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Guidance on EIS and NIS Preparation for Offshore Renewable Energy Projects

Prepared for the Environmental Working Group of the Offshore Renewable Energy Steering Group and the Department of Communications, Climate Action and Environment

by

MacCabe Durney Barnes

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Acronyms

AA	Appropriate Assessment
AMETS	Atlantic Marine Energy Test Site
BACI	Before After Control Impact
BAG	Before After Gradient
CIA	Cumulative Impact Assessment
CIL	Commissioners of Irish Lights
(c)SAC	(candidate) Special Area of Conservation
DAHRRGA	Department of Arts, Heritage, Regional Rural and Gaeltacht Affairs
DCCAE	Department of Communications, Climate Action and Environment
DCENR	Department of Communications, Energy and Natural Resources
DHPCLG	Department of Housing, Planning, Community and Local Government
DEFRA	Department of the Environment, Food & Rural Affairs (UK)
DEHLG	Department of the Environment, Heritage and Local Government
DSPIR	Driver, pressure, states, impact and responses model for CIA
EC	European Commission
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMF	Electromagnetic Field
EMS	Environmental Management System
EPA	Environmental Protection Authority
ERP	Emergency Response Plan
ESB	Electricity Supply Board
EU	European Union
EWG	Environmental Working Group of the ORESG
GIS	Geographic Information System
GSI	Geological Survey of Ireland
HSA	Health and Safety Authority
IFI	Inland Fisheries Ireland
IAA	Irish Aviation Agency
IROPI	Imperative Reasons of Overriding Public Interest
JNCC	UK Joint Nature Conservation Committee

MNCR	Marine Nature Conservation Review
MSFD	Marine Strategy Framework Directive
MSP	Maritime Spatial Planning
MW	Megawatt
NGO	Non-Governmental Organisation
NHA	Natural Heritage Area
NIS	Natura Impact Statement
nm	Nautical Mile
NPWS	National Parks and Wildlife Service
OREDP	Offshore Renewable Energy Development Plan
ORESG	Offshore Renewable Energy Steering Group
PCOD	Population Consequence of Disturbance
(p)SPA	(proposed) Special Protection Area
PRIMER	Plymouth Routines in Multivariate Ecological Research
RUK	Renewable United Kingdom
SAC	Special Area of Conservation
SEA	Strategic Environmental Assessment
SEAI	Sustainable Energy Authority of Ireland
SLVIA	Seascape and Landscape Visual Impact Assessment
SNH	Scottish Natural Heritage
SPA	Special Protection Area
WFD	Water Framework Directive
ZTV	Zone of Theoretical Visibility

Glossary of terms for the purposes of this guidance

Appropriate Assessment (AA)	A focused and detailed impact assessment of the implications of the plan or project, alone and in combination with other plans and projects, on the integrity of a Natura 2000 site in view of its conservation objectives. (*Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities*, DEHLG, 2009 (updated 2010).
Compensatory measures	All measures referred to in Article 6(4) of the Habitats Directive that are necessary to ensure that the overall coherence of the Natura 2000 Network is protected. In the absence of alternatives, and for imperative reasons of overriding public interest (IROPI), a plan or project may proceed, see IROPI below. In Ireland, they shall be construed in accordance with the Planning and Development Act, 2000, as amended S.177W(7) in relation to making land use plans and in accordance with S.177AA(8) in relation to granting permission for proposed development
Competent authority	The designated public authority that determines the application for consent, permission, licence or other authorisation for an offshore renewable energy project and any associated enabling development.
Consent	This shall include any licence, permission, permit, approval or other such authorisation granted by a public authority for any activity, or project where the authority is obliged to have regard to the requirements of the EIA and/or Habitats Directive(s).
Conservation objectives	When a European site is proposed, a statement of its conservation objectives is produced which identifies the qualifying interests or conservation features for which the site is designated. The objectives also include such particular objectives as the Minister for Arts,

	Heritage, Regional Rural and Gaeltacht Affairs may from time to time establish for these purposes under Regulation 26 of the EC (Birds and Natural Habitats) Regulations 2011.
Cumulative effects	Effects resulting from a combination of two or more individual effects, or from an interaction between individual effects. Effects may be synergistic (i.e. greater than the sum of individual effects), or any progressive effect likely to emerge over time.
Developer	The applicant for authorisation for a project or activity.
Designated sites	In the context of this guidance and in recognition of common usage, and unless otherwise specified, the term 'designated' is used to refer to international sites (e.g. Ramsar, Biosphere Reserve), European sites (i.e. SACs and SPAs) and national sites (e.g. NHA, Nature Reserve, National Parks) that are legally designated, or are going through the process of designation.
Environmental Impact Assessment (EIA)	A process consisting of an assessment of the effects of a proposed development project on the environment from which an Environmental Impact Statement is derived to support applications for consent for those projects. Also the assessment of the effects of projects on the environment carried out by the competent authority as part the consent application consent process. The term is defined in section 171A of the Planning and Development Act 2000, as amended.
Environmental Impact Statement (EIS)	A statement of the EIA prepared by the developer of the direct and indirect effects that a proposed development will have or is likely to have on the environment. It must include the information specified in Schedule 6 of the Planning and Development Regulations, 2001, as amended.
European Site	Candidate SACs and proposed SPAs and adopted SACs and SPAs. SACs

	and SPAs are the Natura 2000 European Network designations in Ireland, defined in S.177R of the Planning and Development Act 2000, as amended.
Foreshore	The bed and shore below the line of high water of ordinary or medium tides of the sea, and of every tidal river and tidal estuary, and of every channel, creek, and bay of the sea, or of any such river or estuary to the outer foreshore as defined in the Foreshore Act, 1933 as amended. The foreshore commences at high water of ordinary or medium tides; its outer limit is 12 nautical miles (nm) from the baseline referred to in Section 85 of the Sea-Fisheries and Marine Jurisdiction Act 2006.
Geographic Information Systems (GISs)	Array of technological tools presented on a spatial basis for the management, analysis and display of geographic data.
Good environmental status	As defined in the Marine Strategy Framework Directive 2008/56/EC, this means the environmental status of marine waters where these provide ecologically diverse and dynamic oceans and seas which are clean, healthy and productive within their intrinsic conditions, and where the use of the marine environment is at a level that is sustainable, thus safeguarding the potential for uses and activities by current and future generations.
In-combination effects	Effects resulting from a combination of effects resulting from two or more plans and/or projects assessed as required under the Habitats Directive. For the purpose of this guidance, and unless otherwise specified, the term 'in-combination effects' is used interchangeably with cumulative effects.
Indicators	A measurable variable pointer that can be used to reveal and monitor the conditions and trends for an environmental pressure or state. Indicators should relate to the pressures and subsequent potential

	changes in the environment resulting from the proposed development.
Imperative Reasons of Overriding Public Interest (IROPI)	Where a development is likely to have adverse effects upon the integrity of a European site, or where adverse effects cannot be ruled out, and in the absence of suitable alternative solutions, the competent authority may permit the development where the project is considered to be necessary for imperative reasons of overriding public interest (IROPI). The Habitats Directive does not define what is meant by IROPI. EU guidance is helpful in making an IRPOPI determination. Irish statute narrowly defines IROPI in relation to AA determined effects on European sites that host a priority natural habitat type or priority species at S.177AA(4) of the Planning and Development Act, 2000.
Mitigation measures	Measures to prevent, reduce or offset any significant adverse impacts on the environment or on the biodiversity aspects of implementing a plan/programme or project. Mitigation measures can also be used to mitigate effects on other users.
Monitoring	The periodic or continuous observation and recording of pressure/state indicators and of other parameters to detect changes that may occur over time. Monitoring should relate to the pressures and subsequent potential changes in the environment resulting from the proposed development.
Natura 2000 Network	An EU-wide network of important ecological sites. Natura 2000 sites in Ireland are European sites, including candidate SACs and proposed SPAs and adopted SACs and SPAs.
Natura Impact Statement (NIS)	The report of a scientific examination of a plan or project and the relevant Natura 2000 site(s), to identify and characterise any possible implications from the plan or project for the site in view of the site's conservation objectives, so that a consent authority may carry out an

	appropriate assessment. (*Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities*, DEHLG, 2009 (updated 2010).
Nautical mile (nm)	Measurement used for distances at sea. 1nm equates to 1.852km. Marine jurisdiction is determined by reference to nautical miles.
Precautionary principle	The approach aims at ensuring a higher level of environmental protection through preventative decision-taking in the case of risk. The general principles of risk management remain applicable when the precautionary principle is invoked. These are proportionality between the measures taken and the chosen level of protection; non-discrimination in application of the measures; consistency of the measures with similar measures already taken in similar situations or using similar approaches; examination of the benefits and costs of action or lack of action; review of the measures in the light of scientific developments.
Qualifying interests	Habitats and species of interest, under the Birds and Habitats Directives, which establish the reason(s) for designating a site as an SAC or SPA. The qualifying interests are set out in the site synopsis prepared for the site by the National Parks and Wildlife Service of the Department of Arts, Heritage, Regional Rural and Gaeltacht Affairs.
Residual effect	Remaining environmental effect after mitigation measures have been put in place.
Screening EIA/AA	A process undertaken by the competent authority to determine the need for an environmental impact assessment under the EIA Directive or appropriate assessment under the Habitats Directive.
Statutory consultees	Defined in the Foreshore Act and Planning and Development Regulations and listed in Appendix IV of this guidance.

Transboundary effects	Potential environmental effects that may occur across jurisdictional boundaries. The EIA Directive incorporates specific requirements for assessing potential transboundary effects on the environment of another Member State.
Zone of influence	The potential geographic area that could be affected by the implementation of the project. The zone of influence should be regarded as having flexible boundaries which may change during the assessment. The boundaries should be determined having regard to the source-pathway-target risk assessment concept.

1 Introduction

1.1 Purpose of the guidance

The Irish Government's energy policy aims to ensure secure and sustainable supplies of competitively priced energy to all consumers. Cost-effective harnessing of renewable energy is a key component in achieving a target of 40% of electricity demand from renewable resources by 2020. This will assist in the decarbonisation of the electricity system in line with EU energy policy. As part of the overall energy policy, the Government adopted the Offshore Renewable Energy Development Plan (OREDP) in February 2014. The plan's high level goals seek to harness market opportunities, increase awareness of the benefits of offshore renewable energy and ensure that development does not unacceptably impact Ireland's rich marine environment.

The purpose of this non-statutory guidance is twofold:

- to assist developers in preparing Environmental Impact Statements (EIS) and Natura Impact Statements (NIS) that may be required for development projects; and
- to provide competent authorities, consultation bodies and the public with a basis for determining the adequacy of these statements.

Projects envisaged to be delivered under the framework of the OREDP will be subject to national consenting regimes, including where necessary, the requirement for a competent authority to undertake formal Environmental Impact Assessment and Appropriate Assessment prior to its decision in respect of an application for statutory consent of a project. The competent authority will potentially be required to carry out two types of assessment; an Environmental Impact Assessment (EIA) from which the requirement for an EIS prepared by the developer is derived, and, should there be a likelihood of a significant effect on a Natura Site, an Appropriate Assessment (AA) from which the requirement for a Natura Impact Statement (NIS) also prepared by the developer arises.

The need to undertake EIA derives from the EIA Directive 2011/92/EU; recently revised by EIA Directive 2014/52/EU which has yet to be transposed into domestic legislation, however, where appropriate, requirements under Directive 2014/52/EU have been taken into account in the preparation of this guidance.

The need to undertake an AA of a project is derived from the requirements of the Habitats Directive 92/43/EEC and the Birds Directive 2009/147/EC. Appendix I outlines the main provisions of the Directives that give rise to the requirement for EIA and AA.

None of the EU Directives mentioned in this guidance use the specific term *Environmental Impact Statement* (EIS) or *Natura Impact Statement* (NIS). These terms are used in the Irish legislation that transposes the Directives into Irish law. This legislation sets out the information which must be provided by the applicant to the competent authority in order to allow it to carry out an EIA and/or AA to inform its decision on a project consent application. Guidance from different jurisdictions may differ in terms of process and regulations.

There are key challenges for both developers and competent authorities in understanding the environmental effects of existing and emergent offshore renewable energy technologies. In particular, these challenges relate to scientific uncertainty relating to environmental effects of new technologies, the scale of some of the projects, and to the data required to assess their effects in complex marine environments.

This guidance is supported by two associated reports relating to marine renewables:

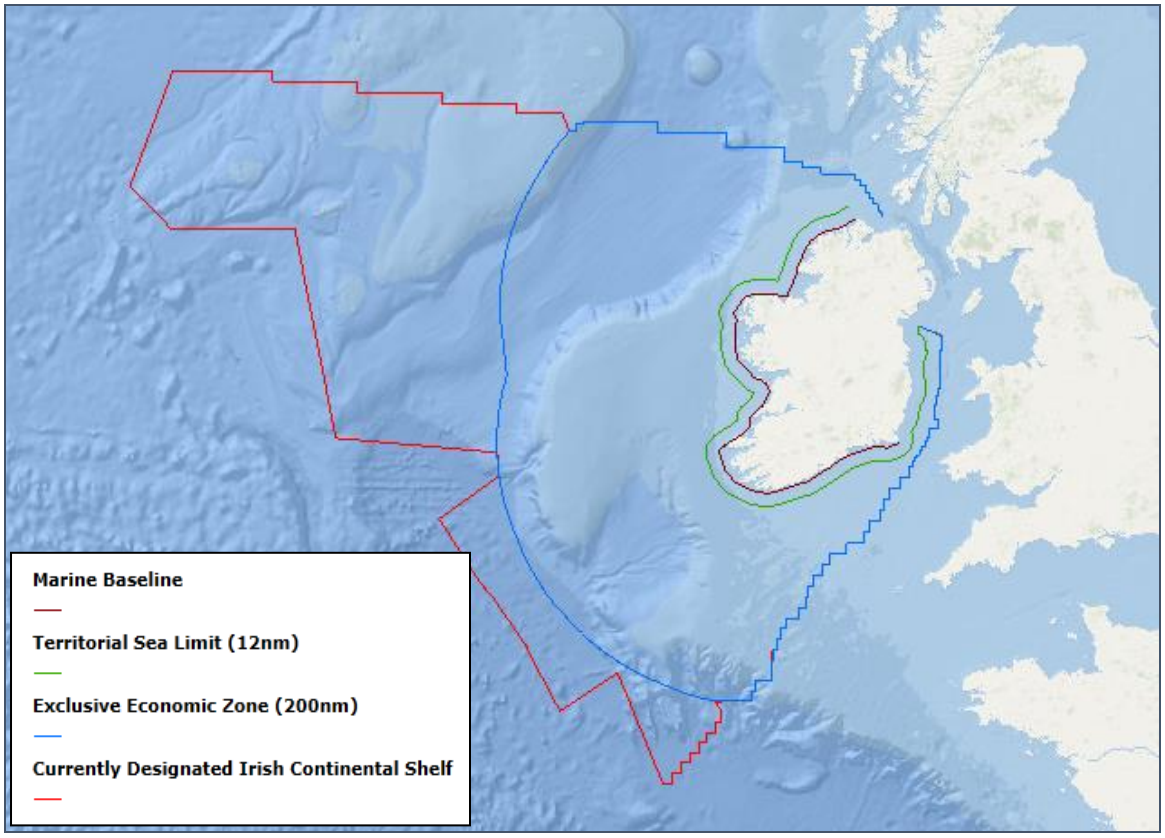
- *Guidance on Marine Baseline Assessments and Monitoring Activities for Offshore Renewable Energy Developments* , DCCAE, due for publication 2017; and
- *Data and Information Sources for Offshore Renewable Energy Developments*[1], DCCAE, 2016

1.2 Scope of the guidance

For the purposes of this guidance, the marine area under Irish jurisdiction is interpreted as meaning the area comprising the foreshore, the exclusive economic zone (EEZ) of the State and any other area currently designated by order under Section 2 of the Continental Shelf Act 1968, see Figure 1.

