CIEEM

Chartered Institute of Ecology and Environmental Management

GUIDELINES FOR PRELIMINARY ECOLOGICAL APPRAISAL

Second Edition

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Guidelines for Preliminary Ecological Appraisal (December 2017)

PREFACE TO SECOND EDITION

The Guidelines for Preliminary Ecological Appraisal (2nd edition) have been produced by the Professional Standards Committee of the Chartered Institute of Ecology and Environmental Management (CIEEM). They were first published in 2012, authored by Ben Benatt CEnv MCIEEM (Halcrow Group Ltd, now part of CH2M) on behalf of the Institute.

The aims of the Guidelines are to:

- promote good practice in undertaking Preliminary Ecological Appraisal (PEA); and
- provide a common framework for PEA in order to promote better communication, understanding and cooperation between stakeholders.

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SECTION 1. INTRODUCTION

1.1 The purpose of this guidance is to set out the appropriate approach to undertaking Preliminary Ecological Appraisals (PEAs) and the appropriate application of such assessments within the planning process.

1.2 **Preliminary Ecological Appraisal (PEA)** is the term used to describe a rapid assessment of the ecological features present, or potentially present, within a site and its surrounding area (the zone(s) of influence[1] in relation to a specific project (usually a proposed development)). A PEA normally comprises a desk study and a walkover survey, the methods for which are further defined in Section 2 of these guidelines.

1.3 The key objectives of a PEA are to:

- identify the likely ecological constraints associated with a project;
- identify any mitigation measures likely to be required, following the '*Mitigation Hierarchy*'[2];
- identify any additional surveys that may be required to inform an Ecological Impact Assessment (EcIA); and
- identify the opportunities offered by a project to deliver ecological enhancement.

1.4 A flowchart is provided in Appendix 1, which sets out the appropriate approach to ecological assessment for proposed development projects, and highlights the role of a PEA within that process.

1.5 The results of a PEA can be presented in a **Preliminary Ecological Appraisal Report (PEAR)**. The primary audience for a PEAR is the client or developer and relevant members of the project team, such as the architect, planning consultant, and landscape architect. It is normally produced to inform a developer (or other client), and their design team, about the key ecological constraints and opportunities associated with a project, possible mitigation requirements and any detailed further surveys required to inform an Ecological Impact Assessment (EcIA). Under normal circumstances it is not appropriate to submit a PEAR in support of a planning application because the scope of a PEAR is unlikely to fully meet planning authority requirements in respect of biodiversity policy and implications for protected species.

1.6 In the majority of cases, additional surveys beyond the PEA will be required. In some scenarios, additional surveys will not be needed to allow an EcIA to be undertaken; this is particularly the case for sites where it is unlikely that protected or priority habitats or species (see Box 1 for definition) are present, or where they are unlikely to be affected by the project[3].

Box 1. Protected and Priority Habitats and Species

Legal protection is afforded to particular habitats and species (as well as designated sites). The legislation, and the habitats and species listed, vary between the different jurisdictions[4].

Certain habitats and species are also considered to have some level of nature conservation importance, due to factors such as their rarity, vulnerability or declining population/status. This document uses the term 'priority habitats' and 'priority species', as they are those which should be considered as priorities for conservation (it should not be confused with priority habitats and species as listed in the EU Habitats Directive).

Priority habitats and species are defined as those which are:

1) listed as a national priority for conservation (such as those listed as habitats and species of principal importance for the conservation of biodiversity[5]);
2) listed as a local priority for conservation, for example in the relevant local Biodiversity Action Plan (BAP);
3) Red Listed using International Union for the Conservation of Nature (IUCN) criteria[6] (e.g. in an all-Ireland Red List[7], in one of the UK Species Status Project[8] reviews, in the Species of Conservation Concern Red List[9], Birds of Conservation Concern in Wales,[10] or BWI/RSPB Red List for Ireland and Northern Ireland (Birds of Conservation Concern in Ireland 2014 to 2019)[11] or, where a more recent assessment of the taxonomic group has not yet been undertaken, listed in a Red Data Book);
4) listed as Near Threatened or Amber Listed e.g. in an all-Ireland Red List, in one of the UK Species Status Project reviews, in Birds of Conservation Concern in Wales,[12] in the Species of Conservation Concern Amber List[13] or BirdWatch Ireland (BWI)/RSPB Amber List for Ireland and Northern Ireland (Birds of Conservation Concern in Ireland 2014 to 2019)[14];
5) listed as a Nationally Rare or Nationally Scarce species (e.g. in one of the Species Status Project reviews) or listed as a Nationally Notable species where a more recent assessment of the taxonomic group has not yet been undertaken; and/or
6) endemic to a country or geographic location (it is appropriate to recognise endemic sub-species, phenotypes, or cultural behaviours of a population that are unique to a particular place).

Most protected species are also considered to be priority species, although there are some exceptions. There are numerous priority habitats and species which do not receive any legal protection.

Note that the terms 'priority habitat' and 'priority species' used in this document differ from the following uses of the same terms:

a) These terms were previously used to denote those habitats and species afforded the highest level of priority for conservation under the UK BAP; this has been superseded by the lists of habitats and species of principal importance for the conservation of biodiversity in England under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006, Section 7 of the Environment (Wales) Act 2016, or their equivalents in Scotland (Nature Conservation (Scotland) Act 2004, Scotland's Biodiversity Strategy and the Scottish Biodiversity List[15]) and Ireland *(Actions for Biodiversity – Ireland's National Biodiversity Plan 2017 -2021*[16]; and *Valuing Nature – A Biodiversity Strategy for Northern Ireland to 2020).*

b) The terms 'Priority Natural Habitat Type' and 'Priority Species' are used to denote specific lists of habitats and species under The Conservation of Habitats and Species Regulations 2017; these are defined in Articles 1(d) and 1(h) respectively of the Habitats Directive.

1.7 It is not always necessary to produce a PEAR following a PEA, as the data could be written up directly in an EcIA Report instead (see Paragraph 1.8). It is usually helpful, however, to produce a PEAR, particularly where there are numerous further surveys required (to inform an EcIA), or major ecological constraints to a project which need to be communicated to the client, or a significant delay between undertaking the PEA and producing the EcIA.

1.8 A PEA is normally used to inform an **Ecological Impact Assessment (EcIA)**. In the context of these guidelines, EcIA is defined as the **process** of identifying, quantifying and evaluating the potential effects of development-related or other proposed actions on habitats, species and ecosystems. These guidelines should be read in conjunction with CIEEM's *Guidelines for Ecological Impact Assessment in the UK and Ireland*[17].

