habitats of species of bird, listed in Annex I and referred to in Article 4(2) of the Birds Directive;
- Habitats of species of animals and plants identified in the Habitats Directive (listed in Annex II);
- Natural habitats listed in Annex I of the Habitats Directive; and
- The breeding sites or resting places of the species, listed in Annex IV of the Habitats Directive.

The proposed Bill also provides that the Minister for the Environment, Heritage and Local Government may, by way of Regulation, extend the species and habitats protected to include those other species or habitats protected under the Wildlife Acts and Habitats Regulations.⁵⁰ It is important to note that the protection regime applies to protected habitats and species both inside and outside of European sites.

App.IV.iv Assessment of Damage to Protected Species and Habitat

Schedule I to the Environmental Liability Regulations outlines the proposed criteria in assessing damage to protected species and habitat. The schedule states:

The significance of any damage that has adverse effects on reaching or maintaining the favourable conservation status of habitats or species has to be assessed by reference to the conservation status at the time of the damage, the services provided by the amenities they produce and their capacity for natural regeneration.

⁴⁶ Regulation 2(1) of the Environmental Liability Regulations defines “water damage:”
“water damage” means any damage that significantly adversely affects the ecological, chemical or quantitative status or ecological potential, as defined in the Water Framework Directive, of the waters concerned, with the exception of adverse effects where Article 4(7) of the Water Framework Directive applies;

⁴⁷ Regulation 2(1) of the Environmental Liability Regulations defines “land damage:”
“land damage” means any land contamination that creates a significant risk of human health being adversely affected as a result of the direct or indirect introduction, in, on or under land, of substances, preparations, organisms or micro-organisms;

⁴⁸ Council Directive of 2 April 1979 on the conservation of wild bird (79/409/EEC)

⁴⁹ Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora

⁵⁰ Head 3 – Extension of Habitats and Species

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The Schedule further indicates that significant adverse changes to the baseline condition should be determined by means of measurable data, such as:

- ❑ the number of individuals, their density or the area covered;
- ❑ the role of the particular individuals or of the damaged area in relation to the species or to the habitat conservation, the rarity of the species or habitat (assessed at local, regional and higher level including at Community level);
- ❑ the species' capacity for propagation (according to the dynamics specific to that species or to that population), its viability or the habitat's capacity for natural regeneration (according to the dynamics specific to its characteristic species or to their populations); and
- ❑ the species' or habitat's capacity, after damage has occurred, to recover within a short time, without any intervention other than increased protection measures, to a condition which leads, solely by virtue of the dynamics of the species or habitat, to a condition deemed equivalent or superior to the baseline condition.

App.IV.v Permit Defences

Article 2(1)(a) of the ELD states:

Damage to protected species and natural habitats does not include previously identified adverse effects which result from an act by an operator which was expressly authorised by the relevant authorities in accordance with provisions implementing Article 6(3) and (4) or Article 16 of Directive 92/43/EEC or Article 9 of Directive 79/409/EEC or, in the case of habitats and species not covered by Community law, in accordance with equivalent provisions of national law on nature conservation.

This provision has the effect of providing a “permit defence.” So, for example, the holding of a derogation licence under Regulation 25 of the Habitats Regulations, 1997, (the provision transposing Article 16 of Directive 92/43/EEC) may exempt the holder from liability in relation to environmental damage to the Annex IV (A) species in question. Similarly, a development consent or approval given by An Bord Pleanála in circumstances where the development concerned is subject to EIA and the EIA is an appropriate assessment for the purposes of the Habitats Regulations, 1997, may exempt the development from liability in relation to environmental damage on a European site. Such possible exemption from liability is, of course, subject to the conditions of licences or consent being complied with.