[1] *Data and Information Sources for Offshore Renewable Energy Developments*. Available at: *http://news.oceanenergyireland.com/data-and-information-for-planning-and-permitting-of-offshore-renewable-energy-developments-in-irish-waters*

Figure 1: Marine areas



Source: Ireland's Marine Atlas. Marine Institute, ESRI, NOAA, National Geographic Survey, DeLorme

The foreshore commences at the mean high water mark and its outer limit is 12 nautical miles (nm) from the baselines referred to in Section 85 of the Sea-Fisheries and Marine Jurisdiction Act 2006 and associated Orders. The EEZ extends to 200nm from the baselines; except where this overlaps the EEZ of another state. The outer boundaries of the EEZ are set out in S.I. No.86 of 2014. Marine Baselines are set out in the Maritime Jurisdiction (Straight Baselines) Order 2016 (S.I. No. 22/2016).

Although it is necessary to consider the legislative and consenting context as part of this guidance, it is not intended to constitute comprehensive guidance on legal, procedural or the statutory requirements of the EIA and AA processes. In this regard, the developer should consult with the relevant competent authorities to determine legal requirements.

The guidance considers offshore renewable energy development powered by:

- offshore wind;
- wave energy;
- tidal energy.

While it is recognised that other forms of offshore renewable energy generation are possible, it is considered that these three elements are those most likely to be developed in the short to medium term in Irish waters. Nonetheless, this guidance has utility for all forms of offshore renewable energy generation.

The guidance also considers the direct and cumulative impacts of associated and supporting infrastructure (e.g. grid connections and substations), which may be located in both the marine and terrestrial environments.

1.3 How to use this document

This guidance document provides a reference for existing information and a sign-post to good practice in EIS and NIS preparation for offshore renewable energy projects. It should be used in conjunction with other guidance documents detailed in Appendix II including:

- *Guidelines on the Information to be Contained in Environmental Impact Statements,* EPA 2002[2];
- *Advice Notes on Current Practice in the Preparation of Environmental Impact Statements,* EPA 2003[3];
- *Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities,* DEHLG 2009;
- *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment,* DECLG 2013; and
- *Offshore Renewable Energy Development Plan,* DCENR 2014 and associated SEA Environmental Report and Natura Impact Statement

2 *Revised Guidelines on the Information to be Contained in Environmental Impact Statements, Draft* (EPA, September 2015) have been issued for public consultation

3 *Revised Advice for Preparing Environmental Impact Statements*, Draft (EPA, September 2015) have been issued for public consultation

Document structure

The guidance document is set out in five sections followed by appendices.

Table 1: Document structure

Section	Content
Section 1	The purpose and scope of the guidance.
Section 2	An overview of the legislative context, principles and practice applied in the guidance.
Section 3	A description of offshore renewable technologies, infrastructure and phases of development.
Section 4	Preparing the EIS and NIS for offshore renewable energy projects.
Section 5	Other project stages following on from the preparation of the EIS and NIS documents.
Appendices	Reference to current legislation, guidance, device types, consultees and mitigation measures.

2 Policy context and approach

2.1 EU Directives

2.1.1 EIA Directive

The EIA Directive (2011/92/EU) sets out a process to assess the environmental effects of proposed public and private projects, prior to a decision being made by the competent authority. The Directive requires an assessment of any projects that are likely to have significant effects upon the environment. An EIA is required for all projects detailed in Annex I of the EIA Directive and for all projects detailed in Annex II where the proposed project is likely to have significant effects on the environment. Annex II project types (3) (h) and (i) relate to hydroelectric and wind farm development. The EIA Directives (2011/92/EU and 2014/52/EU) or Irish EIA legislation does not specifically refer to offshore renewable energy developments, however, all three types of development listed in Section 1.2 of this guidance document are potentially liable to EIA according to the Directive.

Directive 2011/92/EU has recently been amended by EIA Directive 2014/52/EU which needs to be transposed into Irish law by May 2017. This amending Directive includes a number of changes which those undertaking environmental impact assessments should be mindful of. These include:

- a new definition for Environmental Impact Assessment;
- changes to the screening procedures relating to the information to be provided to the competent authority to inform the screening determination;
- requirement that EIA reports be prepared by competent experts and that competent authorities have access to sufficient expertise to examine these reports;
- changes to the content of the EIA reports to include assessment of a wider range factors including population and human health, biodiversity, land and climate as well as risks of major accidents and disasters;
- assessment of alternatives must include the 'do nothing' scenario and all other reasonable alternatives relevant to the project; and

- cumulative impact assessments only need to take account of existing and/or approved projects and not other projects within the planning process.
- requirement that the type and duration of monitoring shall be proportionate to the nature, location and size of the project and the significance of its effects on the environment

Where appropriate, and for information purposes only, the provisions of the amending Directive are reflected in this guidance.

The EIA process involves a number of elements in the assessment of the likely significant effects on the environment of a particular project. These elements include *screening, scoping, consideration of alternatives*, *preparation of EIS*, *mitigation, application for consent*, *consultations*, *assessment*, *competent authority decision* and *monitoring*. It is a highly iterative process and is intended to integrate environmental considerations in the design of a project and the decision-making process in the interests of sustainable development.

2.1.2 The Habitats and the Birds Directives

The Habitats Directive (92/43/EEC) and the Birds Directive (2009/147/EC) seek to maintain, and where necessary restore, the favourable conservation status of designated natural habitats and species throughout member states. The most important ecological sites are designated as European sites under provisions of Irish legislation transposing these Directives. Designated Special Areas of Conservation (SAC), Special Protection Areas (SPA), candidate Special Areas of Conservation (cSAC) and proposed Special Protection Areas (pSPA) are collectively known as European Sites. Together, these sites form part of the Natura 2000 network of comparable sites throughout Member States.

Article 6(3) of the Habitats Directive requires an AA of plans and projects that are likely to have significant effects on any European site. A competent authority cannot agree to the plan or project until it has ascertained that it will not adversely affect the integrity of the site concerned. Specific attention is required to consider the qualifying interests of SACs, or the special conservation interests of SPAs and the conservation objectives for these i.e. to maintain and restore their favourable conservation condition. Following an AA, if it cannot be demonstrated that a plan will not affect the integrity of European sites, and where it has been demonstrated that there are no *alternative solutions*, Article 6(4) of the Habitats Directive allows for derogation for *imperative reasons of overriding public interest* (IROPI). There are limitations on the reasons applicable where priority habitats, as defined in the Directive, are affected.

The Habitats Directive does not specify what information is to be provided by the developer to the competent authority in order to allow it to carry out an AA. However, EC guidance is provided on the AA in *Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites - Methodological Guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC,* EC, 2001.

The main provisions of the EIA and Habitats/Birds Directives are outlined in Appendix I of this guidance.

2.1.3 Other relevant EU Directives

The *Water Framework Directive (WFD)* (2000/60/EC) requires *good ecological and good chemical status* in inland and coastal waters by 2015. The WFD relates to water bodies up to 1nm from the baseline; with the exception of chemical status which also includes territorial waters i.e. to 12nm.

The *Marine Strategy Framework Directive (MSFD)* (2008/56/EC) requires the establishment of a framework within which Member States shall take the necessary measures to achieve or maintain good environmental status in the marine environment by the year 2020 at the latest. This status is primarily determined by a series of descriptors laid out in Annex I of the MSFD.

Data obtained under the WFD and MSFD requirements are an important source of information in assessing the potential of offshore renewable energy projects to impact upon the ecological and environmental status of coastal and marine waters.

The *Maritime Spatial Planning (MSP)* Directive (2014/89/EU) requires spatial plans for marine areas to be in place by 2021. These will provide a policy framework for marine developments including offshore renewable energy development. The DHPCLG is the lead Department for the implementation of these three Directives and further information and data may be obtained from them, see http://www.housing.gov.ie/.

2.2 The Irish legal framework

2.2.1 EIA and AA requirements for consent applications

In terms of offshore renewable energy developments, the EIA Directive is transposed into Irish law through the Foreshore Act 1933, as amended and Part 10 of the Planning and Development Act, 2000, as amended. As set out in these Acts, there are prescribed classes of development for which consent may be sought, and the undertaking of EIA and submission of EIS with the consent application is mandatory. Thresholds apply to the prescribed classes of development. Proposed projects below the set thresholds are subject to EIA if the competent authority considers they are likely to have significant effects on the environment. This is considered in further detail in Section 4.4.

There are no specified thresholds for AA or for the preparation of an NIS. Generally, every project has to be screened for AA to establish if alone, or in combination with other plans or projects, it will have an effect on a European site. Where necessary, an AA must be undertaken by the competent authority prior to determining an application for consent for a project.

Dependent on the scope, scale and location of a project, a number of linked consents may be required under separate statute. It is important to ensure that each element of the project and each matching consent or licence obligation complies with EIA and AA requirements in an integrated manner. This will result in some duplication of documentation for different consent applications and subsequent compliance.[4] Table 2 sets out the current principal relevant consent systems incorporating EIA and/or AA requirements under various legislations. This guidance does not purport to be a definitive legal interpretation of all relevant Irish legislation which may apply to a project.

[4] Refer also to Section 5.3

Table 2: Current consent regime requiring EIA and/or AA consideration.

Statutory Provision	Application Type	Area	Competent Authority
Foreshore Act 1933 (as amended) EIA and AA requirements apply	Foreshore licence and lease	High water mark to 12nm from the baseline referred to in section 85 of the Sea Fisheries and Marine Jurisdiction Act 2006.	Department of Environment, Community and Local Government
Planning and Development Act 2000 (as amended) and Regulations under the Act EIA and AA requirements apply	Planning permission (including strategic infrastructure development)	Jurisdiction of planning authority (usually to high water mark) and on the foreshore, where such development would adjoin the functional area of the planning authority	Planning Authority and/or An Bord Pleanála
Electricity Regulation Act 1999 and EC (Birds and Natural Habitats) Regulations 2011 AA requirements apply	Licence for electricity generation and authorisation for the construction of electricity generating stations. Consent to connect to National Grid	All land and marine areas	Commission for Energy Regulation – generation and construction. EirGrid – transmission connection for total export capacity greater than 40MW. ESB Networks distribution connection for total export capacity less than 40MW
EC (Birds and Natural Habitats)	Consent for activities specified	Minister may direct that certain activities not	Department of Arts, Heritage, Regional

Regulations 2011 AA requirements apply if no other consent applies	under Regulation 28	covered by other consents would require ministerial consent	Rural and Gaeltacht Affairs

2.2.2 *Potential future changes to the current consenting regime*

In 2013 the Government approved a General Scheme of a Maritime Area and Foreshore (Amendment) Bill[5]. The scheme contains proposals intended to:

- align the foreshore and terrestrial planning consent systems and to reduce duplication of assessments in the consenting processes;
- set a coherent mechanism to manage development in the EEZ and on the continental shelf. It is proposed to define in Irish law an Irish maritime area, which would encompass the foreshore, EEZ and designated parts of the continental shelf;
- enable the designation of offshore renewable energy zones and the granting of licences by the Minister for Communications, Climate Action and Environment for offshore renewable energy projects.

2.3 Fundamental considerations for EIA and AA

2.3.1 *Principles*

The underlying objective of environmental assessment is the protection of the environment against significant effects as a result of projects. EIA and AA have important roles to play in achieving this objective, as they consider the potential short to long term, direct and indirect, cumulative and in combination effects of projects. Both seek to set out avoidance and mitigation measures incorporated into projects underpinned by the precautionary principle. While EIA and AA share these higher level objectives, the emphasis of each is different because of the focus of the respective Directives. These differences result in significant variations in current methods and practice. Table 3 outlines and compares the principles that apply to the EIA and AA processes. The principles are derived from the Directives and rulings of the European Court of Justice. To the extent possible, the assessment and proposed monitoring programmes should be proportionate to risks; they should

[5] General Scheme of a Maritime Area and Foreshore (Amendment) Bill available at: http://www.environ.ie/sites/default/files/legislations/general_scheme_of_maritime_area_and_foreshore_amendment_bill_2013.pdf

focus on key effects and receptors, and/or sensitive pressures emanating from the project (e.g. pressure/effect linkages with birds, European sites and visual/landscape effects).

To facilitate efficient EIA and AA processes, comprehensive, focused and relevant EIS and NIS documents must be prepared. The length of these documents depends on the range and complexity of issues that need to be addressed. Unnecessary lengthy and repetitive documents can hamper stakeholder involvement and the overall EIA and AA processes.

Table 3: Principles of EIA and AA

Principle	EIA	AA
Protecting the environment	Environmental protection by assessment of likely **significant effects** of projects to **promote sustainable development**	Environmental protection to **avoid/mitigate adverse impacts** upon European sites and **compensate,** where necessary
Environmental focus	**Broad** focus on significant effects on biodiversity, human beings, flora, fauna, cultural heritage, landscape. material assets and interactions	**Specific** focus on conservation objectives and integrity of the European site
Decision-making	**Informs** decision-making, the outcome of the assessment must be taken into consideration.	**Is binding and determines** decision-making as plan/project cannot be adopted or permitted if adverse effects on the integrity of any European site cannot be ruled out, unless derogation allowed
Evidence-based	**Relevant and complete** evidence relating to all likely significant impacts on the environment	Best **scientific** evidence
Consultation	**Mandatory** requirement to consult with **designated bodies and public** throughout the process	**Discretionary** consultation with relevant environmental authorities (e.g. NPWS) and **consultation** with the public

2.4 Roles of participants

2.4.1 Developers and project designers

It is important for developers to integrate environmental assessments into the design of their projects from the outset. They should not have a rigid, preconceived design concept, and should be fully open to realistic options in what is a highly iterative process.

The developer has the lead role in bringing together the team required to deliver the project. Appropriate project management and quality assurance processes should be put in place, integrating design and environmental specialist teams complemented by good communications with all stakeholders including relevant local stakeholder and organisations. Allowing adequate time to collect the required data and information, to undertake marine surveys and to integrate assessments into the design of proposals is essential. Experience has shown that lengthy design and consenting timeframes, often lasting for a number of years, should be expected. Aligning assessments with development timescales is important and early identification of seasonal survey requirements can assist in avoiding unnecessary delays.

The developer must also be fully committed to proposed mitigation measures which must be clearly defined, and have the capacity to put in place monitoring regimes that may be required by way of mandatory conditions of any consent secured. The developer has an important role in establishing stakeholder engagement processes, at the relevant scale from local to national, which involve consultation during the preparation of an EIS and NIS.

2.4.2 Environmental specialists

The amending EIA Directive (2014/52/EU) requires that the EIS be prepared by competent experts. In addition, the competent authorities must also ensure that they have the relevant expertise to complete the environmental impact assessment processes. The Irish regulations transposing the Habitats Directive require that a NIS must comprise of a scientific examination of the project and its implications for any European site. The expertise required must be *relevant, experienced, independent* and *objective*. Environmental specialists are not involved in the process to promote a project, but rather to assess its likely significant effects. A high level of competence is required to undertake the relevant assessments. Given the range of expertise involved, it is important to have a

competent project leader, who can coordinate all relevant inputs into cohesive final reports, whilst avoiding unnecessary repetition.

2.4.3 Competent authorities

The competent authority will *determine* the application for consent, permission, licence or other authorisation to proceed with a project. It must carry out an EIA and/or AA, taking into account the EIS and/or NIS, as required. Importantly, it is also responsible for formal EIA and AA *screening* decisions and also in the case of EIA, *scoping* decisions. The authority is required to *examine and evaluate* the information in both the EIS and NIS, requesting further information from the developer, as required. It is also required to ensure formal *consultations* with statutory consultees in relation to the EIA process are undertaken. Additionally, the relevant competent authority can have an informal key consultative role in making environmental data available and advising on key environmental issues, and other relevant projects that may interact with the proposal and that should therefore be considered.

2.4.4 Statutory consultees and government agencies

The Planning and Development Regulations 2001, as amended, prescribe certain bodies to be consulted in relation to various types of development for which specific consents are being sought. The Foreshore Act 1933, as amended, specifies authorities which must be consulted in relation to development on the foreshore when an EIA is required. These agencies can provide a critical source of data, information and advice during screening, scoping and assessment stages. The competent authority also has wide discretion in relation to consultation with other bodies. There are no specified bodies for mandatory consultation in cases involving AA alone. A list of statutory and non-statutory consultees is set out in Appendix IV.