1.9 A PEA can also be used to inform, for example:

- scoping for an Environmental Impact Assessment (EIA[18]);
- an assessment as to whether a particular site should be included as an allocated site in a development plan;
- nature conservation management plans;
- sustainability appraisals and ratings assessments (e.g. BREEAM); or
- an assessment of likely compliance with statutory obligations for developments which do not require planning consent, or developments proceeding under Permitted Development Rights or other consented operations, such as Exempted Development in Ireland[19].

1.10 These guidelines are primarily targeted at projects within the UK and Ireland. They are applicable to any geographic location, including the UK Overseas Territories, although it is acknowledged that they will need to be adapted to suit local circumstances, given the varied legislative and planning policy frameworks, availability of relevant habitat classification systems and availability of biological records. These guidelines may also be adapted to inform landscape-scale assessments, such as an assessment of a Local Plan or Local Area Plan, for example.

1.11 These guidelines should be read in conjunction with CIEEM's *Guidelines for Ecological Report Writing*[20], which set out the appropriate structure and content for PEARs, EcIA Reports and Ecology/Biodiversity Chapters of Environmental Impact Assessment Reports (often referred to as Environmental Statements or Environmental Impact Statements).

1.12 Any form of ecological assessment, and the surveys which underpin them, should be undertaken by qualified and experienced professionals with an understanding of nature conservation legislation and planning. Those undertaking surveys should also be able to demonstrate that they meet the minimum knowledge, skills and practical experience requirements as set out in the CIEEM Technical Guidance Series publication *Competencies for Species Survey*[21].

SECTION 2. STUDY METHODS

Process Overview

2.1 A PEA normally comprises both desk study and walkover survey; the methods for each are provided in the following paragraphs. It is advisable, in most cases, to undertake the desk study first, as this can inform the scope of the field survey.

Desk Study

2.2 Desk studies should be used to collect the following information:

Site Information – Basic initial information about the site and surrounding area, which gives an indication of the type of habitats and species likely to be present, and contextual information about the setting of the site within the landscape. This information can be gained from a review of aerial photos and Ordnance Survey maps (including historical maps), which are freely available from web-based sources (although licences may be required to download these or incorporate them into reports).

Designated Site Information – Identification of any designated nature conservation sites within the zone(s) of influence of the project. The desk study will need to collect information on the location of each designated site, its site boundary, distance from the project site, connectivity to the project site, and reason(s) for designation. This information will inform the assessment of whether a designated site is within the zone of influence of a specific project.

Species Records – Existing records indicating the presence of protected or priority species (see Box 1) within the zone(s) of influence. This information will be important in:

- Identifying the confirmed or possible presence of particular protected or priority species in the area, potentially triggering the need for more detailed surveys if suitable habitat for such species is present and if they could be affected.
- Providing contextual information about the presence/distribution of a species in the area surrounding a site, which can be useful in determining: the importance of the species population locally; the likely use/importance of the site for a species (such as data on the location of bat roosts around a site); and the impacts of the proposals, such as fragmentation effects.

Habitat Information – Existing information on the habitat types within the site and the surrounding area.

Distribution Information – Contextual information about the protected or priority habitats or species which are present (e.g. distribution maps), allows an assessment to be made of the geographical scale of importance.

2.3 The appropriate search area for desk study information will vary dependent on the nature of the proposals and the information being sought. The search area should be determined on a case-by-case basis following an assessment of the zone(s) of influence of the project (see Appendix 2 for more guidance).

2.4 There is a range of possible sources of desk study information for any given assessment. The appropriate sources will vary depending on the information being sought (see paragraph 2.2) and the location of the site. Further details on data sources for desk studies in the UK and Ireland are provided in Appendix 2.

2.5 Further details on biodiversity data searches for desk studies in UK are provided in *CIEEM's Guidelines for Accessing and Using Biodiversity Data in the UK*[22]. In certain limited circumstances a data search may not be required; examples of when such circumstances may apply are given in Appendix 2.

2.6 It should be noted that the availability of records of protected or priority species will vary in any particular location, as it may be dependent on the presence of local experts (particularly the case for invertebrates and lower plants). The data provided may include historical records, which need to be considered in the light of more up-to-date information. Available records may lack detail, in terms of location, date, and the activity of a species at the time of recording (and in some cases, the record may relate to a group of species rather than a single species). It is important that any limitations of desk study data are reported.

2.7 It is vitally important that the data gained from a desk study are interpreted adequately in the context of the project under consideration (e.g. through the identification of protected or priority species occurring locally), rather than simply providing a long list of un-interpreted species records in an appendix.

Field Survey

2.8 In most circumstances, it will be necessary to conduct a field survey to support a PEA. Exceptions include circumstances where there are access constraints, perhaps because of land ownership issues. Where the site has not been visited by an ecologist, this should be clearly stated in the PEAR, and any limitations resulting from this should be reported in full.

2.9 Field surveys should consider both habitats and species, focussing upon protected and priority habitats and/or species. An example scope for the field survey for a PEA in the UK and Ireland is provided in Box 2.

Box 2. Example Scope for a PEA Field Survey in the UK and Ireland

The field survey element of a PEA should typically include the following (where relevant):

1) Mapping of the habitat types present following a published and recognised habitat classification that is appropriate for the site's location (see Appendix 3).
2) An assessment of the **possible presence** of protected or priority species, and (where relevant) an assessment of the **likely importance** of habitat features present for such species, with reference to available desk study information. This should include:
    - Plants
    - Fungi
    - Terrestrial and aquatic invertebrates
    - Fish (where relevant, based on an assessment of any watercourses and water bodies present);
    - Amphibians (including both breeding and terrestrial habitat)
    - Reptiles
    - Breeding, wintering and migratory birds
    - Bats (including potential roost sites, and foraging and commuting habitats/features)
    - Other protected or priority mammal species, as relevant
3) Mapping of any stands of non-native invasive plant species.
4) Recording of any incidental sightings of priority or protected species, or field signs of such species.

2.10 The habitat survey should follow a published and recognised habitat classification that is appropriate for the site's location (see Appendix 3). Parcels of land within the survey area (including area, linear and point features) should be mapped as defined habitat types on an appropriately scaled, geo-referenced plan or annotated aerial image. In most circumstances, descriptions of plant species present and their abundance, habitat condition, land management and habitat origin will aid evaluation, impact characterisation or the expected trends in the absence of any impact, and may help to inform future management decisions. Descriptions that are geo-referenced[23] to specific habitat features and accompanied by annotated photographs can help to illustrate habitat structure to the reader, and provide valuable data to other users. Wherever possible, the habitat survey should aim to identify protected and priority habitats and plant species (see Box 1).