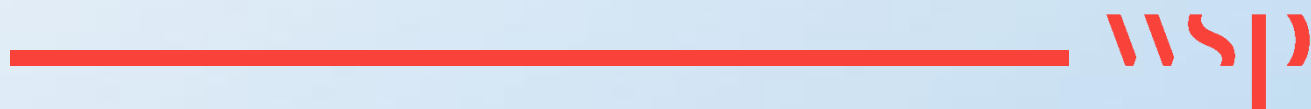
APPENDIX V LOCAL AUTHORITY WORKS AFFECTING NATURE RESERVES, NATURE REFUGES AND NATURAL HERITAGE AREAS (NHAS)

Scannell (2006, p. 282) indicates that the Wildlife Acts provide, *inter alia*, that a local authority and other defined public authorities, shall: (1) consult with the Minister for the Environment, Heritage and Local Government before anything which (in the opinion of the Minister, other Minister or the authority/body in question) is likely or liable to affect, or to interfere with a Nature Reserve, Nature Refuge or Natural Heritage Area; and (2) take all practicable steps to avoid or minimise such effect or interference.⁵¹

⁵¹ Section 12 of the Wildlife Act, 1976, and Section 24(1) of the Wildlife (Amendment) Act, 2000.

Appendix 6C

TEAGASC 2010 - HEDGEROW PLANTING GUIDELINES



Planting a Stockproof Hedgerow

This hedgerow consists mainly of hawthorn and will be a stockproof alternative to fencing, providing a valuable habitat and shelter.

plants and tools required to plant 100 metres:

plants required:

- 500 hawthorn (or whitethorn)
- 100 blackthorn (or sloe)
- 15 holly
- 15 guelder rose
- 15 hazel
- 15 dog rose
- 15 spindle
- 15 crab apple
- 15 field maple (not native to Ireland)
- 5 hedgerow trees (oak, rowan, birch, whitebeam, wild cherry or bird cherry)

materials, tools and labour required:

- ground rock phosphate, compound fertiliser (10-10-20) or rotted farmyard manure (if necessary)
- hire of small digger / JCB with 18"-24" bucket
- spade
- pair of secateurs
- hedging plastic (black, UV-stabilised polythene, 1m wide, 120 micron thick)
- ± 5 tonnes of fine quarry dust
- appropriate fence type
- 2 mandays

before you start...

- the secret of planting a hedge successfully depends mainly on using good quality plants, cultivating the soil prior to planting, controlling grass and weeds and keeping browsing animals away for the first few years
- consider location, access points and traffic safety carefully
- start planning in summer, do it well and try to plant a short run of hedge every year
- fence off: protection for the first few years from cattle, sheep, goats, deer, rabbits and hares is critical

site preparation: essential for successful growth



- spread ground rock phosphate, compound fertiliser (10-10-20) or rotted farmyard manure where hedge is to be planted
- using a JCB or a small digger, dig soil over to 25cm (10") deep and 50cm (2') wide, flip soil over and with the bucket teeth, loosen and level soil
- ensure the site has sufficient top-soil and avoid waterlogged, shallow and very exposed sites
- keep at least 1m (3.5') away from any fence or wall
- if planting (or infilling) on the site of an old hedge: remove old soil and add fresh topsoil mixed with well-rotted manure
- avoid planting on top of an old ditch

plants and planting

- use 2-year old, graded plants between 0.50m - 0.90m tall with a single stem (do not buy plants already cut back in the nursery), bushy roots and a sturdy lower stem
- soak roots before planting (1 hour)
- plant trees directly from the bag, one by one (do not expose roots to air)
- plant a.s.a.p. after delivery, avoiding wet, windy or frosty conditions between december and february
- plant a double row of staggered plants using 5 hawthorn plants/metre (30cm (12") between the rows and 40cm (16") between the plants)



Planting a Stockproof Hedgerow

after planting:

- cut back hawthorn to 10cm (4")
- spread out black plastic over the stumps
- pierce stumps through plastic using a big nail (do not cut slits in plastic), bunch up plastic a little to avoid tearing it later on
- spread thick layer of quarry dust over plastic, covering plastic totally but leaving the stumps exposed
- plant other plants such as holly, guelder rose, etc. along plastic edge

please note: if the hedge is to be laid in the future, this weed control system would be inappropriate. Do not cut back after planting, leave the quicks to grow for 7-10 years and then carry out hedge laying.



after planting care

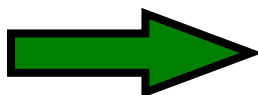
- cut tall weeds (such as thistles, nettles, docks, etc.) growing between the plastic's edge and the fence, twice during the growing season
- pull grass and re-colonising weeds (couch grass, buttercups, etc.) back off the gravel 3 or 4 times during the growing season using a rake or billhook
- *please note: biodegradable mulches (straw, grass, bark, rushes, etc.) used instead of plastic, work very well in sheltered areas if vegetation has been killed off prior to soil preparation and if regularly raked over and topped up. Use grass clippings in the summer and well-rotted manure in the autumn for instance.*

early hedge management

- monitor weed growth and carry out weeding if required
- replace dead hedge plants every winter
- cut back to 30cm (12") of current year's growth for the first three winters:



<< cut back after one year



3 years later >>



- shape hedge in an 'A' after 2-3 years (trim sides, do not top)
- remove fences after 5 years and carry out first mechanical 'A' trimming
- the new hedgerow should be fully stockproof by now and no further management is required but for some biannual side trimming

general remarks:

- use native, locally occurring species; a range of species is more attractive and valuable to wildlife
- appropriate hedging species:
 - o hawthorn (whitethorn, quickthorn), blackthorn, holly, dog rose, guelder rose, hazel, spindle and gorse (also non-native field maple, ramanas rose, common and copper beech, hornbeam)
 - o consider using (shade tolerant) holly in existing hedges
- hedging species to be avoided on the farm (because of aggressive growth or poisonous plant parts):
 - o elder, ash, snowberry, box, yew, rhododendron, cypress, leylandii, cherry laurel, etc.
- appropriate hedgerow trees (every 20-30 metres)
 - o oak, rowan, field maple, ash (sometimes), crab apple, wild cherry, bird cherry, wild pear, elder
 - o use alder or birch on damper sites
- hedgerow tree species to be avoided on the farm:
 - o sycamore, beech, chestnut, lime, elm, yew, cypress, leylandii, (sometimes ash), etc.

Appendix 6D

BAT SURVEY OF TREES (WSP 2026)



Technical Note

TO	An Coimisiún Pleanála	FROM	WSP
DATE	08 June 2026	CONFIDENTIALITY	Public
SUBJECT	Examination of Trees with Bat Roost Potential		

SCOPE OF WORK

This report details the findings of a bat survey completed to inform a request for further information (FI) in relation to the Proposed Kilmartin Soil Recovery Facility in the townland Kilmartin, Coyne's Cross, Co. Wicklow (An Coimisiún Pleanála (ACP) Case Number: ACP-324033-26).

The survey aimed to;

- Re-classify previously identified trees according to updated Bat Conservation Trust (BCT) Bat Survey Guidelines (Collins, 2023);
- Search for evidence of roosting bats within previously identified trees.

The surveys undertaken are in line with recommendations in Chapter 6 of the BCT Bat Survey Guidelines (Collins, 2023). The survey was designed and carried out by Daniel Black M.Sc. (Env.). Daniel has been carrying out bat work since 2021 including aerial assessments of trees and translocation of roosting bats and has been the named ecologist on multiple project licenses to disturb bats granted by the Northern Ireland Environment Agency (NIEA). Daniel has also completed training in Bat Ecology and Survey with the Chartered Institute of Ecology and Environmental Management, delivered by Dr Emma Boston. Surveys previously conducted in September 2022¹ included a preliminary ground level roost assessment and at height inspections (where required) of three sweet chestnut trees *Castanea sativa* and an ash tree *Fraxinus excelsior*. At height tree surveys were conducted by Daniel Black with assistance from Dion Clarke. The report was checked by Cathal O'Brien MSc, BSc, ACIEEM, and authorised by Luis Iemma, Ph. D CEcol, MCIEEM.