2.4.5 Transboundary consultees

Offshore renewable energy projects have the potential to impact upon other jurisdictions in the EU. EIA transboundary consultations by the competent authority are prescribed in legislation in Section 19C of the Foreshore Act, as amended, and Articles 124-132 of the Planning and Development Regulations 2001, as amended. There is no specific requirement to engage in transboundary consultations in the case of AA, but such consultations may be necessary and/or useful, given potential effects on European sites in adjoining jurisdictions.

2.4.6 The public and NGOs

Public participation and consultation are key elements in the process of assessment. Ireland ratified the Aarhus Convention on 20th June 2012. The provisions of the convention comprise of three pillars: access to information, public participation in decision-making and access to justice.

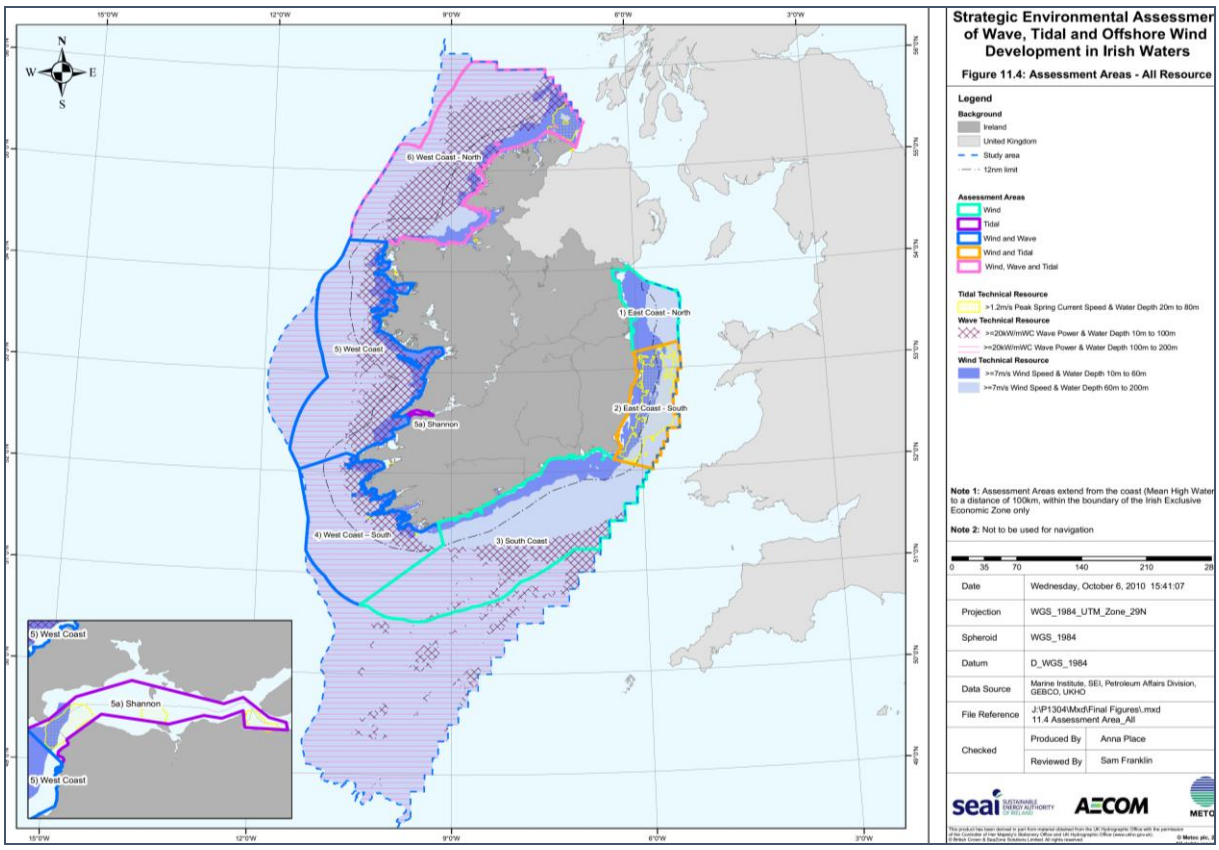
The structure and content of the EIS and NIS should facilitate dissemination of the information contained therein. These documents can be complex and on occasion too technical for members of the public to comprehend. The non-technical summary required as part of an EIS should be clearly drafted and structured to assist in understanding by members of the public. Under the various consenting regimes, the public generally have rights to make observations on the EIS and NIS prior to a decision been made by the competent authority. In addition, developers may also provide an opportunity to engage in consultations with the public at various stages including screening and scoping stages. A wide range of NGOs, and indeed the public, can provide useful information and important views that can also assist in strengthening the assessment of the project. A list of non-statutory consultees is provided in Appendix IV.

2.5 Offshore Renewable Energy Development Plan

The OREDP sets the development policy framework against which the proposals for renewable energy projects in the marine area should be assessed at the consenting stage. One of the three high levels goals of the plan is that offshore renewable energy developments do not adversely impact our rich marine environment and its living and non-living resources. Mitigation measures set out in the plan include the preparation of this guidance document.

In the case of individual projects, future consenting processes should have regard to the broad findings of the Strategic Environmental Assessment (SEA) and AA of the plan in terms of location and constraints. The SEA identified relevant broad environmental topics deriving from the OREDP. They form the basis of Table 4 which includes a number of additional topics to those identified in the OREDP SEA (e.g. visual impact and coastal erosion) to reflect the particularities of offshore renewable energy projects. These topics are not an exhaustive list of environmental assessment considerations, but in the interests of a comprehensive review of potential environmental effects, should be considered together with those topics set out in EIA, EIS and AA guidance from relevant authorities.

Figure 2: OREDP Strategic Environmental Assessment areas



Source: Strategic Environmental Assessment of the Offshore Renewable Energy Development Plan (SEAI, Aecom, Metoc, 2010)

The OREDP sets out project level mitigation measures which developers and competent authorities should have regard to when planning/assessing a project. These measures are listed in Table 4 of the Offshore Renewable Energy Development Plan.

Table 4: Marine EIA/AA Topics

EIA Topics	Marine EIA Topics
Biodiversity, Flora and Fauna	Protected sites and species
	Benthic and pelagic ecology
	Fish and shellfish
	Marine mammals and reptiles
	Birds
	Energy (noise and EMF)
Soils and geology	Coastal erosion
	Sedimentation processes
	Seabed geology and morphology
Water	Water quality
	Bathymetry and hydrography
	Sediments
Seascape and landscape	Seascape
	Visual impact
Climate	Climatic factors
	Gas storage areas
	Renewable energy
Cultural and archaeological heritage	Marine and coastal archaeology
	Shipwrecks
Population and human health[6]	Ports, shipping and navigation
	Aviation safety and military exercise
	Recreation and tourism
	Commercial fisheries, shellfish and aquaculture
	Noise
Material assets	Oil and gas infrastructure
	Cables and pipelines
	Aggregates, dredging and disposal areas

Source: Adapted from SEA of the OREDP (SEAI, Aecom, Metoc, 2010)

6 Article 3 of EIA Directive 2014/52/EU

3 Project lifecycle and infrastructure

3.1 Offshore renewable energy and technologies

As stated at the outset, whilst it is recognised that other forms of offshore renewable energy generation are possible, this guidance, consistent with the OREDP, primarily considers offshore renewable energy projects from wind, wave and tidal energy only.

Wind turbines are currently the most established offshore renewable energy technology. Wind turbines have a subsurface component (foundation or mooring) but the main operational components are above surface (tower, hub, turbines). Turbines can be either fixed or floating.

Wave energy devices include a subsurface component (moorings or foundation) and some have a surface or above surface component. Depending on the technology, they may be installed as a single device or as an array of devices.

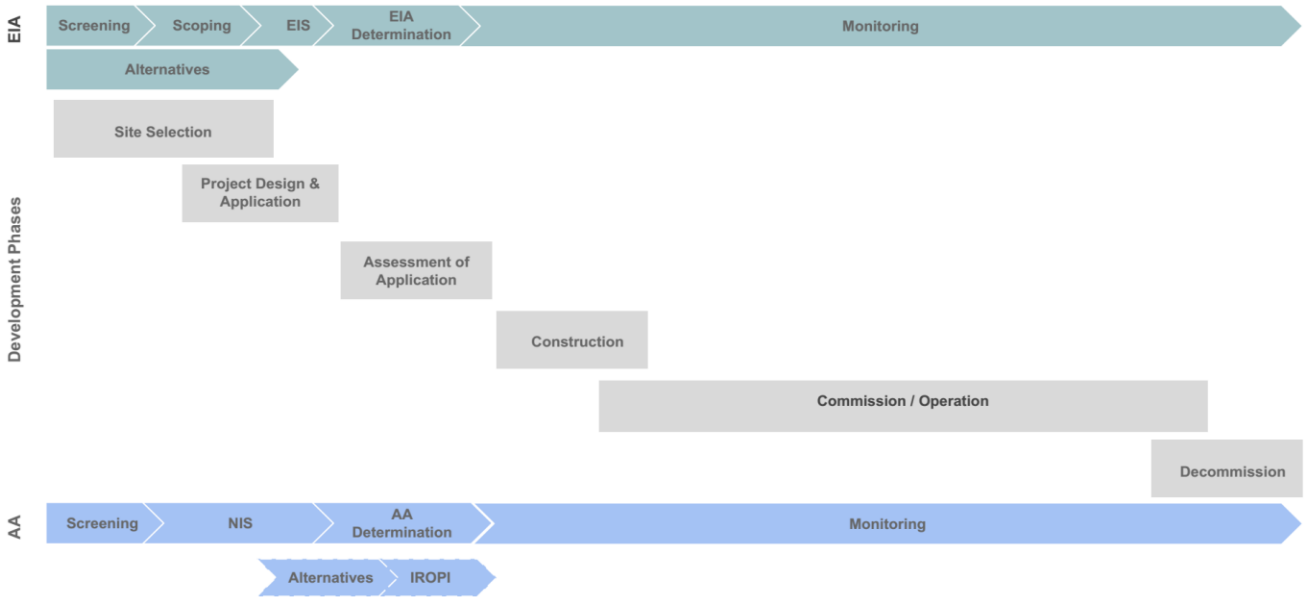
Tidal devices are located in tidal streams, such as narrow straits and inlets, around headlands or in channels. Devices are mainly subsurface but there may also be a surface component. A single or a number of devices may be located within a tidal stream.

Further detailed information on technology types can be found on the SEAI website www.seai.ie

3.2 Project lifecycle phases

All phases of the development should be considered in the assessment process. Each of these phases will have its own specific effects on the environment and will differ in duration. Considering all phases of the development will address full *lifecycle* effects of a proposed development. There are six principal phases of development and their relationship with EIA and AA stages are illustrated in Figure 3.

Figure 3: Project phases and assessment stages



Phase 1 - Site selection

Site location and selection is a critical stage in both the EIA and AA processes and is also an element when considering other options. Strategic alternative locations have been considered in the SEA of the OREDP, which included an assessment of the cumulative effects of different amounts of generating capacity within zones. The site selection process should be undertaken in consultation, where feasible, with the relevant stakeholders and the competent authority. Appendix IV contains a list of potential consultees.

The alternative locations should be:

- *realistic* (e.g. available tidal resource),
- *viable* (e.g. cost effective) and
- *implementable* (e.g. required legal rights).

The selection process should be undertaken in a systematic manner. A generalised approach to site selection is set out in Figure 4.

Figure 4: Generalised offshore renewable energy project site selection process

Step 1 Mapping of all environmentally sensitive areas (e.g. European sites, OSPAR Marine Protected Areas, Ramsar sites, designated archaeological zones and national monuments, protected views and landscapes, designated fishing grounds). Protected sites outside the jurisdiction must also be considered.

Step 2 Mapping of infrastructure, physical and resource constraints (e.g. grid connection points, port/land access, sea depth, seabed morphology, wind speeds, tidal flows, etc.).

Step 3 Mapping of existing and permitted renewable energy projects and other relevant existing or permitted development for consideration of cumulative and in-combination effects. In addition activities such as fishing and shipping must also be considered.

Step 4 Screening out and avoiding unsuitable areas, having regard to constraints identified.

Step 5 Comparing environmental effects of project in alternative locations.

Step 6 Selecting the preferred location/site for detailed assessment.

Phase 2 - Project design, survey and application preparation

The design of an offshore renewable energy proposal is highly iterative and will overlap with the site selection stage. The site selection process may well highlight unforeseen effects that will inform design decisions. Alternatives and mitigation measures, including, for example, device types, their configuration, the number of devices in an array and grid connection options all need to be considered in design and site selection.

Preliminary baseline surveys and site investigations are required to inform the design of offshore renewable energy infrastructure. Most survey work does not have potential for significant effects on the environment (e.g. bird survey, chlorophyll measurement, remote sensing). However, other types of surveys can, in themselves, have effects on the environment. For example, geotechnical surveys involve acquiring samples by excavation or drilling which could cause noise and disturbance effects. Benthic and marine habitat surveys require sampling of sediments and habitats, which may have environmental effects. Therefore, screening for the effects of survey work may be required for AA purposes, particularly where the survey work may affect European sites, or protected species. A foreshore licence may be required for site investigations and the competent authority should be consulted prior to undertaking such investigations. More detailed guidance on surveying and compiling the necessary environmental information to support project consent applications is available in the complementary *Guidance on Marine Baseline Assessments and Monitoring Activities for Offshore Renewable Energy Developments*, DCCAE, due for publication 2017.

The application documentation, together with the EIS and NIS as required, are prepared and submitted to the competent authority at the end of this phase.

Phase 3 - Assessment and determination of consent application

Following submission of the relevant application for consent for the renewable energy project, the competent authority assesses the application against relevant policies, assesses the information submitted with the application (including the adequacy of the EIS and NIS), engages in statutory consultations, hosts oral hearings (if required) and requests any further information from the applicant that may be deemed necessary. The output from this stage of the process is the decision to grant consent with conditions or refuse consent supported by the authority's determinations in relation to EIA and AA, as appropriate.

Informed by the EIS, the potential environmental effects of the lifecycle of the project will be considered in the EIA. During the EIA process, mitigation measures set out in the EIS may be accepted as is or may be altered and, together with additional mitigation measures that may be identified, could be included as conditions on any consent granted.

Phase 4 -Construction and commissioning

Construction and installation can have a range of significant effects on the environment. They can, by their nature, be temporary and/or may occur over several seasons. Construction will have direct physical disturbance effects on the seabed and habitats. In addition, underwater noise impacts may result from drilling and piling activities. Underwater works can also disturb seabed sediments. Additionally, the presence of surface and subsurface vessels relating to the construction and installation phase can have effects on the environment (e.g. accidental release of hydraulic fluids).

Phase 5 - Operation and maintenance

The operational phase of a development is an important phase for consideration in the environmental assessments. The environmental pressures associated with this phase can potentially be persistent and/or significant. Maintenance operations and effects upon the environment arising from such operations should also be considered in the EIS and/or NIS.

Phase 6 - Decommissioning

The effects associated with decommissioning can be similar to those resulting from the construction phase, where the infrastructure must be removed. Each decommissioning response will be specific to its project. In general all devices and the associated infrastructure will be removed and disposed of on land taking into account the waste management hierarchy of avoidance, reduction, re-use,

recycling, recovery, and residue disposal[7]. Appropriate consideration of decommissioning requirements is required at the design stage, in order to allow for an assessment of the full lifecycle effects on the environment. Conditions attached to permissions or consents may require decommissioning plans to be submitted and agreed in order that consultation may take place with the competent authority at the decommissioning stage.

3.3 Connection to grid systems

A key element in commercial electricity generation is connection with the national grid. This may involve the laying of underwater cables, bored tunnels/directional drilling, underground terrestrial cabling, and terrestrial overhead power lines with associated towers and substations.

It is recommended that permission/consent for the entire project i.e. electricity generation facility and connection to the national grid should be sought at the same time, if the connection to the grid does not already exist or has not previously been granted consent. This may involve the submission of different applications to different competent authorities. However, it will ensure that the full life cycle of the project, any facilitating infrastructure and its combination of potential environmental effects have been assessed and can therefore be considered by the competent authorities.