2.11 Habitat surveys should also identify and map stands of invasive plant species and indicate where uncommon or rare/protected plants may occur. Where there is potential for protected or priority habitats (see Box 1) or uncommon/protected flora to be present, it may be appropriate to recommend that additional surveys are undertaken.

2.12 The scope and methods used for any species surveys must be clearly reported. In most cases, species surveys undertaken at the PEA stage are characterised as preliminary risk assessments or assessments of habitat suitability for a particular species, rather than detailed field surveys.

2.13 The appropriate study area for the field survey will need to be determined on a case-by-case basis. In most cases this will include all of the land within the 'site' boundary, plus additional 'off-site' areas where relevant to the assessment. The distance from the site that data need to be collected will vary in relation to different habitats or species and for different types of development project (i.e. this will depend on the zone(s) of influence of the project – see *CIEEM's Guidelines for Ecological Impact Assessment in the UK and Ireland* for further details).

SECTION 3. REPORTING

3.1 The findings of a PEA may be reported in different ways, depending on the scope of works agreed with the client and the status of the project design. Where project designs are not fixed, reporting will normally be in the form of a PEAR. An Ecological Constraints and Opportunities Plans (ECOP) may also be used to illustrate key constraints and opportunities to the client and project design team and can accompany a PEAR (see Appendix 4).

3.2 In other circumstances the outcomes of the PEA, in terms of likely ecological constraints and opportunities, possible mitigation and further surveys needed, may be reported to the client in another format – for example, in an email supported by a suitable plan such as an ECOP (assuming this is acceptable to the client). The data collected as part of the PEA will need to be presented in any EcIA Report, whether a PEAR is produced or not.

3.3 Given the objectives of a PEA (see Para 1.3), a PEAR needs to be written in the context of the relevant legislation and, in the case of development projects which require planning consent, the relevant local and national planning policies. The information to be included in a PEAR is set out in Box 3.

Box 3. Typical Contents of a PEAR

In the majority of cases it is expected that a PEAR would include:

1) Identification of any designated nature conservation sites (statutory and non-statutory) that could be affected by the project.
2) Mapping of the habitat types present to provide a visual representation of the land within and adjacent to the site boundaries.
3) Assessment of the likely importance of the habitats present, determining (as far as possible within the constraints of the site visit(s) undertaken) whether there are any protected or priority habitats present (see Box 1), which could be affected by the project. Limitations in relation to this must be clearly stated (see paragraphs 3.8 and 3.9).
4) Assessment of the likely presence of protected and priority species, which could be affected by the project (see Box 1); and confirmation of the presence of any such species, as far as possible within the constraints of the site visit(s) undertaken. Limitations in relation to this must be clearly stated (see paragraphs 3.8 and 3.9).
5) Based on information gathered in bullets 1-4, identification of any ecological **constraints** to the client and relevant members of the project team. This will allow likely significant effects to be avoided wherever possible through careful scheme design, and ensure that the likely requirements for possible mitigation[24] and licensing are understood (based upon the level of information known about the project at the time of the assessment).
6) Based on information gathered in bullets 1-5, a list of **further ecological surveys** likely to be required to inform an EcIA, together with their appropriate scope, methodology and timing (see paragraphs 3.12 to 3.15).
7) Identification of **opportunities** for ecological enhancement.

3.4 It is often necessary to combine the results of desk study and field surveys and apply professional judgement and local knowledge, to make an assessment of the likelihood of a species occurring at a particular location, which will inform the need for more detailed surveys. In most cases, it will be appropriate to include geo-referenced descriptions of the features suitable for protected or priority species on survey maps. Reports should make a clear distinction between confirmatory evidence of a species and the presence of habitat with the potential to support a species. The separation of geo-referenced species and habitat data onto different map layers may assist the reader's interpretation, data management and sharing, and is therefore recommended. Reports must explain the process followed to assess the potential of a habitat to support a particular species, and describe any limitations encountered in reaching that conclusion.

3.5 As ecological information becomes available, relevant constraints and opportunities should be used to inform site design and layout. The status of each ecological feature identified should then be balanced against the other competing needs from the project, taking into account the international, national or local importance of the habitats and/or species potentially affected. In this context, a constraint[25] is defined as an ecological feature that may ultimately represent a constraint on the design and/or layout of a project (e.g. an area of a priority habitat type, or a feature used by a protected or priority species).

3.5 The process of identifying constraints and opportunities is likely to be an iterative one, especially on larger and more complex projects, with increasing levels of detail and certainty becoming available as ecological information is cross-referenced to the emerging details of the project.

3.6 The level of detail on constraints and opportunities should be proportionate to:

- the predicted degree of risk to biodiversity;
- the nature and scale of the project; and
- the complexity of the ecological feature concerned.

It is particularly important that reporting should make a clear distinction between different levels of constraint associated with each feature identified. For instance, the presence of a nationally designated site might represent an absolute constraint on the project's layout, where all adverse effects may need to be avoided completely. In contrast, an effect on features of local importance may represent less of a constraint, and impacts upon such features may be addressed through other measures within the Mitigation Hierarchy (e.g. mitigation or compensation).

3.7 It may be necessary to mark the report as confidential where locational details are provided of sensitive species (where the locations need to be kept confidential due to the risk of human interference) including the location of badger setts and nests of certain bird species (e.g. barn owl).

Limitations

3.8 It is important to report all assumptions made, any limitations of the methodologies and the implications of these For example, Clause 6.7 of BS 42020:2013[26] states that:

> *To reduce uncertainty, and to achieve full scientific disclosure, those undertaking surveys and preparing ecological advice and reports should identify all relevant limitations relating to:*
>
> *a) the methods used, including:*
>
> *1) personal competency (i.e. qualifications, training, skills, understanding, experience)*
>
> *2) inadequate resources (equipment and/or personnel)*
>
> *3) inadequate time spent surveying*
>
> *4) inadequate data (e.g. arising from incomplete or inappropriate surveys) giving rise to lack of statistical robustness and higher uncertainties*
>
> *5) use of old and out of date data*
>
> *6) timing or seasonal constraints and suboptimal survey periods*
>
> *7) partial use of and/or departures from good practice guidelines*
>
> *b) site conditions and other factors, including:*
>
> *1) adverse weather conditions*
>
> *2) restricted access to a site or part of a site*
>
> *3) unrealistic deadlines*
>
> *4) unproven or untested measures for mitigation and compensation*
>
> *Any limitations associated with work should be stated, with an explanation of their significance and any attempt made to overcome them. The consequence of any such limitations on the soundness of the main findings and recommendations in the report should be made clear.*

3.9 Where the status of a feature is unknown this should be clearly reported (e.g. where the PEA has identified a pond as suitable for use by breeding amphibians but it is unknown whether or not protected amphibians are present). The PEAR should consequently identify the further work required to address such uncertainties (see paragraphs 3.10 to 3.13). It may also be useful to spell out the likely adverse implications of not undertaking the work and leaving the uncertainty unaddressed.