It is noted that the trees that have been assessed within this report were scoped in for climbing surveys following an ecological appraisal of potential roosting features on site. This included review of the Potential Roost Features (PRFs) on site carried out prior to the survey, following previous site surveys documented in the EIAR².

RESULTS

A daytime assessment of trees within the Proposed Kilmartin Soil Recovery Facility site was undertaken on the 1st of June 2026 following reference to the following guidance documents.

- Andrews H. (2018) *"Bat Roosts in Trees – A Guide to Identification and Assessment for Tree-Care and Ecology Professionals" - Bat Tree Habitat Key*. Pelagic Publishing
- Collins, J. (ed.) (2023) *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (4th edition). The Bat Conservation Trust, London
- Andrews H et al. 2013. *Bat Tree Habitat Key*. AEcol, Bridgwater

¹ Environmental Impact Assessment Report (2022). Proposed Kilmartin Soil Recovery Facility. Chapter 6.0: Ecology & Biodiversity.

² Chapter 6.0 Ecology and Biodiversity - Proposed Kilmartin Soil Recovery Facility Environmental Impact Assessment Report. EIAR Chapter Reference: 400000103.R02.06. December 2025.

- Marnell, F., Kelleher, C. & Mullen, E. (2022) Bat mitigation guidelines for Ireland v2. Irish Wildlife Manuals, No. 134. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland.

Conditions during the survey were dry and overcast. All trees were assessed from ground level using binoculars to identify PRFs. PRFs were then inspected using a torch and inspection camera (Rigid CA-150). Trees were climbed using ropes and harness to access features where necessary. All trees were categorised according to Table 1-1 and the PRFs noted within the trees were classified according to Table 1-2.

Table1-1: Tree categories according to Bat Conservation Trust Guidelines (4th edition) (Collins, 2023)

Tree Category	Description
None	Either no PRFs in tree or highly unlikely to be any.
FAR	Further assessment required to establish if PRFs are present in the tree.
PRF	A tree with at least one PRF present.

Table 1-2: PRF Categories according to Bat Conservation Trust Guidelines (4th edition) (Collins, 2023)

Tree Category	Description
PRF-I	PRF is only suitable for individual bats or very small numbers of bats either due to size or lack of suitable surrounding habitats.
PRF-M	PRF is suitable for multiple bats and may therefore be used as a maternity colony.

Evidence of bat usage sought during the surveys include:

- Bat droppings (these will accumulate under an established roost or under access points);
- Insect remains (under feeding perches);
- Oil (from fur) and urine stains;
- Scratch marks; and
- Bat corpses.

TREE 1

The condition of previously noted features was largely consistent with prior surveys. One new feature (PRF-8) was noted. While individual features are classified separately in accordance with BCT guidance, the presence of multiple PRF-M features indicates that, on a precautionary basis, Tree 1 is considered to have high suitability for roosting bats. However, no evidence of bats was recorded.

Date: 01/06/2026

Tree 1: Sweet Chestnut *Castanea sativa* (PRF-M)

Location: 53.04605335, -6.083504185. Southern tree



PRF-1 (PRF-I): Peeling bark found at the base of the tree on its east aspect, open to the top somewhat lowering potential, due to water ingress. No evidence of bats noted.

PRF-2 (PRF-I) two further small cavities at base, *approximately* 10cm, suitable for single bats. No evidence of bats noted.