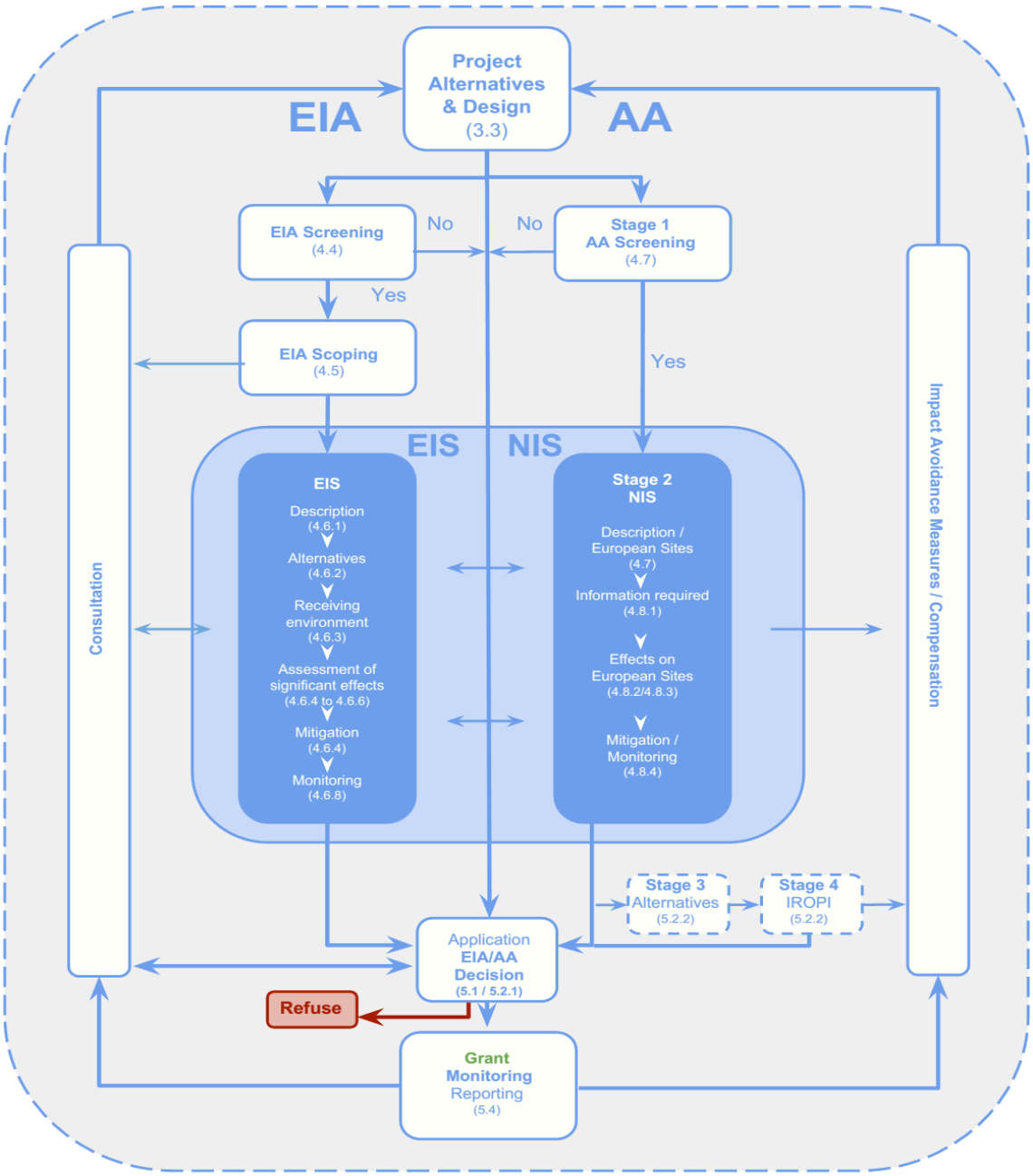
[7] *OSPAR Guidance on Environmental Considerations for Offshore Wind Farm Development* (Reference number: 2008-3).

4 Preparing the EIS and NIS

4.1 Integration of EIS and NIS

Statutory requirements in relation to EIA and AA are intensely process driven. Figure 5 sets out the framework for integrating the stages in the two processes.

Figure 5: Integrated EIS and NIS Preparation as part of EIA and AA Processes.



These processes aim to effectively integrate environmental considerations into the site selection, alternatives and design of the project to ensure that they are not merely retrospective assessments of a predetermined solution. The processes and practices for EIA and AA are closely related and in many cases complementary. Information, methodologies and assumptions should be shared between the two processes, but must be tailored to address the specific requirements of the respective Directives.

While the focus of AAs is on conservation objectives of an individual Natura site and the integrity of European sites and the European Natura 2000 network, EIAs take a broader range of environmental matters into account. Information gathered for the EIS can be utilised in the NIS and vice versa. Under EIA Directive (2014/52/EU), there is a requirement to put arrangements in place to facilitate joint and/or coordinated procedures in relation to the EIA and AA assessments. The Commission has published guidance on streamlining environmental assessments conducted under Article 2(3) of the Environmental Impact Assessment Directive 2011/92/EU, as amended by Directive 2014/52/EU)[8]. The final EIA and AA decisions are a result of separate, albeit joined or coordinated, processes and could be different although may be communicated at the same time.

The progression and timing of stages in the preparation of the EIS and NIS can be usefully linked. However, developers and their advisers should remain mindful of the distinct differences between NIS and EIS as outlined in Table 3.

4.2 Communication and consultation

4.2.1 General principles

Effective communication and consultation is a key element in designing and securing consent for marine renewable energy projects. It can enhance transparency and public awareness of the proposal and improve public understanding of decisions made by consenting authorities. Table 5 summarises the consultation roles and interactions arising over the life cycle of an offshore renewable energy project.

[8] Commission guidance document on streamlining environmental assessments conducted under Article 2(3) of the Environmental Impact Assessment Directive (Directive 2011/92/EU of the European Parliament and of the Council, as amended by Directive 2014/52/EU) available at http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52016XC0727(01)&from=EN

4.2.2 Stakeholder consultation

Public consultation may reveal other concerns not directly related to the matters covered by the EIA and Habitats/Birds Directives (e.g. policy matters, land ownership, property rights, community gain). The manner in which these other matters are managed may affect the outcome of the consultation process.

There are particular challenges in identifying non-statutory stakeholders for marine related projects. The list provided in Appendix IV is a good starting point. Early consultation with stakeholders and other users, particularly mariners and fishers, is essential. Feedback mechanisms should also be established. It is also advisable to engage with the competent authority to identify any other non-statutory stakeholders from the local to national scale.

It is critical that developers and their consultants liaise with competent authorities throughout the entire design and assessment processes. The competent authorities have an important role in providing advice on consenting processes, providing advice on other relevant consultation bodies, furnishing relevant data and responding in a timely fashion. Consultation with other state agencies is extremely beneficial to identify issues, obtain data and address key concerns.

4.2.3 Statutory consultation requirements

Potential offshore renewable energy projects have specific consent and statutory consultation requirements, which may depend on the scale, type and location of the project and its facilitating infrastructure. Table 2 sets out the current consent regime and is a useful guide to scoping the consents required for a project. It identifies the competent authority and high level environmental information requirement according to consent application type made, and the attendant enabling legislation governing the application process.

Each statutory application process prescribes consultees and methods of public information and consultation, see Section 19 and 19A of the Foreshore Act as amended, and Articles 124-132 of the Planning and Development Regulations 2001, as amended.

4.2.4 Consultation and communication strategy

It is recommended that developers prepare and implement a consultation and communications strategy at the outset of the project which could include consideration of the following:

- establish statutory consultation requirements;
- distinguish between EIA/AA consultations/communications and those for building project understanding and/or support;
- identify opportunities for public participation throughout the various stages of project development;
- agree clear roles and responsibilities
- undertake a stakeholder mapping exercise and organise information exchange events;
- ensure that the correct information is disseminated to the correct parties at the appropriate stage;
- record all communication and ensure relevant feedback into design;
- identify possible options for communication and consultation during construction and operation; and
- ensure feedback to relevant parties addressing concerns raised.

Table 5: Suggested communication and consultation actions for EIA and AA

Project Phase	Developer	Competent Authority	Statutory Consultees	Public, Interest Groups & NGOs
Inception	• Consultation & communication strategy	• Receive initial contact • Establish any transboundary consultation requirements	• Receive initial contact	• Developer stakeholder mapping – from the local, to national and international scale
Site selection and Alternatives	• Initiate site selection process & broad alternatives • Select location	• Provide relevant data • Advise on location	• Provide relevant information	• Developer review of previous consultation engagements
AA and EIA screening	• Request EIA screening advice • Request AA screening advice • Provide information for screening	• Provide Screening advice • Pre-application consultations	• Informal advice	
EIA scoping	• Request EIA scoping opinion	• Scoping decision • Consult statutory bodies prior to scoping	• Provide observations	• Developer considers appropriate form of engagement
Environmental baseline	• Acquire & collate data	• Provide data • Pre-application	• Provide relevant data	• Developer to seek relevant

Project Phase	Developer	Competent Authority	Statutory Consultees	Public, Interest Groups & NGOs
		meetings		information
EIS and NIS	• Impact assessments • Impact avoidance/ mitigation measures • Draft documents	• Provide further advice, as required	• Provide further advice, as required	• Public and stakeholder meetings
Consent application	• Prepare and submit application • Public notices • Displays, as required • Website, as required • Attend oral hearing, as required	• Review EIS and NIS adequacy • Formal consultations with public and statutory consultees • Request further information, as required • Oral hearing, as required	• Formal observations • Attend oral hearing, as required	• Public displays • Provide observations • Attend oral hearing, as required
Decision	• Review decision • Comply with conditions	• Issue decision • Notify relevant bodies/ parties • Publish decision	• Review decision	• Publication of decision
Monitoring	• Establish monitoring requirements for	• Receive and review results • Inspections, as required	• Receive and review results if required • Identify	• Access to monitoring reports

Project Phase	Developer	Competent Authority	Statutory Consultees	Public, Interest Groups & NGOs
	construction & operation • Implement monitoring measures		remedial actions, if required	
Construction/ Commissioning	• Identify liaison officer • Establish protocols	• Advise and liaise	• Advise and liaise	• Ongoing liaison with key stakeholders

4.3 Baseline data collection and management

An environmental baseline is essential for effective environmental assessment. Marine environmental data is derived from a wide range of existing available data sources. *Data and Information Sources for Offshore Renewable Energy Developments*, DCCAE, 2016, broadly identifies data requirements, sources and availability of information. The type of data required should address all relevant aspects of the project and is dependent upon the nature and scale of the project itself and the purpose of the assessment. For example, AA requires consideration of the potential significant effects on European sites having regard to their conservation objectives, whereas EIA when producing an EIS will have regard to all relevant aspects of the environment into which the project is to sit and may significantly affect, including an outline of how these environment aspects are likely to evolve without implementation of the project.

Data and information quality and scale are key in informing decisions. Quality relates to availability, currency and completeness. Scale is dependent upon data gathering and creation methodologies. Significant gaps, which may be identified during the scoping stage should be addressed through field surveys, etc.

Data and information obtained during the preparation of project level EISs and NISs for offshore renewable energy projects may prove a useful source of information in review of the OREDP and its

SEA. Sharing between projects and subsequent deposit with a data repository should be facilitated, particularly if required to do so by the competent authority.

4.4 EIA screening

4.4.1 General

Screening is a process to determine whether an EIA is required. The requirement for an EIA is dependent on whether a project seeking consent falls within Annex I or II of the EIA Directive as transposed into Irish statute by The Planning and Development Act and the Foreshore Act. [9]

Section 13A of the Foreshore Act requires the appropriate Minister to ensure that an EIS is prepared if a development meets the EIA criteria set out in legislation. The Foreshore Act provides that the appropriate Minister shall ensure that projects of an EIA class, or projects where the Minister had determined would be likely to have significant effects on the environment, are subject to an EIA prior to determining a foreshore consent application.

Schedule 5 of the Planning and Development Regulations, 2001 as amended, sets the project type and scale thresholds at which an EIS and resultant EIA is mandatory. Offshore renewable energy developments are not specifically mentioned in the Regulations, however, for hydroelectric energy production, the scale threshold requiring a mandatory EIA is an output of 20MW or more. The threshold for wind farms is 5 turbines or a total output of greater than 5MW.

New technologies may emerge over time, and decisions will have to be made as to their classifications for EIA thresholds.

4.4.2 Sub-threshold EIA

In accordance with the Foreshore Act, as well as the Planning and Development legislation, an EIA may be required in order to apply for consent from the competent authority where development of a type considered in Schedule 5 of the Planning and Development Regulations is proposed, but does not exceed a quantity, area or other limit specified in that schedule. Such development is defined as 'sub-threshold development' in those regulations for the purposes of EIA.

[9] The Planning and Development Act, 2000 as amended and the Foreshore Act, 1933 as amended and attendant regulations.

Schedule 7 of the Planning and Development Regulations sets out criteria against which a competent authority will adjudge whether an EIA is required for sub-threshold development due to the likelihood of significant effects on the environment. *Environmental Impact Assessment (EIA) Guidance for Consent Authorities regarding Sub-threshold Development*, DEHLG, 2003 provides useful advice for developers and their consultants in determining if an EIA is required.

While a competent authority must carry out a screening exercise following submission of a relevant application in cases where an EIS has not been submitted, there is currently no process for a formal screening request to be submitted by a developer to the competent authority. However, this is due to be addressed shortly via regulations which will implement Section 176A of the Planning and Development as inserted by the Planning and Development (Housing and Residential Tenancies) Act 2016, which provides for such application to the planning authority.
The 2014 EIA Directive specifies that the developer, if requesting a screening opinion, should include a description of:

- the proposed project;
- the aspects of the environment likely to be affected; and
- likely effects.

The competent authority would then make a determination on whether an EIA is or is not required. If an EIA is required, the developer should progress to the next stage. If an EIA is not required, the developer may proceed with preparing and submitting an application for consent; although surveys and supporting reports, including screening for AA requirements will likely still be required. This may best be recorded in a non-statutory environmental report.

4.5 EIA scoping

4.5.1 General

Guidance on EIA Scoping, EC, 2001, defines EIA scoping as *"determining the content and extent of the matters which should be covered in the environmental information to be submitted in the EIS"*
The scoping process is referred to in *Guidelines on the Information to be contained in Environmental Impact Statements*, EPA, 2002. Scoping determines the nature, detail and specific topics to be considered in the EIS and provides a focus for the assessment. It has the benefits of avoiding costly excessive assessments and reducing the potential for further information requests from the competent authority at application stage. Scoping must focus on environmental effects that are related, likely to occur, and are significant.

General guidance on the content of an EIS is currently set out in Article 94 and Schedule 6 of the Planning and Development Regulations, 2001, as amended and environmental topics and project types are considered in *Advice Notes on Current Practice (in the preparation of Environmental Impact Statements),* EPA, 2003.

The Planning and Development Act[10] allows for a developer to seek a written opinion on the information to be contained in an EIS intended for submission with an application of consent, from the competent authority. The formal scoping undertaken provides for the competent authority to prepare its opinion and to undertake consultation with the relevant statutory bodies. The competent authority may also request information or comments from other parties.

It is recommended that, other than in exceptional circumstances, a scoping opinion should be formally sought. In addition to describing potential significant effects, a report presented for scoping purposes should include a detailed description of the proposed development (including design of device, scale, number in arrays, cabling and grid connections), and aspects of the environment likely to be affected (including existing available data, information and required surveys). It should also outline the options to be considered together with proposed methodologies and refer to consultations undertaken. Topics to be scoped out should also be specified.

While the general focus of an EIS is to identify and mitigate significant adverse effects of the project, positive effects must also be described. The scoping report should factor in any such effects in order to ensure that they are adequately considered, and so allow for a comprehensive assessment of effects of the project on the environment.

4.5.2 Defining the development

The offshore renewable energy device types to be deployed in a project need to be adequately described to allow a scoping opinion to be formed. Developers may sometimes limit the description of the scheme design using the *Rochdale Envelope*[11] principles to allow for flexibility in future design evolution; particularly for test facilities and evolving renewable technologies. The need for design flexibility in its evolution through EIA/EIS and consent application must be balanced with the need to

[10] The Planning and Development Act, 2000 as amended and attendant regulations.