Recommendations for Further Ecological Surveys

3.10 It will often be necessary for 'further ecological surveys' (those in addition to the PEA) to be undertaken, in order to inform an EcIA and/or the design of appropriate mitigation or compensation measures. It is important to specify the appropriate methods and timing of such surveys in any PEAR, as well as their key objectives. The level of ecological survey work undertaken to inform a planning application should be proportionate to the likely scale of impact; further ecological surveys should only be undertaken where they are necessary (see 3.13).

3.11 UK and UK Devolved Administration Government guidance states that under normal circumstances surveys should be completed and any necessary measures to protect biodiversity should be in place, through conditions and/or planning obligations, before permission is granted[27]. Consequently, it is not normally appropriate to produce an EcIA which contains recommendations for further survey, where such surveys are material to the assessment. In such cases, production (and submission) of an EcIA should be delayed until all relevant surveys have been completed. The need for such surveys will be identified in a PEAR, where one is produced, or can be communicated to the client by alternative means where a PEAR is not produced. The need to carry out further surveys should only be secured through planning conditions in exceptional circumstances, with the result that the surveys are carried out after planning permission has been granted (see Box 4). The few exceptional circumstances where a further survey may be recommended in an EcIA in the UK are also set out in BS 42020:2013 Clause 9.2.4.

Box 4. Further Ecological Surveys Submitted After Determination of the Planning Application

Planning authorities have for many years been advised in government guidance that they should only condition further ecological surveys in exceptional circumstances. In other words, all necessary survey information should be submitted with the planning application so that it can be taken into account prior to the granting of planning permission.

There are a limited number of circumstances where further surveys may not be necessary to the determination of the planning application. Instead they may be conditioned and submitted after determination of the application. These limited circumstances are set out in BS 42020:2013 Clause 9.2.4 and include where:

a) original survey work will need to be repeated because the survey data might be out of date before commencement of the development project;

b) there is a need to inform the detailed ecological requirements for later phases of projects that might occur over a long period and/or multiple phases;

b) adequate information is already available and further surveys would not make any material difference to the information provided to the decision-maker to determine the planning permission, but where further survey is required to satisfy other consent regimes e.g. a European Protected Species (EPS) licence;

b) there is a need to confirm the continued absence of a protected or priority species or to establish the status of a mobile protected or priority species that might have moved, increased or decreased within the site; or

b) there is a need to provide detailed baseline survey information to inform detailed post-project monitoring.

Note: Box 4 refers to the situation in the UK in relation to planning consents and conditioning for future surveys. The situation regarding further ecological surveys in Ireland is set out in paragraph 3.12.

3.12 In relation to further ecological surveys in Ireland, it is not acceptable to condition additional surveys by way of mitigation or in order to determine mitigation. Ecological surveys and monitoring to confirm predictions from an impact assessment are acceptable as long as they are specified as such. Ecologists in Ireland should make themselves aware of current regulations/requirements in Ireland, as they pertain at the time of any particular PEA. It may be necessary for the production (and submission) of an EcIA to be delayed until all relevant surveys have been completed.

3.13 EcIA can be undertaken without detailed survey information for a given ecological feature, where:

1) the outcomes of the survey can be reasonably predicted, or would make no material difference to the assessment of likely significant effects; and
2) appropriate mitigation can be designed and secured on the basis of the information available.

Examples of scenarios where further ecological surveys are likely to be necessary, or are not likely to be necessary to inform an EcIA are provided in Appendix 5.

PEARs and Planning Applications

3.14 Where an ecological report is required to accompany a planning application, the appropriate report is an EcIA Report (or an Ecology/Biodiversity Chapter of an Environmental Impact Assessment Report for an EIA project). Under normal circumstances it is not appropriate to submit a PEAR as part of a planning application, because the scope of a PEAR is unlikely to fully meet planning authority requirements in respect of biodiversity policy and implications for protected species. This is because a PEAR is normally written to advise a client of ecological constraints and opportunities to inform their design options, likely mitigation requirements, and the need for further surveys. It therefore lacks a detailed assessment of ecological effects, and commitment to mitigation; the planning authority is therefore unlikely to have adequate[28] information to enable the decision maker to determine the application lawfully. A PEAR may, however, be submitted as an appendix to an EcIA Report.

3.15 In some cases it may be appropriate and acceptable to submit an EcIA Report to accompany a planning application which is based solely on biodiversity data collected during the PEA process. This is the case where the following circumstances apply:

1) No further surveys beyond the desk study and field survey are necessary to allow an assessment of ecological effects and to design appropriate mitigation (see Box 4).