Date: 01/06/2026

Tree 1: Sweet Chestnut *Castanea sativa* (PRF-M)

Location: 53.04605335, -6.083504185. Southern tree

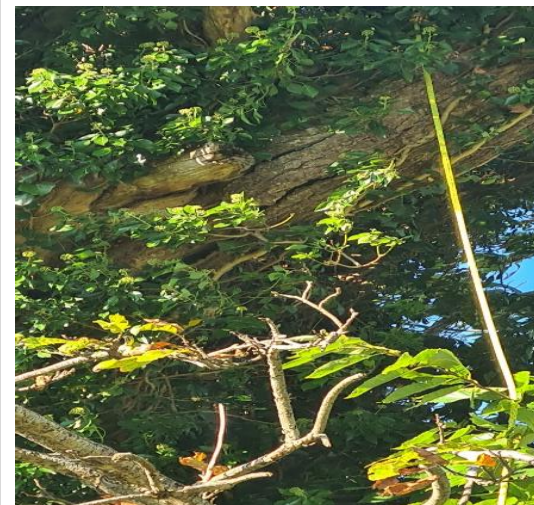
PRF-3 (PRF-M) At western end a basal cavity continues into a burrow (+1m) while cavity continues up for 50cm. No evidence of bats noted.



PRF-4 (PRF-M) Two cavities above PRF-3, continues up for 25cm – no evidence of bats.



PRF-5 (PRF-I) Peeling bark on stem at 9m on eastern aspect. Open to side allowing water ingress reducing potential. Underneath the bark is very dirty and there is lots of ivy growth blocking much of the feature further reducing potential.



PRF-6 (PRF-M) Hole in dead branch at 10m on east aspect. Travels up 15cm and down 80cm. Dry inside and is good potential to host multiple bats. No evidence of bats noted.

PRF-7 (PRF-M) Knot hole at 11m on west aspect, goes straight back into tree approximately 30cm. Has clear landing area devoid of leaves but feature itself is full of cobwebs (which indicates it has not been used a roost recently). This feature is also somewhat exposed to wind due the fact it heads

PRF-7 (PRF-M) Dead limb at 2m on N aspect. Nesting material inside but did not appear currently in use by birds. No

Date: 01/06/2026

Tree 1: Sweet Chestnut *Castanea sativa* (PRF-M)

Location: 53.04605335, -6.083504185. Southern tree



straight back into tree.



evidence of bats noted.



PRF-8 (PRF-M) crevice at the base of broken limb on N aspect at 4m. Nesting material inside but did not appear currently in use by birds. No evidence

Date: 01/06/2026		
Tree 1: Sweet Chestnut <i>Castanea sativa</i> (PRF-M)		
Location: 53.04605335, -6.083504185. Southern tree		
of bats noted.		
		

TREE 2

Mature tree with ivy cover. As with previous surveys when ivy was examined the roots did not form mats thick enough to form cavities. Multiple tiny cracks on the stem were too narrow to be of use by bats. One PRF not noted during previous surveys, was discovered on the north facing aspect of the tree. The identified PRF is limited and of low suitability; therefore, the tree is considered to have low overall suitability for roosting bats (PRF-I).

Date: 01/06/2026

Tree 2: Sweet Chestnut *Castanea sativa* (PRF-I)

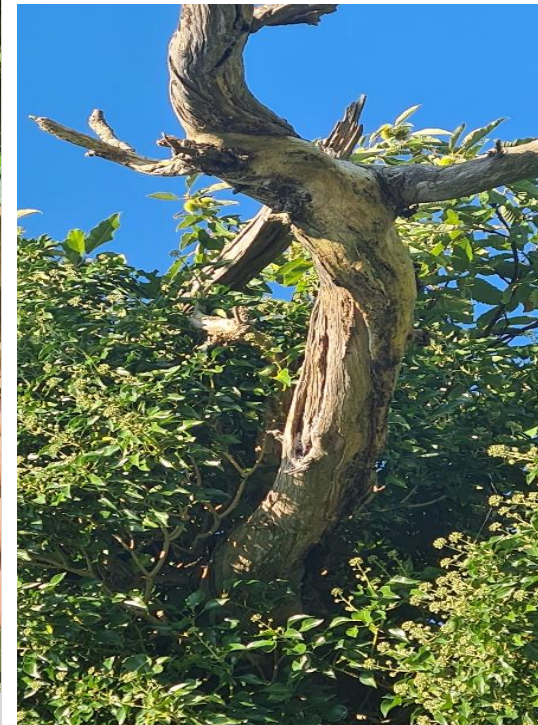
Location: 53.04655442, -6.083383821.