[11] Rochdale Envelope is an approach in which the level of detail of the proposals is sufficient to enable a proper assessment of the likely environmental effects, and any resultant mitigation measures to be undertake and also takes account of the need for flexibility in the future evolution of the detailed project proposal.

define the development adequately to avoid delays and inconsistency in the assessment and consenting processes.

4.5.3 Establishing the zones of influence and study area

Zones of influence in a proposal are the potential geographic areas that could be affected by the implementation of such proposals; they will generally extend well beyond the footprint of the development. Development in the marine environment has the potential to cause certain effects over a wide area, including terrestrial environments. Furthermore, other pressures may occur over the lifetime of a project from construction through to operation and decommissioning. For AA it should be borne in mind that projects outside designated site boundaries of a Natura 2000 site may impact on the conservation objectives of the site.

It can be difficult at scoping stage to establish the full extent of the impacts of the entire project. It is therefore appropriate to adopt a precautionary approach to ensure that the study includes all areas where there is potential for significant effects. The zones of influence may differ depending upon the topic under consideration (e.g. the visual zone will differ from the biodiversity zone). In establishing the zones of influence, the following should be identified:

- the physical footprint of the project;
- the measures required to determine the overall zones of influence of a project (i.e. the area impacted by the development with reference to the of likely significant effects); and
- the study area (i.e. that selected for the review).

Specific modelling techniques, typically simulating water mixing processes to predict temporal and spatial variations, can be used to assist in the exercise. The zones of influence relate primarily to ecological and visual impacts of the development. A source – pathway – target risk assessment methodology may be of benefit in establishing the potential zones of influence. The study area for the assessment of other matters (e.g. socio-economic impacts, navigation, port developments, and material assets) will not necessarily correspond with the ecological or visual zones of influence.

4.5.4 Provision of adequate information and data gathering

The developer should provide sufficient and relevant baseline information to the competent authority to justify scoping out certain effects. In the longer term, providing adequate information at scoping stage will save time and costs by avoiding having to undertake detailed assessments on topics that do not require assessment.

Scoping is a key stage in identifying existing data sets, data gaps and the requirement for survey information. This involves:

- identifying the potential pressures and their receptors that may be affected by a development;
- establishing the condition and status of receiving environments with reference to pressures;
- establishing safety and navigational risks and needs of other users
- reviewing the adequacy of information and any identified data gaps;
- compiling a checklist to ensure that all relevant datasets are obtained; and
- providing as much relevant information as possible about the availability of data in relation to each of the receptors identified.

This allows for a comprehensive and effective assessment of the data gaps and any requirement for further baseline survey work to be undertaken prior to the preparation of the EIS. These requirements should be agreed with the competent authority and the relevant state agencies, where appropriate. Collection of baseline data is considered in further detail in 4.6.3 in *Guidance on Marine Baseline Assessments and Monitoring Activities for Offshore Renewable Energy Developments*, DCCAE, due for publication 2017.

4.5.5 Future EIA topics

Although not required to be transposed into Irish law until May 2017, when preparing for consent application after the new EIA 2014 Directive comes into force, consideration should be given to the change of emphasis, which, will have an effect on the scope of EIAs. For example, an assessment of a wider range of factors including population and human health, biodiversity, land and climate as well as the risks of major accidents and disasters will need consideration.

By reason of their nature and location, renewable energy facilities in the marine area are generally unlikely to have significant effects on human health. They may, at some locations, represent a risk to navigation or aviation safety, but as they are not significant emitters of pollutants or toxins to air, water or soil, their effects on human health are likely to be limited. However, in some instances e.g.

land elements of the project or locations close to the coast, residential areas, schools etc., an assessment of any likely effects on human health may be required, unless specifically scoped out in a scoping opinion from the competent authority.

4.6 The EIS

4.6.1 Describing the proposed development

The EIS project description should provide sufficient details of the project and its design to allow for the full implications of the project for the environment to be understood and assessed. It is recognised that offshore renewable energy technology is evolving, and that it may not be possible to fully describe the intricacies of various technological elements, but any elements likely to have significant effects on the environment must be described, as suggested in Table 6. The merits of the 'deploy and monitoring' approach for filling gaps and as part of scaling up of larger developments is recognised in the OREDP.

Table 6: Project description – indicative list of elements to be described.

Location • area context • onshore, offshore, inshore Phases • site investigations • construction period • operational/maintenance timeframe • decommissioning Device description • surface and subsurface elements • wind turbine tower/hub height and dimensions colour and finish • blade dimensions • floating or fixed • turbine characteristics • horizontal or vertical axis • oscillation (wind and tidal) • moorings and foundations	• acoustic disturbance • anchoring scour from lines and chains • landside construction and assembly areas • blasting and drilling operations • construction of structures and hard surfaces • dredging and smothering • disposal of dredged materials/drilling waste and discharges • seabed, seismic and excavation works • coastal erosion /seabed vegetation clearance • construction materials and methodology (including sourcing transportation and storage) • temporary powerline connections Commissioning and operation

Scale • development area • number in array • distance between devices Associated developments • grid connection (cables/overhead lines) • substations • jetties and piers • port facilities Construction • time of year, duration and phasing • working hours • construction techniques and methodology (including under and over ground and water development) • access and travel on/off-site	• testing • expected MW outputs • duration of operation • servicing • noise Growth/change • deploy and monitor potential • future phases • adaptability • climate change resilience Decommissioning • overall lifespan • decommissioning plan • reuse of materials • reversibility of impacts

[Adapted from *Advice Note on Current Practice in Preparation of Environmental Impact Statements,* EPA 2003]

4.6.2 Alternatives

Consideration of alternatives of location, design, technology type and scale is a key element in the EIA process. Alternatives should be considered throughout the lifecycle of the project, from technology design options, site selection to decommissioning, as a means of mitigation of potential environmental effects – refer to Section 3.3.

Consideration of alternatives should be recorded and developed from EIA scoping stage, and refined as required having regard to the environmental assessment and the observations of the competent authority and any consultees. Selected alternatives must be realistic, reasonable, viable and implementable. A *do-nothing* or baseline scenario without the project must be an appropriate consideration, as it facilitates an assessment of the other alternatives against the baseline.

Importantly, the 2014 EIA Directive requires the developer to provide the main reasons for selecting the chosen option, including a comparison of the environmental effects. Comparing the impacts of different options requires a degree of assessment of each, with regard to the methodologies used for assessing the impacts of the selected option.

Case Study 1: Burbo Bank Wind Farm (England) - consideration of alternatives

As part of the environmental impact assessment for the extension of Burbo Bank wind farm, a detailed assessment of alternatives was undertaken for the selection of sites both onshore and offshore. The options first formed part of the EIA Scoping Report. Alternative options were defined with respect to physical, biological and human environmental constraints. The alternatives were presented to both the technical consultees and the public. Locational options were selected for:

- routes
- substations
- power production

The site area of the project was significantly reduced from that initially identified in the licensing rounds. Landfall and onshore export cable route options were assessed against a number of criteria including environmental constraints and sensitivities, technical considerations (e.g. access) and technologies. SACs and SPAs were a particular focus as well as planning restrictions imposed by the local authority in the jurisdiction, cumulative and in-combination effects and economic viability.

Outcome: The alternatives were considered in two phases with the first phase concentrating on the offshore component of the farm, and the second phase, undertaken a year later, investigating landfall options. This phase involved significant input from National Grid (the British grid operator) to establish the most suitable grid connection location.

4.6.3 Receiving environment

A description of the existing environment is required to allow for a prediction of significant likely effects of a development. The description should include any relevant available information on the conservation condition, status of annexed species and habitats, WFD and MSFD status and other flora and fauna. The *condition* of the receiving environment should be used to inform whether or not an effect is significant and to understand its vulnerability and sensitivity – refer to 4.6.4 (Step 2).

When defining the marine and associated terrestrial baseline, it should also be acknowledged that the environmental baseline can change over time due to, for example, seasonal variation or climate change. This will have implications that should be accounted for in any reference to effects, including cumulative effects, and in the monitoring regime proposed as part of the project.

It is therefore recommended that the monitoring regime for the project be designed at this stage, so that the information gathered is appropriate to both the assessment and monitoring requirements. Reference should be made to *Guidance on Marine Baseline Assessments and Monitoring Activities for Offshore Renewable Energy Developments*, DCCAE, due for publication 2017, for further information on monitoring. Significant elements of the EIS baseline data and information can also be used for AA screening and the preparation of the NIS.

Zones of influence and features of interest

The context for assessment is described at section 4.5.3 where the zones of influence and study area are established at the scoping stage. The zones may differ depending upon the pressure or ecosystem component under consideration (e.g. smothering or noise and seabed or birds). Data and identification of features of interest within the zones that might be impacted by an offshore renewable energy project are required so that a source – pathway – target risk assessment can be carried out and the subsequent evaluation of effects such as displacement, modification or loss of habitats for key species.

In undertaking this exercise, it should be recognised that effects on part of a habitat or species may have implications for the wider ecosystem, and study areas should be determined accordingly. More general information is required for establishing the zone of visual impact and the area of study for social issues. GIS can be used in formulating and presenting this information. Information on the zones may take into account, for example:

- numbers, distribution and diversity of breeding and feeding birds;
- fish assemblages including migratory species and timing of movement of larvae, juveniles and adults;
- benthic species in intertidal and subtidal areas, particularly protected or endangered species;
- hydrodynamic factors, including erosion, sedimentation, tides and wave direction;
- changes to estuarine morphology and environments; and
- zone of visual impact.

Significance

The significance of identified habitats, species, or other designated areas should be specified. This can be done with reference to:

- statutory status (e.g. identifying conservation objectives of European sites; OSPAR Marine Protected Areas; Ramsar sites; designated archaeological zones and national monuments or protected views and landscapes);
- scarcity, abundance or environmental qualities (e.g. of species, water quality); and
- value (e.g. material asset value).

Sensitivity

Sensitivity relates to the potential vulnerability that any change might cause to certain aspects of the environment arising from the project. This may, for example, relate to the effect of wind farm development upon migratory routes of birds, or a particular species being vulnerable to collision risks; a benthic community that is sensitive to disturbance; a zone of archaeological heritage which may be sensitive to substrata excavations or a landscape sensitive to the introduction of large scale built elements. The use of GIS sensitivity mapping may assist in this task.

Adequacy of information and data gaps

Data and Information Sources for Offshore Renewable Energy Developments, DCCAE, 2016 and the OREDP SEA identify data requirements, current sources and availability of information.

Information submitted with an application for consent should be spatially represented at an appropriate resolution and scale in order to assess the effects of a given project within the specific marine and terrestrial area in question. Data and information gathering should also be informed by the consideration of the potential for cumulative/in-combination effects. The competent authority must be satisfied that the EIS contains adequate information to allow them consider it under an assessment of the environmental impacts. There are a number of matters to consider in the formulation of the baseline:

- *identification* of information required to identify the main pressures and effects of the project;
- *availability* of information to assess main effects; and
- *focus* of the information to assess effects that are likely and significant.

Case Study 2: Paimpol-Bréhat Tidal Farm (France) – baseline data

Paimpol-Bréhat Hydroelectric Park, operational since 2012, was chosen as a demonstration site for tidal energy due to its prevalent position in tidal streams. The farm is located within a SAC and a SPA with environmental receivers that include zostera marina, zostera noltii, a large maërl zone, benthic fauna and pelagic fauna. In addition, affected mammals and wintering and diver birds are protected under Annexes II and IV of the Directive. The area was also noted as having active fishing and oyster farming. Two sites were also listed as natural heritage sites under French legislation in the vicinity of the farm. It was decided that the site would be an excellent demonstration site for measuring the adaptability of a sensitive receiving environment to tidal energy devices.

Outcome: A detailed baseline was prepared to identify and assess likely significant effects on the above qualifying elements.

4.6.4 Scoping exercises

The EIA scoping exercise for a project should assist in identifying relevant data gaps which need to be filled by further field surveys. In marine environments, surveys over a prolonged period (e.g. in some

cases for periods of up to 3 years) may be required to inform some of the relevant baseline elements. This has implications for the timeframe within which the application for consent can be submitted. However, while this may extend the pre-application, consultation, design and assessment stage, it can avoid requests by the competent authority for further information during the application stage. Early identification of survey and monitoring requirements should be integrated into the overall design and management of the project and can inform realistic timeframes for design and assessment of the project prior to the submission of any application for consent.

Detailed technical guidance for conducting baseline assessments and subsequent monitoring of Offshore Renewable Energy Developments (Wind, Wave and tidal energy) is available in *Guidance on Marine Baseline Assessments and Monitoring Activities for Offshore Renewable Energy Developments*, DCCAE, due for publication 2017.

EIA topics identified at scoping stage such as socio-economic assessments, oil and gas infrastructure, dredging/dumping and underwater cables generally will not require primary survey work, as they rely, for the most part, on existing data. Table 7 indicates a number of offshore renewable energy project specific field surveys that may be required in EIA. The need for surveys and choice of assessment method will depend on a variety of issues including the proposed technology and site location.

Table 7: Surveys and methods of assessment

Marine EIA Topics	Surveys	Assessment methods/approach
Benthic ecology (subtidal and intertidal)	• Seabed characterisation surveys • Video survey • Dive survey • Remote operated vehicle • Grab sampling • Macro faunal sampling • Bathymetric mapping • Site suitability investigation • Remote mapping • Sediment sampling • Chlorophyll measurement • pH and Eh measurement	• Numeric modelling • BACI analysis • PRIMER software • Macro faunal analysis • Sediment sizing

Marine EIA Topics	Surveys	Assessment methods/approach
Fish and shellfish	• Trawling • Beam trawl • Natural fish population survey • Drop-down video	• Electromagnetic modelling • Fish-presence mapping
Marine mammals and reptiles	• Towed hydrophones • Tagging • Stationary data-loggers • Haul out site counting • Aerial survey • Hydro-acoustic surveys • Vantage points survey • Boat-based survey • Photo ID • Telemetry • Line transect survey • Stranding survey	• Noise assessment of marine mammals • Statistical analysis • Spatial modelling • Threshold analysis
Birds and bats	• Site characterisation (density, distribution, abundance) • Line transect • Point counts • Radar • Infra-red video • Shore vantage point survey • Boat-based survey • Aerial survey • Open coast survey • Photo ID • Stranding survey • Carcass recovery • Beached bird survey • Breeding seabird survey • Cliff-nesting seabird survey	• Displacement BAG or BACI analysis • Collision risk analysis • Statistical modelling seabird data • PCOD model • Bradbury model

Marine EIA Topics	Surveys	Assessment methods/approach
	• Tagging • Surface observation • Focal watch	
Coastal processes	• Tidal current surveys • Hydrography surveys • Wave patterns • Estuarine flooding • Coastal flooding	• Tidal flow simulations • Wave simulations • Erosion impact assessment • Coastal processes modelling • Flood risk
Sedimentation processes	• Sediment sampling	• Sediment transport and dispersal simulations
Seabed geology and morphology	• Bathymetry surveys • Geophysical surveys • Geotechnical surveys • Acoustic seafloor survey	• Morphological simulations • Hydrodynamic modelling • Sediment modelling
Water quality	• Water sampling	• Standard methods depending on parameter
Seascape, landscape and visual	• Landscape character • Seascape character appraisal • Zones of Theoretical Visibility (ZTV) • Identify and map protected views and prospects • Identify other views	• Standard assessment methodologies • Photomontages • Wireline drawings
Air and climate	• Air sampling	• Threshold analysis
Marine, coastal archaeology and shipwrecks	• Side scan sonar survey • Magnetometry survey • Sub-bottom profile survey • Metal detector survey • Aerial photography • Excavation • Geophysical survey	• Identify exclusion zone • Mapping of anomalies • Interpretation of all data sets

Marine EIA Topics	Surveys	Assessment methods/approach
	• Underwater dives • Walkover survey of intertidal area	
Ports, shipping and navigation	• Vessel counts • Directional analysis	• Navigation Risk Assessment
Aviation safety, military exercise and telecommunications	• Radar assessment • Survey of existing use of area	• Television reception study and broadcast service impact assessment • Radar impact assessment
Recreation and tourism	• Behaviour survey • Business survey • Expenditure survey	• Standard statistical assessments
Commercial fisheries	• Synoptic fish-presence mapping • Observer trips (fishing and potting) • Fishing activity questionnaire	• Fish spawning studies • Fish stock assessment
Aquaculture	• Aquaculture Sites - location and species	• Assessment of interactions

Source: Adapted from Guidance on Conducting Marine Baseline Assessments and Monitoring Activities for Offshore Renewable Energy Developments, DCNER, due for publication 2017

Changes to baseline receiving environment from other drivers should be considered when assessing effects of offshore renewable energy projects e.g. changes in species distribution or to intertidal habitats resulting from sea-level rise associated with climate change, or the predicted effects from other permitted or recently constructed developments (i.e. cumulative effects).