AND

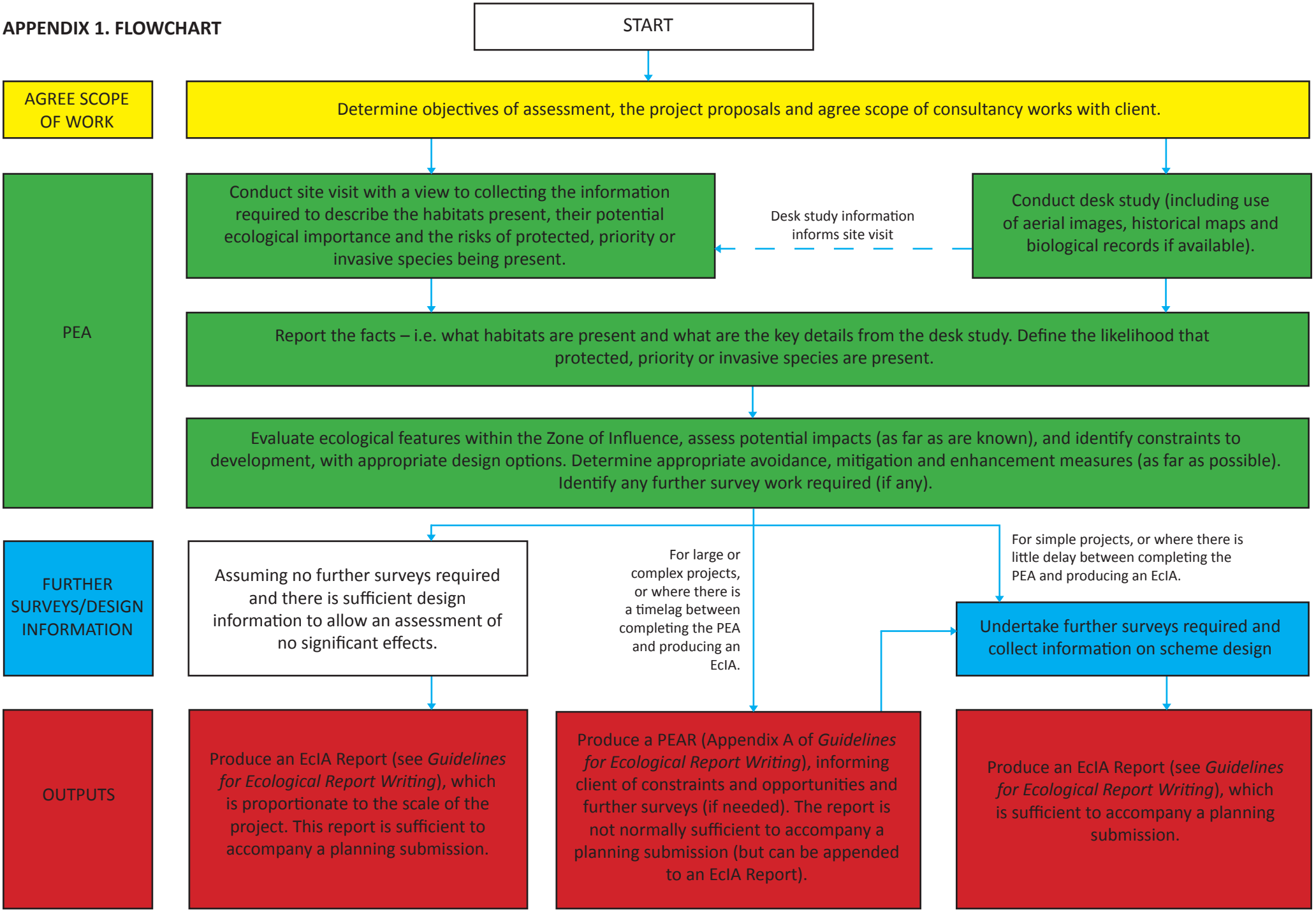
2) There is sufficient information available about the design of the project to allow a full assessment of ecological effects, or no significant ecological effects are predicted.

AND

3) There is sufficient information available about the ecological mitigation (and enhancement) measures proposed, and these can be secured through a planning condition or obligation.

The appropriate report to be submitted with the application in such cases is an EcIA report. The scope of an EcIA report submitted in these circumstances should be proportionate to the scale of the likely ecological effects.

APPENDIX 1. FLOWCHART



Appendix 2. Desk Studies

Data Sources

In all cases it will be appropriate to consult web-based sources to gain basic initial information about the site and surrounding area, information on statutory designated sites (the UK government's MAGIC[29] website in England; Natural Resources Wales (NRW) website in Wales[30]; Scottish Natural Heritage's (SNH) SiteLink website[31], Scotland's Environment Web[32] and the Atlas of Living Scotland[33], in Scotland; the Department of Culture, Heritage and the Gaeltacht, National Parks and Wildlife Service (DCHG, NPWS)[34] in Ireland; and the Department for Agriculture, Environment and Rural Affairs (DAERA)[35]) in Northern Ireland; and existing records of protected or notable species (UK - the National Biodiversity Network (NBN) Atlas[36],[37]; Ireland National Biodiversity Data Centre (NBDC)[38]; Northern Ireland Centre for Environmental Data and Recording (NI CEDaR)[39]).

In the majority of cases it will be appropriate to also obtain information in the UK from the Local Environmental Records Centre (LERC[40]); in Ireland from the DCHG, NPWS and the NBDC; in Northern Ireland from the DAERA and the CEDaR; or equivalent on non-statutory designated sites[41] and existing records of protected and priority species.

In the UK, background data searches will generally not be considered adequate by the Local Planning Authority or other regulatory authority if they rely entirely on open access data, as some of these datasets are not necessarily comprehensive or are not at a fine enough resolution to inform local decisions. Some sensitive records (such as rare species data) are not available for public view, and this could result in an erroneous assumption being made that a given species is absent from a particular area. It will only be appropriate not to obtain data from the above listed bodies in the very occasional cases where the information identified in paragraph 3.2 can be obtained by other means. In such cases full justification must be given in the report text and, where the statutory planning authority employs an ecologist/biodiversity officer, this approach should ideally be agreed with them beforehand.

In some parts of the UK and in Ireland there will be other sources of information on particular species/groups, which are not necessarily held by the above listed sources (LERC, NBDC, CEDaR etc.) and which will therefore also need to be sought if relevant to the assessment (e.g. local bat group data (or other specialist group); local Botanical Society of Britain and Ireland (BSBI) records; data on fish populations from the Environment Agency (EA), NRW, Scottish Environment Protection Agency (SEPA), Inland Fisheries (Ireland) or DAERA (Northern Ireland); local invertebrate recorder data; bird data such as the Wetland Bird Survey (WeBS) and Irish Wetland Bird Survey (IWeBS)).

In some cases there will be informed individuals who can also provide useful background information (e.g. the landowner(s), local authority ecologist/biodiversity officer(s), Conservation Ranger(s) (NPWS) and local mammal recorder(s)).
Where available, previous ecology reports for the site (or other sites in the general area) should be consulted and reviewed.

Search Areas

The search area for desk study information will need to be determined on a case-by-case basis. Existing ecological information for the site and adjacent areas should be obtained, normally extending to at least 1 km from the site boundaries (or 0.5 km for sites of approximately 1 ha or less). The search for desk study information will need to extend further beyond the site boundaries to ensure that all information of relevance to the assessment has been collected. This will need consideration to be given to the zone(s) of influence of the project (see CIEEM's *Guidelines for Ecological Impact Assessment in the UK and Ireland* for further details).

Examples of scenarios in which data may need to be collected over extended search areas include where:

- there are mobile species, such as bats[42] and birds, which could be affected whilst passing through the project site;
- projects may cause fragmentation effects due to the size, location and nature of the project;
- there are designated sites that may be affected through hydrological impacts, or through increased recreational pressure associated with a residential development; and
- mitigation proposals require such information, for example when determining appropriate receptor sites for translocations.

PEAs Without LERC/NBDC/CEDaR Data

Very occasionally it might be possible to carry out a robust PEA without obtaining LERC/NBDC/CEDaR data; this will usually only apply to low impact or small-scale projects (e.g. by virtue of size, extent, duration of works, magnitude and locality), and should be determined on a case-by-case basis. In all cases, the decision not to obtain these data should be justified in the report.