Ivy roots do not form mats.



Dead branch with tear off does not form cavity.



Date: 01/06/2026		
Tree 2: Sweet Chestnut <i>Castanea sativa</i> (PRF-I)		
Location: 53.04655442, -6.083383821.		
PRF-1 (PRF-I) Small cavity in snapped branch on N aspect at 2.5m. Extends into tree about 7cm with an approximately 3cm diameter. No evidence of bats noted.		
		

Sweet chestnut with two basal cavities. Despite the features proximity to the ground, they still provide adequate shelter from predators and have been assessed as suitable to support multiple bats (PRF-M).

Date: 01/06/2026

Tree 3: Sweet Chestnut *Castanea sativa* (PRF-M)

Location: 53.046799, -6.083326

PRF-1 (PRF-M) Basal cavity on southwest aspect. Goes up into tree about 25cm, diameter approximately 5cm. Relatively dry but filled with woodlice. No evidence of bats was noted.



PRF-2 (PRF-M) Basal cavity on south aspect. Goes up into tree 30cm, diameter approximately 5cm. Relatively dry but filled with woodlice. No evidence of bats was noted.



TREE 4

Ash tree which contained lifted bark is assessed as suitable to support individual/small numbers of bats and a knothole assessed as suitable to support multiple bats (PRF-M).

Date: 01/06/2026		
Tree 4: Ash (PRF-M)		
Location: 53.04676397 -6.083358541		
PRF-1 (PRF-I) Lifted bark on the southern aspect at 1.5-3m forming multiple cavities. Most of these cavities are too exposed to wind/light/rain. However, one small section (approximately 5x10cm) was assessed as suitable to support individuals/small numbers of bats. No evidence of bats was noted.	PRF-2 (PRF-M) Knot hole on the southern aspect at 3m. Goes back into tree about 20cm with a diameter of approximately 4cm. Full of woodlice and a slug. Precautionarily assessed as being able to support multiple bats. No evidence of bats was noted.	
		



SUMMARY

This report details the findings of a bat survey conducted on 4 no. trees in Kilmartin, Co. Wicklow. Three sweet chestnut trees and one ash tree were noted to contain features suitable to support roosting bats. When these features were examined at height using an endoscope, no bats or evidence of previous occupation was noted.

On this basis and having regard to the nature of the features and absence of recorded bat use, the trees are considered to have low to moderate suitability for roosting bats, with no evidence of current occupation. Any works affecting these trees can be undertaken with appropriate precautionary measures and, where required, under ecological supervision.

The absence of bats or field evidence (e.g. droppings, staining or feeding remains) within the inspected features, combined with the detailed inspection of all identified PRFs, indicates that no roosts were present at the time of survey. While it is acknowledged that bat roosts in trees may be used intermittently, the results indicate a low likelihood of regular or established roost presence within the surveyed trees.

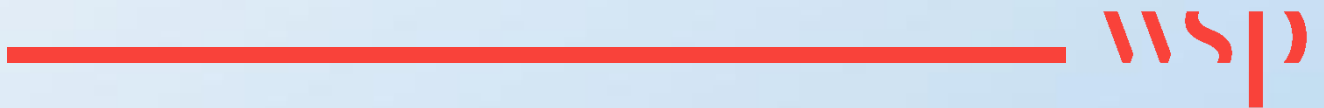
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Appendix 6E

BADGER MITIGATION STRATEGY



Badger Mitigation Strategy

TO	An Coimisiún Pleanála	FROM	WSP
DATE	10 June 2026	CONFIDENTIALITY	Public
SUBJECT	Badger Mitigation Strategy		

INTRODUCTION

This Badger Mitigation Strategy was prepared following a request for further information from the An Coimisiún Pleanála (ACP) in relation to a proposed development of a soil recovery facility at a site in Kilmartin, Coyne's Cross, Co. Wicklow (ACP Case Number: ACP-324033-26).