4.6.5 Assessment of likely significant effects

The EIA Directive requires an assessment of the *likely* and *significant* effects of a proposed project upon the environment. The *Guidelines on Information to be contained in Environmental Impact Statements,* EPA, 2002 provides some advice on the approach that can be adopted. While the methodology adopted in assessments may vary, a broad standard approach is generally followed:

Step 1 Identify likely significant effects, both positive and negative, having regard to the sensitivity of the receiving environment and the exposure to change based on probability and significance;

Step 2 Evaluate the likely significant effects having regard to the vulnerability of the receptor;

Step 3 Manage effects through mitigation of adverse effects;

Step 4 Assess any significant residual effects after mitigation measures have been incorporated.

Step 1 - Identifying likely significant effects

The process of identifying *likely significant* effects, both positive and negative, allows for an understanding of the change brought about by the project. Only *likely* effects need to be considered for their *significance*. The likelihood of the effect can be expressed as certain, probable, unlikely or extremely unlikely. In defining likelihood, the precautionary principle should apply. The identified effects must also be *significant*. A number of criteria can assist in determining significance. These criteria include:

- *spatial extent* – the zone of influence in the terrestrial and marine environment;
- *magnitude and complexity* – the level of change from the baseline that the project, alone or in combination with other projects can have, and the number of the indicators that are predicted to change
- *integrity* – the level of the effect upon complex marine ecosystems having regard to fragility, stability, carrying capacity, productivity and community dynamics;
- *duration and frequency* – temporary, permanent, continuous, intermittent, occasional, or short, medium or long term effects; and
- *transboundary* – across international jurisdictional boundaries.

Identified effects can be further defined and described to be direct, indirect, secondary and cumulative or in combination effects. The timescale of the effects should be described, e.g. short, medium, long term, temporary, permanent, continuous, or intermittent. Interactions between effects must also be considered.

The science behind identifying the negative effects is more advanced than that required to identify and quantify the positive effect of projects on the environment. Nonetheless, it is essential that positive effects are identified and assessed. The Annex IV 2016 State of the Science Report –

Environmental Effects of Marine Renewable Energy Developments Around the World[12] provided useful information on negative and, to a lesser extent, positive effects on the environment from offshore renewable projects. Positive environmental effects resulting from the reduced use of fossil fuels include a reduction in the production of greenhouse gases causing global warming, sea-level rise, increased in the frequency and strength of storms and ocean temperature increases and acidification.

At a local level some environmental benefits from offshore renewable energy projects could include:-

- Reefing, the attraction of organisms to objects such as offshore renewable energy devices that are placed in the marine environment, either on the seabed or in the water column with the potential to enhance production and dispersal of organisms, creation of refuge, and improvements in prey resources.
- Increased vertical mixing can have positive effects by causing higher concentrations of bottom water dissolved oxygen at times
- Coastal protection from the strategic placement of offshore renewable energy devices
- An appreciation of a modern environmentally responsibility approach to fulfilling energy requirements.

It is important that these and other beneficial effects are identified and assessed.

The OREDP SEA identifies main EIS topics and potential effects relevant to offshore renewable energy projects. Some of the topics will have more significance than others and others are unlikely to occur. This should be recognised in the EIS. Table 8 provides an indicative list of potential effects associated with offshore renewable energy projects.

[12] The *Annex IV 2016 State of the Science Report – Environmental Effects of Marine Renewable Energy Developments Around the World available at* https://tethys.pnnl.gov/publications/state-of-the-science-2016

Table 8: Potential effects

Marine EIA/AA topics	Potential effects – indicative list.
Protected sites and species	• Site integrity • Site quality • Protected species • Habitat loss • Coherence of existing and proposed networks • Conservation objectives • Reefing and creation of refuge
Benthic ecology (subtidal and intertidal)	• Damage/loss to habitats and non-mobile species • Smothering • Scouring of seabed • Suspended sediments and increased turbidity • Changes in wave and tidal regime • Disturbance of contaminated sediments • Contamination (hydraulic fluids/vessel fuel) • Improved vertical mixing
Fish and shellfish	• Disturbance • Displacement • Reefing and creation of refuge Smothering • Noise • Collision risk • Hydraulic injury (entrapment) • Suspended sediments and increased turbidity • Habitat exclusion areas • Barriers to movement • Disturbance of contaminated sediments • Accidental contamination • Substratum loss • Changes in wave and tidal regime • EMF
Marine mammals and reptiles	• Physical disturbance

Marine EIA/AA topics	Potential effects – indicative list.
	• Displacement • Reefing and creation of refuge • Noise • Contamination (hydraulic fluids/vessel fuel) • Collision Risk • Habitat exclusion • Barrier to movement • EMF
Birds and bats	• Physical disturbance • Displacement • Noise • Contamination (hydraulic fluids/vessel fuel) • Collision risk (including entanglement and entrapment) • Habitat exclusion • Barrier to movement • EMF
Coastal processes	• Coastal erosion • Coastal protection • Estuarine and coastal flooding
Sedimentation processes	• Increased suspended sediments • Change in sedimentation process
Seabed geology/morphology	• Change in seabed morphology
Water quality	• Disturbance of natural sediments • Disturbance of contaminated sediments • Accidental contamination (hydraulic fluids/vessel fuel) • Increased turbidity • Reduced visibility • Increased vertical mixing
Seascape, landscape and visual	• Designated landscapes • Seascapes • Visual amenities

Marine EIA/AA topics	Potential effects – indicative list.
	• Designated or other significant views • Indicative of a modern environmentally responsibility approach to fulfilling energy requirements. • In-combination and cumulative effects on tourism
Air and climate	• Construction dust, vibration, noise • CO2 reduction • Sterilisation of future carbon storage areas • Sea level change, water salinity and temperature
Marine, coastal archaeology and shipwrecks	• National monuments • Zones of archaeological interest • Shipwrecks • Changes to sediment regime
Ports, shipping and navigation	• Collision risk (subsurface and surface) • Displacement of shipping • Decreased trade supply • Reduced visibility
Aviation safety, military exercise and telecommunications	• Collision risk • Radar interference • Designated military areas and disruption to military activities • Broadcast and telecommunications
Recreation and tourism	• Access routes • Noise • Safety and collision risk • Disturbance to wildlife • Displacement
Commercial fisheries	• Direct disturbance • Temporary displacement from traditional fishing grounds • Long term displacement from traditional fishing grounds
Aquaculture	• Smothering • Substratum loss • Contamination (hydraulic fluids/vessel fuel)

Marine EIA/AA topics	Potential effects – indicative list.
Socio-economic	• Tourism • Coastal communities • Economic
Oil, gas, other renewables and aggregates	• Access restrictions • Collision risk • Sterilisation of area
Dredging and dumping	• Access restrictions • Water pollution
Cables and pipelines	• Direct damage • Access restriction • Water temperature • EMF

Source: Adapted from SEA of the OREDP (SEAI, Aecom, Metoc, 2010). Site specific, local scale potential beneficial effects are outlined. Broad scale beneficial effects are outlined in Step 1 above.

Step 2 - Evaluating likely significant effects

The main assessment stage is an evaluation of the effects of the project on the environment, having regard to the vulnerability of the receptor to change. The interactions of multiple environmental effects arising from a project affecting a receptor should also be considered. The assessment must include an evaluation of the full range of effects of the proposal, including positive effects for example reduction in CO_2 emissions. The likelihood of an environmental receptor being vulnerable to change resulting from the effects of the project is assessed for significance. The EPA EIS Guidelines, 2002 indicates the following scale:

- *Imperceptible* - an effect which is capable of measurement but without noticeable consequences.
- *Slight* - an effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
- *Moderate* **-** an effect that alters the character of the environment in a manner that is consistent with emerging trends.

- *Significant* - an effect which by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
- *Profound* - an effect which obliterates sensitive characteristics.

Effects can be classified as *positive, neutral* or *negative*. A range of assessment matrices are used in the assessment of significance. The conventional approach often provides an assessment of significance based on vulnerability and importance. Other matrices used include determining exposure to change which combines magnitude and probability of change. Methods of assessment vary widely, depending on the topic, but include expert judgement; checklists; trend analysis and computer modelling; threshold analysis, trigger thresholds and spatial risk analysis; ecosystem modelling and chain analysis.

Case study 3: Horns Rev 2 Offshore Wind Farm (Denmark) - assessment of effects

An extension of the Horns Rev offshore wind farm, involving an additional 91 turbines located 30km from the Danish coast was proposed. A thorough assessment of potential effects on benthic communities was undertaken following several years of observation at Horns Rev 1, located within 10km from the subject site and using samples from the subject site itself. *The Rochdale Envelope* approach was adopted as the number of turbines was not exactly determined at assessment stage, although it was considered that a larger number of smaller turbines would have more impacts than a few bigger turbines. The project team decided that a basis of 95 turbines would be used for assessment, with a spacing of 600m. Maximum capacity was established at 209MW with a maximum height at 114.5m above sea level. A number of environmental changes and receptors were identified to proceed to the assessment of likely significant effects at the site. Effects were categorised using a number of criteria as follows:

- Importance of issue: international, national regional or local interest;
- Magnitude of impact or change: major; moderate; minor; negligible, or no change;
- Persistence: permanent (lifetime of project or longer); temporary/long-term > 5 years; temporary/medium-term 1-5years; temporary/short-term <1 year;
- Likelihood of occurring: high (>75%); medium (25 to 75%); low (<25%);
- Other: direct/indirect/cumulative impacts.

Outcome: Significance of effects was then determined by assessing the sensitivity of each of the receptors, using an assessment matrix. Parts of the assessment submitted found that the impacts of the turbines on the benthic communities would positively counteract the effects of trawling.

Step 3 – Mitigation

Mitigation measures are usually required where likely significant effects on the environment are identified. Mitigation measures may be proposed in order to *avoid, prevent, reduce, rectify,* or sometimes *compensate* any major adverse effects. The impact of residual effects should then be assessed.

Mitigation can be achieved through a variety of means, including those to avoid sensitive areas or adopting construction and operation methods that reduce effects. A number of specific project level mitigation measures were identified as part of the SEA for the OREDP and were subsequently included in the adopted OREDP. They are included in Table 4 of the Offshore Renewable Energy Development Plan.

These measures emphasise the importance of avoiding, where possible, very sensitive sites and corridors and of avoiding certain operations at critical times of the year. They also indicate how mitigation measures may need to be adopted at different phases of the lifecycle of the project. In addition to these previously identified mitigation measures, each developer should also identify other specific mitigation measures that may be required to address specific identified significant effects. These should be developed through consultation with the relevant consultee and the competent authority. They will be dependent upon the nature of the pressure/receptors interaction, the type of device to be deployed, the grid connections and the overall scale of the project. The environmental effects of any mitigation measures proposed must, of course, be set out in the EIS. Mitigation measures are a stated commitment when described in the EIS as forming part of the construction, operation and/or decommissioning methodologies of the project. They may require monitoring at some or all stages of the project lifecycle.

Mitigation measures may be incorporated into the design stage and the consideration of alternatives as part of the overall EIA. Changes to design, scope and nature of the project resulting from mitigation measures should be clearly documented in the EIS.

The competent authority may impose additional mitigation measures addressing identified significant effects, or may edit or strengthen mitigation measures proposed in the EIS, either indirectly by way of further information requested during the course of consideration of a consent application, or directly by condition on the consent. Monitoring will play an essential role in

mitigation. An Environmental Management System (EMS) for a project can incorporate monitoring regimes. Any mitigation and monitoring plan should address the following:

- details of mitigation measures and how they will avoid or reduce identified adverse effects;
- identification of responsibilities of developer;
- a timetable for implementation (including maintenance); and
- details of how the measures will be monitored, how results will to be fed back into the operation of the project and how remedial action will be taken, if warning thresholds are breached during monitoring.

Step 4 – Residual Effects

The residual effects of a project, including mitigation and monitoring associated with these effects, should be identified, described and assessed. The assessment should include an evaluation and commentary on the significance of the likely residual effects of the development on the environment. Where residual effects are likely to be significant and negative, the prospect of receiving consent, or at a minimum, consent with highly stringent conditions attached, is reduced - particularly where they relate to a European site.

4.6.6 Specific Marine Topics

Assessments in the marine environment can require specialised expertise, for example in relation to marine ecology, marine birds, navigation, seascape and visual assessment, climate change and biodiversity. Table 7 considers the range of EIA topics that may be addressed in relation to offshore renewable energy projects and the range of surveys and impact methods/tools generally used.

Appendix II outlines other guidance that is available in relation to specific topics. *Guidance on Marine Baseline Assessments and Monitoring Activities for Offshore Renewable Energy Developments*, DCCAE, due for publication 2017, provides further advice on appropriate methodologies and tools for the environmental monitoring of offshore renewable energy projects in marine natural habitats. Other aspects that should be considered in offshore renewable energy projects include impacts on coastal processes and sea-scape and visual impacts.

Navigational Risk Assessment

Failure to provide for safety of navigation, risk assessments and associated mitigation measures could have implications for safety of life at sea, property and the environment. As offshore structures are a potential hazard to navigation it is imperative that they are marked properly and effectively, in accordance with international guidelines. The Commissioners of Irish Lights and the relevant Port Authorities should be consulted in regard to safety of navigation at the pre-planning stage for any development. Offshore structures should be marked in accordance with International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) Recommendation O-139 on the Marking of Man-Made Offshore Structures and statutory sanction to deploy or remove these marks should be achieved from Irish Lights.

Seascape and visual impact

A useful definition of the seascape is "*the visual and physical conjunction of land and sea which combines maritime, coastal and hinterland character"* from *Offshore Renewables – Guidance on Assessing the Impact on Coastal Landscape and Seascape: Guidance for Scoping an Environmental Statement,* SNH, 2012. Particular attention needs to be paid to effects on views from purpose-built tourism facilities, especially hotels, as well as touring routes and walking trails, see *Guidelines on the Treatment of Tourism in an Environmental Impact Statement, 2011*. It should be noted offshore windfarms may be viewed in a positive light reflecting a modern environmentally responsibility approach to fulfilling energy requirements. Seascape and Landscape Visual Impact Assessment (SLVIA) adopts standard landscape and visual assessment methodologies (e.g. character definition, alternatives, assessment), which are adapted to the marine and coastal environments.
It consists primarily of an assessment of the effects upon the:

- character of the seascape and landscape and its sensitivity (maritime, coastal edge, intertidal zones and hinterland); and
- particular views and visual amenities (from both land and sea).

Various methods can be used that include identifying Zones of Theoretical Visibility (ZTV). This is the process for determining the visibility of an object in the surrounding landscape using computer modelling and digital terrain mapping. Importantly, interactions with other environmental considerations, (e.g. tourism and marine leisure) need to be an integral part of the assessment. Wind farms in particular, also have significant potential for cumulative and in-combination visual effects that needs to be considered.

Case Study 4: Neart na Gaoithe Wind Farm (Scotland) - Seascape, Landscape and Visual Impact Assessment (SLVIA) and Cumulative Impact Assessment (CIA)

A detailed SLVIA technical report was submitted as part of the environmental assessment. It assessed effects on the coastal and marine seascapes caused by changes in elements and qualities resulting from the proposed development. It also considered visual impacts of the onshore elements of the wind farm. Resulting effects on the visual amenities on a number of categories of users were measured to determine the severity of the effects. The developers used the *Rochdale Envelope* approach and proposed varying turbine heights and density to assess effectively which format would result in the lowest visual impact on the receiving environment.