The following is not intended to be an exhaustive list, but gives examples of the type of sites where such data might not be needed[43]:

- a field in active arable cultivation where there is no impact on any hedges, trees or water bodies;
- small areas of cultivated garden/amenity grassland, as above; or
- small urban sites comprising mostly asphalt or compacted hardstanding.

Appendix 3. Habitat Classification Systems

There are a number of different habitat classification systems that may be appropriate for use in a PEA; these depend upon the geographic location and objectives of the particular study. CIEEM provides a useful list of suitable survey types and classifications in *Sources of Survey Methods*[44].

NBN also lists classification types for which it holds data[45].

Some examples of classification systems in regular use include:

Phase 1 Habitat Survey – Appropriate for use across Great Britain, especially suited as a rapid survey tool in semi-natural habitat types in open countryside[46].

Wetland Typology – In Scotland, wetlands can be identified using the Functional Wetland Typology for Scotland[47].

Integrated Habitat System (IHS) (v2.0) – IHS integrates UK broad habitat types, priority habitat types, Annex 1 habitats and JNCC Phase 1 classified habitats, and provides a translation tool between these different classifications. IHS can be used across the UK and Ireland to collect and translate existing habitat data into a common format[48].

Habitats In Ireland – This is the standard habitat classification system for use in Ireland[49] and an associated survey methodology[50].

National Vegetation Classification (NVC) – GB-wide classification and description of plant communities, widely used to describe semi-natural habitats in the UK[51].

Irish Vegetation Classification (IVC) (in prep.) – The IVC is an ongoing project which aims to classify, describe and map in detail all aspects of natural and semi-natural vegetation in Ireland within a single, unified, hierarchical framework. A web application (ERICA) for assigning vegetation samples to the IVC is being developed. The IVC builds on a number of classifications recently developed in a series of NPWS habitat surveys[52].

European Nature Information System (EUNIS) Habitat Classification – The EUNIS includes an EU-wide hierarchical habitat classification which incorporates all Annex 1 habitat types from the Habitats Regulations 1994. EUNIS is widely used across EU states and in the UK, especially marine and coastal areas[53].

EUNIS (Scotland) – SNH is adopting the EUNIS habitat classification for terrestrial habitat data and mapping[54]. It also correlates EUNIS habitats with habitat types listed in Annex I of the Habitats Directive. Correspondence tables support translation between EUNIS and the national habitat classifications and lists, including the NVC, UK BAP Priority Habitat types[55], Phase 1 categories and habitat features on Sites of Special Scientific Interest (SSSIs).

CORINE Biotopes Project Habitat Classification – An inventory[56] of habitats of major importance for nature conservation across the European Community, which forms the basis of the selection of habitats listed in Annex 1 of the Habitats Directive.

UK BAP Broad & Priority Habitats – This is a UK-habitat classification prepared by the UK Biodiversity Group that classifies all terrestrial and freshwater habitats in the UK into 37 broad habitat types. UK BAP Priority Habitats are a range of semi-natural habitat types that were identified as being the most threatened and requiring conservation action. The original Priority Habitat list was created between 1995 and 1999 and revised in 2007. The list of Priority Habitats has been used to help draw up statutory lists of habitats of principal importance for the conservation of biodiversity in England, Scotland, Wales and Northern Ireland (see Box 1 for further details). The suite of habitats of principal importance for the conservation of biodiversity (formerly Priority Habitats) nest into the defined Broad Habitat Types[57,58].

Identification and mapping of marine, intertidal and coastal habitats is a highly specialised task. A separate survey of these is recommended following published and recognised classification systems. Where the ecologist(s) possess adequate expertise, a preliminary attempt may be made to identify accessible areas of littoral/inter-tidal zone using this classification system.

UK Habitat Classification (in prep.) – The UK Habitat Classification, which is currently under

development, potentially presents a unified hierarchical habitat classification suitable for use across the UK territory which integrates with EU and other UK classification systems. The system initially covers terrestrial, freshwater and coastal areas. Field trials of the system are currently on-going.

Appendix 4. Ecological Constraints and Opportunities Plan (ECOP)

An ECOP is a useful method of illustrating the key points gathered from PEA baseline studies and, depending on the purpose of reporting, an ECOP may accompany or replace a PEAR. An ECOP may be quite simple in format and content (e.g. when illustrating relevant ecological features associated with an application for the construction of a single dwelling) or may be extensive in its coverage (e.g. when applied to a large-scale project across a wide area with many ecological features present).

It has three main roles (extract from BS 42020:2013 'Commentary on Clause 5.4' – page 17):

- *At the pre-application stage, an ECOP may be used as an iterative tool within the design team to inform the overall design process;*
- *At the decision-making stage, it may be used to provide summary information for the decision-maker showing graphically how the mitigation hierarchy has been applied in practice. As such, it is an opportunity to show what and where the key biodiversity constraints and opportunities are associated with the proposed development described in the planning application; and*
- *At the implementation (construction) stage, it may be used to provide an overview, showing how and where biodiversity is to be addressed during the actual development works or aftercare period (e.g. as a summary drawing(s) forming part of a construction environmental management plan).*

In illustrating constraints and opportunities, the ECOP should identify the following (where relevant), in accordance with BS 42020:2013 Clause 5.4:

1) areas and features (both on- and off-site) including appropriate buffer areas that, by virtue of their importance, should be retained and avoided by both construction activities and the overall footprint of the project[59];
2) areas and features where opportunities exist to undertake necessary mitigation and compensation;
3) areas and features with potential for biodiversity enhancement;
4) areas where ongoing biodiversity conservation management is required to prevent deterioration in condition during construction/implementation;
5) areas needing protection on site and/or in adjacent areas (e.g. from physical damage on site or pollution downstream) during the construction process; and
6) areas where biosecurity measures are necessary to manage the risk of spreading pathogens or non-native invasive species.

Appendix 5. Examples of Where Further Ecological Surveys Are, Or Are Not, Likely to be Necessary to Inform an EcIA

Example 1

A proposed development project requires a new access to be constructed, which requires a gap to be created in a hedgerow, of approximately 15 m in width. This could affect use of the hedgerow by foraging and commuting bats.

Scenario 1a: The hedgerow could link an important roost site for a species of bat which is light-averse and tends to avoid gaps, with valuable foraging habitat for that species. In order to accurately assess the effects of the proposed development on this species population it will be necessary to undertake a survey to determine the level of use of the hedgerow and its relative importance.