The Badger Mitigation Strategy was prepared following best practice guidance from the NRA (2005)¹ Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes.

This document should be read in conjunction with the updated Chapter 6.0: Ecology and Biodiversity (WSP file ref: 40000103.R02.06.02).

LEGISLATION

Badgers *Meles meles* and their setts are protected under the provisions of Section 23 (5)(d) of the Wildlife Act, 1976 (as amended). It is an offence to intentionally kill or injure a protected species or to wilfully interfere with or destroy the breeding site or resting place of a protected wild animal. No active sett should be interfered with or disturbed during breeding season (December to June). Monitoring of the sett would be required to demonstrate no sett activity if closure was required during this period.

If interference with an active sett is required, the works shall be undertaken by a suitably qualified and experienced ecologist in accordance with relevant legislation, current best practice guidance and any recommendations provided by the National Parks and Wildlife Service and Wicklow County Council .

BACKGROUND

Survey work on the site undertaken by O'Donnell Environmental Ltd and WSP between 2022-2025 has identified on outlier badger sett with 2 entrances within the fill area (see updated Chapter 6.0: Ecology and Biodiversity (WSP file ref: 40000103.R02.06.02) for details).

A single badger individual was recorded either investigating the sett entrance or entering and exiting the sett on three occasions during the period between 9 February 2022 to 3 March 2022. Based on the camera trail evidence and lack of latrines, bedding material or bedding trails, the level of use indicates the sett was not being used for breeding purposes at the time of the survey. If this was the case, activity would be expected to be higher than recorded, and latrines would also be present around the sett, which they were not.

¹ National Roads Authority, (2005). *ENVIRONMENTAL SERIES ON CONSTRUCTION IMPACTS*. [online] Available at: <https://www.tii.ie/media/gtajacj2/guidelines-for-the-treatment-of-badgers-prior-to-the-construction-of-a-national-road-scheme.pdf>.

In accordance with Scottish Badgers (2018) and Smal (1995) this does not affect the classification of the type of sett as an outlier sett, as two-entrance outlier setts are common.

The destruction of the outlier badger sett is unavoidable, as it is located within the proposed fill area which is constrained by the presence of a natural valley located within the Site.

Targeted monitoring using a trail camera was carried out between 9 February 2022 to 3 March 2022 by, following the identification of a potential badger sett during a site survey on 9 February 2022 by O'Donnell Environmental Ltd. (see Section 6.4.3.2 Mammals the updated Chapter 6.0: Ecology and Biodiversity (WSP file ref: 40000103.R02.06.02)). The potential badger sett was recorded in a hedgerow located centrally within the Site, with a single entrance, and was later confirmed as a partially used 'outlier' badger sett in accordance with guidance from Scottish Badgers (2018)² based on the size and context of the sett and its level of usage.

A walkover survey conducted by WSP on 21st August 2023 confirmed the presence of a single entrance, active outlier badger sett at the same recorded location in 2022.

A further walkover survey undertaken by WSP on 18th June 2025 noted that a second entrance had been excavated at the same outlier badger sett.

MITIGATION MEASURES

Current best practice guidelines in relation to mitigation measures for the exclusion of badger from setts are set out in NRA (2005)¹.