The chosen approach was that of a CIA where three types of effects were examined:

1. simultaneous or combined effects (two or more farms are visible from a fixed point in the same arc of view);
2. successive visual effects (two or more wind farms are visible from a fixed point, but observer needs to turn to see the various sites); and
3. sequential effects (several wind farms can be seen as the observer moves along a linear road/footpath).

A CIA was carried out in three phases. Firstly, a prediction of magnitude of additional effects resulting from the introduction of devices in the receiving environment was undertaken. This was followed by classification of the sensitivity of the seascape/landscape and visual receptors to the proposed development. Finally, the significance of cumulative impact having regard to the sensitivity of the receptor and the magnitude of effect was evaluated. The onshore assessment was the most difficult as it incorporated a significant number of historic gardens and designated areas which could be impacted by the offshore development.

Outcome: The assessment identified limited significant effects on the seascape character of the study area, and no significant effects on the landscape character. Significant effects on views were predicted, although it was noted that these effects were only likely to occur at open coastal locations scattered across the study area.

Coastal processes

Depending on the location there are potential significant effects from offshore renewable energy projects associated with marine coastal processes relating to sedimentation, wave impacts and coastal erosion. In addition to sediment sampling, hydrographic, geophysical and tidal current surveys are often required to support the assessments. A variety of model simulations relating to

sediment dispersal, tidal flow and wave impacts can be used in determining the likely significant effects.

4.6.7 Cumulative, indirect and interaction of effects

The *Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions*, EC, 1999, contain European guidance on cumulative, indirect and interaction of effects as follows:

- *Cumulative effects* are those that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project.
- *Indirect effects* are not a direct result of the project; they are often produced away from, or as a result of, a complex pathway. They are sometimes referred to as secondary effects.
- *Interaction of effects* are the reactions between effects, whether between the effects of just one project, or between the project effects and the effects of other projects in the area. These interactions can be manifested as additive, antagonistic/synergistic, or a combination of all of these.

The *Guiding Principles for Cumulative Impact Assessments in Offshore Wind Farms*, (Renewable UK, 2013) set out a number of principles to evaluate these effects. They can be applied to Cumulative Impact Assessment (CIA) for all offshore renewable energy technologies and include those set out at Figure 6.

Figure 6: Principles of Cumulative Impact Assessment (CIA).

1. A clear and transparent collaborative approach should be established between stakeholders.
2. Clearly identified spatial and temporal boundaries should be linked to the baseline.
3. A realistic project design envelope should be used.
4. Other plans (e.g. development plans, local area plans, MSP plans, grid plans) or projects (e.g. those with consent) on which there is sufficient information should be referenced.
5. Share information between projects.
6. Assessments should be proportionate to risks; they should focus on key effects and receptors, and/or sensitive pressures emanating from the project (e.g. pressure/effect linkages with birds, European sites and visual/landscape effects).
7. Mitigation and monitoring plans should be informed by the assessment of cumulative effects.

Standardised frameworks for assessment of cumulative effects have been developed in relation to offshore wind farms like the *Framework for Assessing Ecological and Cumulative Effects of Offshore*

Wind Farms (Ministry of Economic Affairs and Ministry of Infrastructure and the Environment, Government of the Netherlands, 2015). Specific methodologies have also been developed for the cumulative assessments of offshore wind farms in relation to birds in *Developing Guidance on Ornithological Cumulative Impact Assessment for Offshore Wind Farm Developers*, SNH, 2014.

Together, these standardised frameworks for CIA have been based on the *driver, pressure, states, impact and responses* (DPSIR) model. This involves the following steps depicted in Figure 7:

Step 1 Describe all relevant activities (drivers) that could affect the same species or habitat.

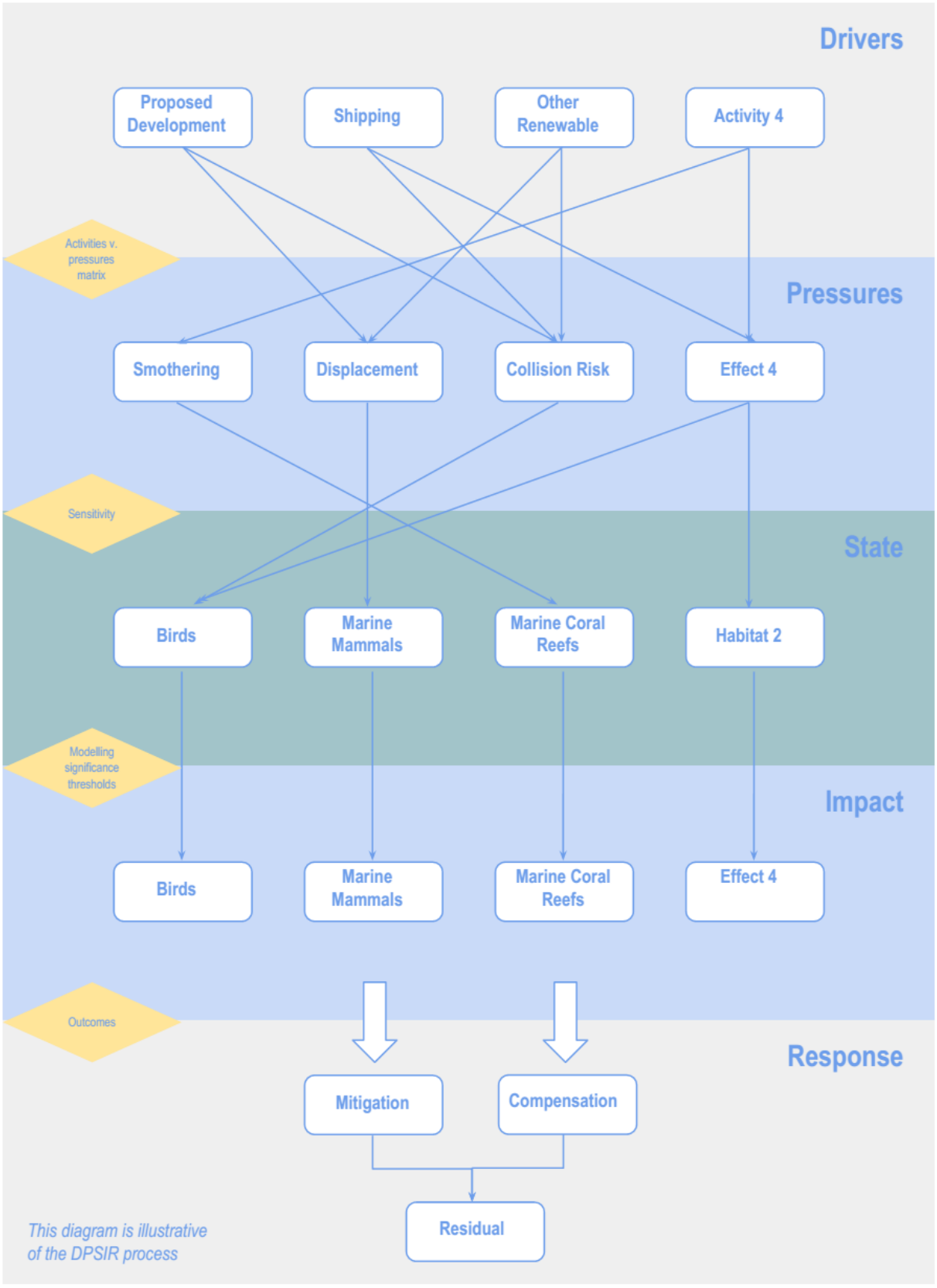
Step 2 Identify the relevant potential effects (pressures) the envisaged activities could cause.

Step 3 Identify the habitats and species (states) that may be affected by these pressures.

Step 4 Describe the nature and scale of the cumulative effects of all the activities selected in Step 1 on the selected habitats and species, and evaluate the significance of the effects on the selected habitats and species (impacts).

Step 5 If necessary, adapt the activity by taking mitigation or compensatory measures (response) in order to prevent the activity from contributing to any significant effects.

Figure 7: Framework for Cumulative Impact Assessment (CIA) of Offshore Renewable Energy Projects.



4.6.8 Areas of scientific uncertainty and confidence in assessments

In undertaking assessments, there will be recognised areas of scientific uncertainty in relation to offshore marine renewable energy projects. These may include:

- scale and uncertainty of environmental effects;
- unknown distribution of Annex I habitats/communities outside designated areas;
- limited information on bird migratory routes, offshore feeding/loafing;
- impact of noise during construction and operation on marine mammals and fish;
- mortalities arising from collisions;
- noise impacts upon diving birds, marine mammals and fish (e.g. cod); and
- barrier impacts on fish migratory routes and commercial fisheries.

Areas of uncertainty should be specified in the assessment. Confidence assessments should be applied, in line with the precautionary principle, to consider whether the information presented is adequate for EIA purposes. Ongoing monitoring programmes can be used to reduce scientific uncertainty with respect to potential impacts and inform management and operational procedures. This is conventionally expressed as *high, medium* or *low* confidence levels. In considering confidence levels, matters such as use of quality standards, standard methodologies used, proportionate, completeness, timeliness and accuracy of information are important. A quality assurance procedure should be adopted from the outset of the project to avoid, in so far as possible, omissions and/or requests for further information by the competent authority, prior to the issuing of a decision.

4.6.9 Monitoring

Monitoring is specifically referred to in the new EIA Directive 2014/52/EU. Monitoring measures will need to be distinguished, yet linked to baseline information gathering to allow for project lifecycle assessment of significant effects. The decision of the competent authority must contain information on environmental conditions attached to the decision, a description of the features of the project designed to mitigate significant environmental effects, and where appropriate, monitoring measures.

Monitoring of projects is not specifically required under the Birds and Habitats Directives. However, it constitutes good practice and is often a condition of consents involving an EIS or NIS. The environmental receptors to be monitored and the duration of the monitoring should be proportionate to the nature, location and size of the project, and the significance of its effects on the

environment. Where there is scientific uncertainty with respect to impacts from emerging technologies, monitoring is an important source of information and can inform adaptive management processes.

Poorly devised monitoring programmes can result in excessive unnecessary costs for the developer usually as a result of duplication or conflict in monitoring methods and outcomes. While the monitoring of the environmental effects of a project will be the responsibility of the developer, carrying out monitoring over an area or ecosystem element not affected by the proposed development needs to be avoided. All project monitoring results should be periodically shared and reviewed with the consenting authority so that more effective monitoring methods and redundant monitoring requirements are identified and addressed.

Case Study 5: Atlantic Marine Energy Test Site (AMETS) (Ireland) - monitoring.

AMETS is a government-operated wave energy testing facility located west of Bellmullet in Co. Mayo. The site, where the primary purpose is the testing of wave energy devices in "real-life conditions" uses service vessels to control the activity of the moored devices forming part of AMETS.

Information technology at AMETS is a central component of the monitoring framework. The AMETS Management Organisation operates an Information Technology Management System established to ensure the integrity of the environment and safety of all users. An Environmental Management System (EMS) for AMETS was designed. Its role is to monitor effects, whether positive or negative, in relation to the baseline as described at EIA stage. It was envisaged at EIA stage that any negative effects would be addressed at the earliest stage possible to avoid environmental damage. However, unpreventable or unmitigated (un-predictable) effects would be the subject of Emergency Response Plans (ERP). Ecological monitoring involves monthly sampling of marine mammals, birds and benthos.

Outcome: The monitoring programme was developed in partnership with the statutory consultees to assess the effects of wave energy devices on the environment. Receptor devices are integrated along the cable routes and on the site to collect monitoring data.

Competent authorities and other agencies (e.g. the Marine Institute, the EPA, NPWS) are also responsible for environmental monitoring in relation to other marine matters including requirements under the CFP, WF and the MSFD in relation to European sites. In the event that a single national

repository for marine environmental information is established, all consented project monitoring information deposited with the competent authority or a public body should, to the extent possible, be shared with the national repository for marine environmental information. This mechanism will allow for sharing of data between developers. However, individual developers may also establish less formal methods of data-sharing, particularly in advance of submission of the information to the competent authority.

Similar to the monitoring of mitigation measures at Step 2 above, the monitoring regime should be devised at the inception of the project. It should relate to pre-construction and post-construction phases (including decommissioning). Monitoring requirements should be integrated into the preparation of the baseline survey methods to be used, and the assessment of the likely significant effects (including cumulative effects). Importantly, monitoring will inform the type of mitigation measures proposed as part of the development design process and ongoing adaptive management processes.

The associated *Guidance on Marine Baseline Assessments and Monitoring Activities for Offshore Renewable Energy Developments*, DCCAE, due for publication 2017, considers potential impacts and survey methods for monitoring during all relevant phases of the development. An Environmental Management System (EMS) can incorporate the monitoring regime and could be developed in conjunction with Emergency Response Plans (ERP) to deal with scientific uncertainty, unpreventable or unmitigated (un-predictable) effects that may arise.

Monitoring of a consented project will focus on the comparison of predicted effects with actual outcomes, and the effectiveness of mitigation measures.

Key factors for developing a monitoring plan/programme

- The regime should be appropriate for the scale of the development (e.g. spatial extent of development and zone of influence/buffer zone), the type of devices (e.g. tidal surface or subsurface) and be clearly linked to the pressures and their likely significant effects.
- Baseline monitoring data should be directly relevant to the methods of assessment used.
- Ongoing monitoring activities should always be linked back to the baseline to allow for changes resulting from the development to be detected; bearing in mind that the baseline may change due to other factors (e.g. climate change).
- Effects and monitoring can be considered in terms of general effects (e.g. changes in abundance, distribution and density of seabird populations) and local effects (e.g. disturbance and collision risk of different bird species).
- Survey methods should be linked to the vulnerability and risk of key environmental receptors and target species.
- Timing of surveys and monitoring activities should be addressed (e.g. seasonal surveys, monthly, restrictions due to seasonal conditions).
- Duration of surveys should be aligned to the completion date of the EIS.
- Duration of post-construction monitoring need to be specified (e.g. for birds annual monitoring for up to 3 years after commencement of construction, then on year 5,10 and 15).
- Remedial action falling within the scope of the consented development should be taken by the developer/operator if significant adverse effects are identified during monitoring.

4.6.10EIS Format

Guidelines on the information to be contained in Environmental Impact Statements, (EPA, 2002) advises that the structure of the EIS can be either a *direct* or *grouped* format.

The **direct** format structure sets out separate descriptions of the proposed development project, existing receiving environment, impacts and mitigation measures. Each description section holds a subsection on the topics set out in the current Schedule 6 *Information to be contained in an EIS* of the Planning and Development Regulations, 2001, as amended. The **grouped** format examines each topic separately referring to the existing receiving environment, description of the proposed development project, assessment of effects and mitigation.

Each EIS should be accompanied by a technical and non-technical summary. The non-technical summary should not omit or understate effects and all significant effects must be included. A non-technical summary must also explain the assessment in terminology that is readily understandable. The non-technical summary should be objective and it should accurately set out the likely significant effects of the project on the environment. It should not be used as a public relations exercise to achieve public acceptance for the project. The EIS should be available in both hard-copy and electronic format.

4.7 AA Screening

Figure 5 sets out the strategic stages for Appropriate Assessment (AA). Every stage determines if a further step is required. Stage 1 is the screening by the competent authority of a project to determine if an AA is required. If a significant effect upon the conservation objectives of any European site cannot be excluded, either on its own or in combination with other plans or projects, then the project must be progressed to the preparation of an NIS. The focus of the screening exercise will be on the conservation objectives relating to the species and habitats for which the European sites are designated and should be based on sound scientific information and relevant expertise.

Unlike the EIS, there are no predetermined thresholds above which there is a mandatory requirement for an AA. Each case must be dealt with on its merits. While there is no legal obligation for the developer to prepare a report to inform the AA screening of the project, best practice indicates that such a report be prepared and submitted with the application for consent to assist the competent authority in its determination. *Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities,* DEHLG, 2009 outlines the general requirements of screening in steps.

AA Screening Steps

Step 1 - Description of the project

This involves describing the individual elements of the project (alone and in combination with other plans or projects) likely to give rise to impacts on the conservation objectives a European site. The description may be similar to that required for the EIA screening but it is important that it fully addresses the implication of the European Site in view of the site's conservation objectives. The description should consider device design and number, supporting infrastructure, spatial extent,

duration and the separate phases of development. The entire extent of the project must be considered.