Scenario 1b: By virtue of its location directly adjacent to an existing residential area, the hedgerow could only act as a link between roost sites and foraging habitat for bat species which are not light-averse and do not tend to avoid gaps. It may not be necessary in this case to undertake a bat survey, as the outcomes of the survey are unlikely to make any material difference to the assessment.

Note: there are likely to be other ecological impacts associated with creating gaps in hedgerows which may require further survey; this example has been restricted to considering the impacts on bats for the purpose of illustrating a principle.

Example 2

A proposed development project will result in the loss of habitat suitable for use by reptiles. There are desk study records of slow-worm from gardens immediately adjacent to the site; no other reptile species are considered likely to be present, and the site is not within the geographical range of smooth snake or sand lizard.

Scenario 2a: The proposed development will result in the loss of 50% of the available habitat, which is suitable for slow-worms, but not of particular value; the site is relatively homogenous in terms of its suitability for slow-worms. The suitable habitat within the site is contiguous with a much larger area of suitable habitat which effectively surrounds the site. The developer is willing to commit to undertaking a range of habitat improvement measures in the remaining 50% to improve it for slow-worm, and it is likely that such measures could improve the carrying capacity sufficiently to accommodate the slow-worms present in the habitat to be adversely affected. These measures, along with measures to protect slow-worms during site clearance, can be secured through a planning condition.

In these circumstances a targeted reptile survey may not be necessary, as it would be unlikely to change the assessment, or the mitigation proposed. This is due, in part, to information that would be gained from a survey, which in most circumstances would not provide an assessment of population size – the availability of sufficient habitat would be based on an assessment of the quality and size of the remaining habitat in comparison with that lost.

It could be argued that a survey may be beneficial to the developer, as it could remove the requirement for the mitigation. However, even with a negative survey result, it is likely that some mitigation would still be required on a precautionary basis to ensure legal compliance, given the presence of suitable habitat and records of slow-worm in adjacent gardens.

Scenario 2b: The proposed development will result in the loss of the majority of the suitable habitat within the site, which is patchily distributed across the site. The site is relatively isolated from other areas of suitable habitat for reptiles, with the exception of adjacent residential gardens. It is therefore possible that slow-worms, if present, would need to be translocated to an off-site receptor area (dependent on the amount of habitat affected). This could result in a significant effect on the slow-worm population in the local area, dependent on the location of the proposed receptor area and the size of the population affected.

In these circumstances it is likely that a targeted reptile survey would be required to confirm the presence or likely absence of slow-worm from the site, and to allow an assessment of the distribution of slow-worms within the various habitat patches, and therefore inform the assessment of likely effect on the species.

Example 3

A proposed residential development is to be located at the edge of a small rural midlands town in Ireland (RoI). Aerial photography suggests that mature hedgerows and scrub may need to be removed to facilitate access roads and the construction of dwellings. Records of road kill in the vicinity include pine marten and red squirrel.

Scenario 3a: The hedgerows provide linkages across the landscape for both protected species and when viewed from a broader scale they may link known woodland refuges for both species. No presence/absence data for either species exists for the area. Loss of either habitat could have impacts on these protected species if they use the linear habitats for moving through the area or for breeding (particularly for pine marten).

In this circumstance it is likely that a focused mammal survey would be required to confirm use of the hedgerows and scrub by either species and to inform the layout of the proposed development in order to avoid severance of these linkages.

Scenario 3b: The developer has indicated that the area of scrub and hedgerows will be preserved but managed as a landscape feature as it includes outcrops of rock which would be difficult to integrate into the design. Much of the smaller hedgerows will require removal, but the mature hedgerows can be preserved.

Surveys to indicate presence/absence may not be required as the retention of the mature hedgerows and scrub may be sufficient at a landscape scale to permit protection of important linkages across the area for both species. Further consideration of impacts of construction works causing temporary disturbance on potential nesting sites may be required, or may be addressed by timing of the works to avoid the breeding season.

ENDNOTES

[1] The area(s) over which ecological features may be affected by the biophysical changes caused by a proposed project and associated activities.

[2] For more information on the 'Mitigation Hierarchy', see BS 42020:2013 Clause 5.2.

[3] For example, in England see Paragraph 99 of ODPM Circular 06/25: *Biodiversity and geological conservation – statutory obligations and their impact within the planning system.*

[4] For details of relevant legislation see http://jncc.defra.gov.uk/page-1376; Ireland - http://www.npws.ie/legislation; and Northern Ireland - www.daera-ni.gov.uk/topics/biodiversity.

[5] In England under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006; in Wales under Section 7 of the Environment (Wales) Act 2016; in Scotland under Section 2(4) of the Nature Conservation (Scotland) Act 2004; in Northern Ireland under Section 3(1) of the Wildlife and Natural Environment Act (Northern Ireland) 2011; in the Republic of Ireland Wildlife Acts 1976 to 2012 (IUCN category based species Red Lists https://www.npws.ie/publications/red-lists).

[6] IUCN (2012) IUCN Red List Categories and Criteria. Version 3.1. Second edition. IUCN, Gland. IUCN (2012) Guidelines for Application of IUCN Red List Criteria at Regional and National Levels. Version 4.0. IUCN, Gland.

IUCN (2016) Guidelines for Appropriate Uses of IUCN Red List Data. Version 3.0. Adopted by the IUCN Red List Committee.

IUCN (2017) Guidelines for Using the IUCN Red List Categories and Criteria. Version 13. Prepared by the Standards and Petitions Subcommittee.

[7] National Biodiversity Data Centre (2013) Ireland's Red Lists – *A National Standard. National Biodiversity Data Centre Series No 1*. Waterford, Ireland.

[8] The Species Status project is the successor to the JNCC's Species Status Assessment project, providing up-to-date assessments of the threat status of various taxa using the internationally accepted Red List guidelines (http://jncc.defra.gov.uk/page-1773).

[9] Eaton *et al*. (2015) Birds of conservation concern 4: the population status of birds in the UK, Channel Islands and Isle of Man. British Birds 108: 708-746.

[10] Johnstone, I. and Bladwell, S. (2016) Birds of Conservation Concern in Wales 3: the population status of birds in Wales. Birds in Wales 13 (1).

[11] Colhoun, K. and Cummins, S. (2013) Birds of Conservation Concern in Ireland 2014-2019. Irish Birds 9: 523-544.

[12] See 21.

[13] See 20.

[14] See 22, 34 and 38.

[15] http://www.gov.scot/Topics/Environment/Wildlife-Habitats/biodiversity/BiodiversityStrategy

[16] National Biodiversity Action Plan 2017-2021. Department of Culture, Heritage and the Gaeltacht. https://www.npws.ie/sites/default/files/publications/pdf/National%20Biodiversity%20Action%20Plan%20English.pdf

[17] CIEEM (2016) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal.* 2nd edition. CIEEM, Winchester.