- Exclusion of badgers from currently active setts should only be carried out during the period of July to November (inclusive) to avoid the badger breeding season (December to June). During the breeding season, no activity, such as infilling with soil and stone waste should be carried out within 50 m of an active sett.
- As the identified outlier sett is located within the proposed fill area, its loss is unavoidable. Prior to implementation of any mitigation measures affecting the sett, consultation will be undertaken with NPWS and Wicklow County Council regarding the proposed methodology and any additional measures considered necessary. The recommendations advised by NPWS are to be agreed with the local planning authority, namely Wicklow County Council Biodiversity Officer. Any further mitigation measures advised along with those set out in this Badger Mitigation Strategy will be implemented under the supervision of a suitably experienced badger ecologist (i.e. Ecological Clerk of Works (ECoW)).
- A pre-construction survey of the application site (i.e. the infill area), and the remainder of the Site in which the wider fields are located, including monitoring of setts via the deployment of camera traps (i.e. one at each sett entrance) will be required for a minimum of seven days to determine if setts are still active (or as advised by NPWS). Monitoring of any new setts discovered since the 2025 survey will also be required. The activity status of a sett is adjudged by field signs at and around the sett: evidence of paths, rooting, latrines, etc. will suggest recent or intermittent use and the results of camera capture.
- The precise mitigation measures implemented will be informed by the results of pre-construction surveys and monitoring undertaken immediately prior to commencement of works.

² Scottish Badgers (2018). *Surveying for Badgers Good Practice Guidelines Surveying for Badgers: Good Practice Guidelines 2 Acknowledgements*. [online] Available at: https://www.scottishbadgers.org.uk/wp-content/uploads/2020/12/Surveying-for-Badgers-Good-Practice-Guidelines_V1-2020-2455979.pdf.

- **Mitigation measures for active setts:**

- If setts are determined to be inactive and/ or dis-used following the pre-construction survey and monitoring, exclusion of badgers from such setts may be undertaken during any season. If found to be dis-used after monitoring, setts should be immediately hard-blocked under the supervision of the suitably experienced ecologist, which requires appropriate placement of wire fencing and compacted soil¹.
- If field signs and/or monitoring reveal any suggestion of current or recent badger activity at any of the sett entrances, the sett requires thorough evacuation procedures before it can be hard blocked outside of the breeding season (July – November inclusive).

One-way badger exclusion gates shall be installed over all entrances of any active setts to allow badgers to exit but not to return. Materials to construct the one-way gates will comprise:

- Heavy-duty mesh.
- Funnel-shaped or hinged flap design.
- The gates should be tied open for three days prior to being set to exclude badgers.
- Sticks should be placed at arm's length within the gated tunnels to establish if badgers remain within the sett or a camera trap deployed at the sett entrance for three days to establish if badger have left the sett.
- The gate should remain installed for a minimum of 21 days with regular inspections to monitor activity within the gate. If activity is recorded, the procedure should be repeated and additional measures implemented. Once there has been no activity for an additional 21 days, the sett entrance should be hard blocked.
- Sett destruction should commence immediately following the 21-day exclusion period, provided that all badgers have been excluded.
- The status of the known sett and the presence of any additional badger activity within the Site shall be verified immediately prior to commencement of works.

MONITORING

Where active setts are subject to exclusion measures, post-closure monitoring will be undertaken to confirm that badgers have not established replacement setts within areas likely to be affected by the Proposed Development. The requirement for, frequency of and duration of monitoring will be determined by the supervising ecologist having regard to the results of pre-construction surveys and the status of the sett at the time mitigation measures are implemented.

REFERENCE

Smal, C. (1995). The badger and habitat survey of Ireland . [online] The Stationary Office. Available at: <https://www.bovinetb.info/docs/the-badger-and-habitat-survey-of-ireland.pdf>.

Scottish Badgers (2018). Surveying for Badgers Good Practice Guidelines Surveying for Badgers: Good Practice Guidelines 2 Acknowledgements. [online] Available at: https://www.scottishbadgers.org.uk/wp-content/uploads/2020/12/Surveying-for-Badgers-Good-Practice-Guidelines_V1-2020-2455979.pdf.