[18] Environmental Impact Assessment (EIA) is the process used to assess the effects of certain public and private projects on the environment in order to meet the requirements of Council Directive 85/337/EEC as amended by Council Directives 97/11/EC, 2003/35/EC and 2009/31/EC and redrafted in a codified version Directive 2011/92/EU. The amended Environmental Impact Assessment (EIA) Directive 2014/52/EU entered into force in 2014 to simplify the rules for assessing the potential effects of projects on the environment and Member States have to apply these rules from May 2017.

[19] Ireland: Section 4 of the Planning and Development Act, 2000 (as amended); and the Planning and Development Regulations, 2001 (as amended).

[20] CIEEM (2015) *Guidelines for Ecological Report Writing*. CIEEM, Winchester.

[21] See https://www.cieem.net/competencies-for-species-survey-css-

[22] CIEEM (2016) *Guidelines for Accessing and Using Biodiversity Data in the UK*. CIEEM, Winchester.

[23] Wherever possible, geo-referenced descriptions should be attached to the point, line or polygon they are describing, as this assists with data interpretation, data management and future monitoring.

[24] In accordance with the Mitigation Hierarchy.

[25] 'Constraints' should not be confused with 'limitations'. The latter refers to limitations on the adequacy and robustness of the data collected, as may arise from the ecological methods used or conditions on site that in some way limit the soundness of the main findings or recommendations of the report (for more information on limitations see paragraph 3.8 and BS 42020:2013 Clause 6.7).

[26] *BS 42020:2013 Biodiversity. Code of practice for planning and development.* British Standards Institute, London.

[27] In England: Circular 06/2005; paragraph 98 and 99; in Wales: TAN 5 2009; paragraph 6.2.2; in Scotland: Scottish Planning Policy (SPP) paragraphs 125-164 and PAN 60 Planning for the Natural Heritage; in Northern Ireland: Planning Policy Statement 2; Ireland - Planning and Development Act 2000 to 2015 and its associated Regulations.

[28] BS 42020:2013 Clauses 6.2 to 6.13 and Clause 8.1 specify what constitutes 'adequate' information to support and determine a planning application.

[29] http://www.magic.gov.uk/

[30] http://naturalresources.wales/conservation-biodiversity-and-wildlife/find-protected-areas-of-land-and-seas/designated-sites-search/

[31] http://gateway.snh.gov.uk/sitelink/index.jsp

[32] http://www.environment.scotland.gov.uk/

[33] https://scotland.nbnatlas.org/

[34] http://www.npws.ie/

[35] https://www.daera-ni.gov.uk/

[36] https://nbnatlas.org/

[37] Data from the NBN Atlas may have restricted use for commercial purposes where sensitive species are involved. Users should check any licence restrictions before using data.

[38] http://www.biodiversityireland.ie/

[39] http://nmni.com/cedar

[40] LERCs and other data providers may have their own terms and conditions, which will vary. These terms and conditions must be adhered to in respect of the use and provision of the data supplied. LERCs may take up to 10-15 working days to provide the requested data search information and this should therefore be programmed into the project; this timescale is not normally an acceptable reason for not obtaining these data. Information on contacting LERCs can be found via www.alerc.org.uk or obtained from the Local Planning Authority.

[41] In Scotland, Local Development Plans should contain boundary maps for non-statutory sites if these are not available through interactive mapping. It is recommended that the Local Authority Ecologist/Biodiversity Officer is contacted for further information.

[42] For sites where a bat licence is likely to be required, Natural England generally require a data search for bat records to at least 2 km from the site boundary.

[43] In all cases, if buildings are present, LERC data might be needed due to potential impacts on bats in the UK (see CIEEM (2016) *Guidelines for Accessing and Using Biodiversity Data in the UK*. CIEEM; Winchester)

[44] http://www.cieem.net/sources-of-survey-methods-sosm

[45] http://habitats.nbn.org.uk/habitatClassList.asp

[46] JNCC (2003) *Handbook for Phase 1 Habitat Survey – a technique for environmental audit.* JNCC, Peterborough.

[47] SNIFFER (2009) WFD95: *A Functional Wetland Typology for Scotland; Project Report.* SNIFFER, Edinburgh.

[48] http://ihs.somerc.co.uk/index.php

[49] Fossitt (2000) A Guide to Habitats in Ireland. The Heritage Council, Kilkenny.

[50] Smith, G.F., O'Donoghue, P., O'Hora, K. and Delaney, E. (2011) *Best Practice Guidance for Habitat Survey and Mapping*. Heritage Council, Kilkenny.

[51] Rodwell, J.S. (ed.) (1991) *British Plant Communities. Volume 1. Woodlands and scrub.* Cambridge University Press.

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Details available from: http://jncc.defra.gov.uk/page-4259.

Rodwell, J.S. (2006) *NVC Users Handbook.* ISBN 978 1 86107 574 1. Available as free download from: http://jncc.defra.gov.uk/page-3724

[52] Details of the IVC and ERICA are available at: http://www.biodiversityireland.ie/projects/national-vegetation-database/irish-vegetation-classification/

[53] EEA (2012) EUNIS *Habitat Classification 2012 – a revision of the habitat classification descriptions.* EEA. Copenhagen.

[54] SNH (2017) *Commissioned Report 766: Manual of terrestrial EUNIS habitats in Scotland*. SNH, Edinburgh.

[55] BAP Priority Habitat Types are published by the Scottish Ministers as a list of habitats of principal importance for the conservation of biodiversity under the Nature Conservation (Scotland) Act 2004. The list was first published in 2005.

[56] Devillers, P., Devillers-Terschuren, J. and Ledant, J-P. (1991) CORINE biotopes manual. Vol. 2. Habitats of the European Community. Office for Official Publications of the European Communities, Luxembourg.

[57] Jackson, D.L. (2000) *Guidance on the interpretation of the Biodiversity Broad Habitat Classification (terrestrial and freshwater types): Definitions and the relationship with other classifications.* JNCC Report 307, 73 pages, ISSN 0963 8091.

[58] Maskell, L.C., Norton, L.R., Smart, S.M., Carey, P.D., Murphy, J., Chamberlain, P.M., Wood, C.M., Bunce, R.G.H. and Barr, C. J. (2008) *Countryside Survey. Field Mapping Handbook*. NERC/Centre for Ecology & Hydrology, 130pp. (CS Technical Report No.1/07, CEH Project Number: C03259).

[59] A useful list of construction activities with the potential to have an adverse effect on biodiversity is provided in BS 42020:2013 Annex G.