Step 2 - Identification of relevant European sites

Consideration must then be given to any European sites, together forming the Natura 2000 network, which may be affected by the project; including consideration of direct, indirect and in-combination effects. Projects that lie outside designated European sites may still have an effect upon their integrity, particularly in a marine environment where protected species are mobile and the environment is dynamic.

Properly identifying the zone of influence is therefore important. In this regard, a recommended 15km zone around designated sites for plans is provided in *Appropriate Assessment of Plans and Projects in Ireland,* 2009, NPWS, but it is emphasised that this may be much less for projects and each should be evaluated on a case by case basis. Determination of the zone of influence is made by reference to the nature, scale and location of the project, the qualifying interests of each designated site (see below), the *sensitivities* of receptors, the existence or absence of pathways and the potential for in-combination effects. Modelling may be required to properly define the zone.

The *qualifying interests* of the European sites concerned (i.e. the habitats and species for which the sites' *conservation objectives* have been identified) should be listed for the designated sites. Conservation Objectives, Site Synopsis and Standard Data Forms are available from the NPWS website[13]. The data forms also provide information on vulnerabilities and pressures on individual sites. The *condition* of the receiving environment should be used to inform whether or not an effect is significant and to assist understanding of its vulnerability and sensitivity to the project.

Step 3 - Assessment of likely significant effects

Effects to be assessed have to be both *likely* and *significant*, or potentially significant. Direct, indirect and cumulative, and in-combination effects need to be identified with reference to the characteristics of the development, the area and the location relative to European sites. This identification of potential or likely effects will overlap with any EIA screening and scoping. *Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*, EC 2001 provides assessment criteria which assist in the determination of significance and are summarised in Table 9.

[13] Information on protected sites in Ireland available at: http://www.npws.ie/protected-sites

Table 9: Example of significance indicators

Effect Type	Significance Indicator
Reduction of habitat area	Loss of habitat.
Disturbance of key species	Duration, including permanence (e.g. in relation to breeding species).
Habitat or species fragmentation	Duration or permanent fragmentation, level in relation to original extent (e.g. fragmentation during intertidal cable laying).
Reduction in species density	Percentage decrease and timescale for replacement (e.g. bird collision risk).
Changes in key indicators or elements of conservation value	Relative change in key indicators (e.g. marine water quality).

Step 4 - Screening determination

The report prepared by the developer to inform the competent authority's screening determination should conclude with a statement of whether or not, in the expert view of the developer's ecological specialists, there are potential significant effects upon the conservation objectives of a designated European site. The competent authority is responsible for the screening determination as to whether a full AA is required, and should have regard to the report submitted by the developer. There are a number of possible outcomes:

1. Where the report submitted by the developer with an application concludes that an AA is not required, and the competent authority agrees, the application for consent may be processed through to decision stage. (The developer should, where pre-application consultations are carried out with the competent authority, bring the report it has prepared to the attention of the authority and seek its views on the conclusions. This may avoid delay following the submission of the application.)
2. Notwithstanding the conclusion in the developer's report that an AA and therefore NIS is not required, the competent authority may still determine that an AA is required. In this scenario it will formally request an NIS to assist the AA or seek modification to the project to avoid a potential effect.

3. In the event that the developer's report concludes that significant effects upon the conservation objectives of a European site cannot be excluded, the developer should progress directly to the preparation of an NIS to accompany any application for consent.

4.8 The NIS

The term Natura Impact Statement (NIS) is not contained in the EU Habitats Directive. It is used in an Irish context following transposition of Birds and Habitats Directives into national legislation. The primary statutes setting out the AA and NIS preparation and consideration process are the European Communities (Birds and Natural Habitats) Regulations 2011 and Part XAB of the Planning and Development Act, 2000 (as amended) and associated Regulations.

An NIS is a report on the scientific examination of a plan or project and the relevant European Site or European Sites within proximity. The report should identify and characterise any possible implications of the plan or project, individually or in combination with other plans or projects, on the conservation objectives of the relevant site or sites.

4.8.1 Information required

The baseline for the NIS should build on the information compiled during the screening exercise. In practice, the relevant data and information can be compiled for the NIS and the EIS at the same time. Any information gaps previously identified during screening/scoping stages should be filled. The assessment must be based upon sound scientific evidence. Critically, if there is any doubt about the potential effects upon the integrity of a site, having regard to its conservation objectives and features of scientific interest, the competent authority may not grant consent for the development.

Inadequate information is the most common cause of delays in the process. Consultation between the developer and the competent authority is essential, in addition to close liaison with NPWS, SEAI, Inland Fisheries Ireland, the Marine Institute, CIL and other relevant statutory consultees. There should be adequate information available about the project in relation to the number of devices and their design, supporting infrastructure (e.g. grid connections and substations), spatial extent and phases of development (construction, commissioning, operation, decommissioning) to allow for the full ecological implications of the project to be understood and assessed.

A significant amount of information can be obtained from the standard data forms for each designated site, but this should be supplemented by additional information, where necessary

including research and surveys, to demonstrate the effects the project may have upon the integrity of the designated site.

The following information should be available and presented in relation to the sites that may be affected:

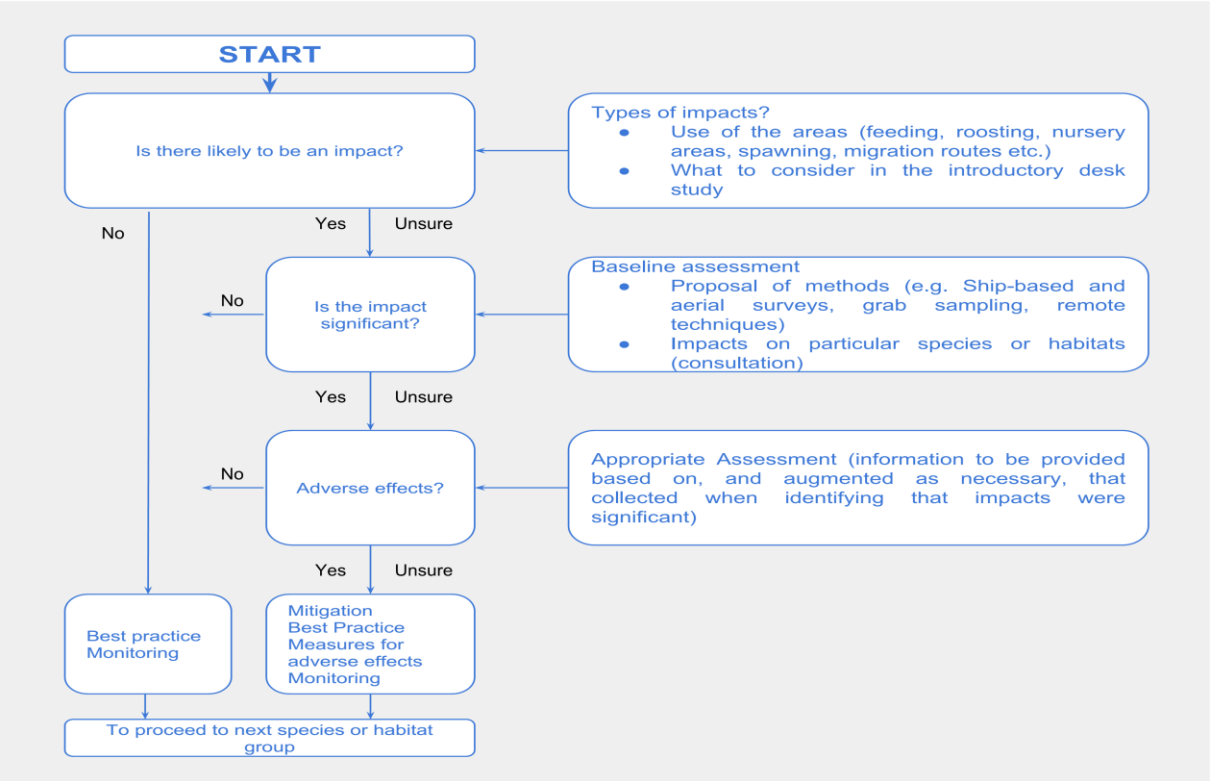
- Conservation status of habitats and species under Annex II of the Habitats Directive , Annex I of the Birds Directive;
- Conservation objectives and qualifying features for the site;
- Any management plans associated with the site;
- Details on each species and habitat type for which the site is designated and spatial mapping of distribution and temporal mapping, including annual lifecycle stages;
- Information on usage of the site for activities such as foraging, breeding, resting, staging or hibernating;
- Data on population profile of the species and on their conservation status (e.g. size, population structure, etc.);
- Ecosystem structure and functioning of the site and its overall conservation state;
- The role of the site within the ecosystem region and the Natura 2000 network; and
- Any other aspects of the site or its wildlife that is likely to have an influence on its conservation status and objectives (e.g. current management activities, other developments.)

4.8.2 Assessing effects on sites

Expert advice is required in both the preparation of the NIS and the assessment process undertaken by the competent authority. *Guidance on Wind energy developments and Natura 2000*, EC, 2011 in turn refers to UK guidance on AA and wind energy development, which outlines a methodology for AA for offshore wind projects. The basic methodology, as depicted at Figure 8, can be applied to the various groups of species and habitats in turn and is transferrable to wave and tidal projects.

The methodology/process for the assessment of likely signficant effects contained in the NIS should be undertaken in a structured manner. Section 4.6.4 (Step 2) outlines methodologies that can be adopted in the assessment. It is important that all direct, indirect, short term, long term, permanent, cumulative and in-combination effects are assessed.

Figure 8: Assessing Effects of Offshore Wind Energy Projects



Source: Nature Conservation Guidance on offshore Wind Farm Development (DEFRA, 2005)

4.8.3 *Effects upon the integrity of European sites*

Following the assessment of likely significant effects, the next stage is determining whether the effects will adversely affect the *integrity* of the European site, in light of its conservation objectives, either alone or in combination with other plans or projects. The competent authority must ensure that there is no scientific doubt as to the effects.

Integrity of the site relates to its qualifying interest, conservation objectives and the condition of the site. Ecological integrity has been defined in *Managing Natura 2000 sites*, EC, 2000 as *"the coherence of the site's ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or populations of species for which the site is classified"*[14]. Integrity relates to the quality of the whole habitat or species. In changing and evolving marine ecosystems, a high degree of integrity is where the European site is resilient, has the capacity to repair and renew with minimum management, and can achieve the stated conservation objectives.

14 Managing Natura 2000 sites (EC, 2000)

Case Study 6: Delta Stream demonstrator project (Wales) - Appropriate Assessment

The demonstration tidal stream energy device was located in Ramsey Sound, South Wales. The site was selected following a long investigation of 24 possible sites. The site hosted a number of designated areas such as SACs, SPAs and Sites of Special Scientific Interest. A Habitats Regulation Assessment (the UK equivalent of an Appropriate Assessment) was carried out to verify the suitability of the site to accommodate the tidal device. Particular care was given to the assessment of effects on marine mammals. Information on marine mammals was collected through literature, data records and detailed surveys carried out on site. Most common mammals noted were grey seals and harbour porpoises, a European protected species. The project team was specifically concerned with the collision risk of mammals with the submerged turbines. The assessment focused on the following elements:

- Interaction with the device at operational phase;
- Loss/disturbance/displacement of habitats/displacement of food source;
- Underwater noise/barrier to movement/collision risk;
- Water contamination;
- Visual disturbance.

Outcome: It was successfully demonstrated that underwater noise would help prevent collision risk with marine mammals, effectively reducing the potential effect to a very low level of significance.

4.8.4 Mitigation and monitoring measures

Alternatives and project refinement will inevitably be considered as part of the process of mitigation. For example, mitigation for wind farms may involve consideration of alternative locations away from conflict with designated habitats or species (e.g. to avoid migration routes, foraging areas, flight paths, flyways, breeding areas, etc.). This consideration of alternatives will be integrated into that consideration associated with the EIA for EIS, where one is required.

The broad elements of AA mitigation and monitoring are similar to those detailed in relation to the EIA process, although it should be noted that compensatory measures to ensure the overall coherence of Natura 2000 is protected are not considered mitigation but are only considered in the case of the Stage 4 IROPI process, see Figure 5.

In practice AA and EIA monitoring regimes can be integrated to ensure best use of project design, operation and decommissioning resources.

Whilst there is no legal requirement to undertake AA monitoring it is likely that conditions of a consent of a project supported by NIS either alone or with an EIS will require monitoring; it is good practice to protect European sites by ensuring that mitigation measures, set out in the EIS and considered in AA, are working to identify unpredicted significant effects that may require remedial action.

4.8.5 Conclusion

After the mitigation measures have been identified, the assessment in the NIS must conclude whether or not the project will adversely affect the integrity of any European site. There are two conclusions that can be drawn in the NIS:

1. The proposed development would not adversely affect the integrity of the site; or
2. The project would adversely affect the integrity of the site, or it cannot be ruled out that it would do so.

4.8.6 NIS Content and format

The NIS report generally contains the following:

a) a description of the project, its pressures and likely impacts on the conservation objectives and local site characteristics;

b) identification of all European sites located within the zone of influence, together with qualifying interests and conservation objectives;

c) methodologies, analysis and data sources utilised to demonstrate use of best scientific knowledge;

d) a scientific assessment, analysis and statement of the significant effects including direct, indirect, cumulative and in combination effects on the relevant European site(s) which are expected to occur as a result of the development;

e) details of any appropriate mitigation measures undertaken, or proposed to be undertaken by the applicant to mitigate any significant effects on the environment or on the European site(s), and the period within which any such measures shall be carried out by the developer;

f) an assessment of the scope and scale of residual effects after mitigation; and

g) a conclusion in relation to whether or not the project would adversely affect the integrity of any European site.

Formats may vary; but the report should be precise, complete, and scientifically robust, yet as accessible and as clear as possible to members of the public.

5 Further stages in EIA and AA processes

5.1 EIA determination

Once the EIS has been completed and application documentation prepared, the application is submitted to the competent authority for assessment and determination. The applicant and the competent authority must comply with relevant statutory provisions that may apply in relation to documentation, public notices, consultation and processing of the application. The competent authority is required to assess the adequacy of the EIS and the information contained therein, consult with statutory authorities, to consider observations submitted as part of the consultation process and request further information if required.

The competent authority has to formally undertake an EIA of the project EIS as part of the consent application consideration process. The authority must determine whether the EIS submitted identifies and describes adequately the direct and indirect effects on the environment of the proposed development, and any further information submitted to enable the carrying out of EIA. The EIA carried out by the competent authority will have regard to submissions received from the public and other member states; reports by its officials, and consultants, experts or other advisors. The competent authority must also record their EIA in the form of an EIA Report. The competent authority then considers its EIA and any other material matters to make a decision to grant permission with conditions or refuse consent with reasons. Conditions are required to express mitigation measures where the authority sees fit. In 2013, the DECLG issued *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment.* These guidelines are a useful source of information for any competent consenting authority where an EIS has been required to be submitted.

5.2 AA determination

After receipt of an application for consent and NIS, the competent authority must undertake its AA of the project having regard to the contents of the NIS. The authority must also state whether it agreed

with the NIS conclusions or not, and if not, why not. In practice, the competent authority should have access to its own ecological expertise and advice. The assessment should include consideration of the adequacy of the information contained in the submitted NIS, any further information requested/received, any advice received and observations made. If this assessment concludes that the project will not adversely affect the integrity of any European site, the authority may proceed to issuing a grant of consent subject to it being satisfied that the project is otherwise acceptable. However, if the competent authority determines that significant adverse effects on the integrity of a site would arise or cannot be ruled out, then it must either refuse consent, or go through further formal stages of consideration of alternative solutions and initiating IROPI procedures.

5.2.1 AA Alternative solutions and IROPI

In the event that the AA concludes that adverse impacts upon the integrity of a European Site cannot be ruled out, or that the integrity of such a European site will be adversely affected, the development may still be permitted under procedures detailed set out in Article 6(4) of the Habitats Directive as transposed into Irish law by the European Communities (Birds and Natural Habitats) Regulations 2011 and Section 177AA to 177AC of the Planning and Development Act, 2001 as amended and Regulations.

In order to invoke this derogation the competent authority must:

- be satisfied that the project for which consent is sought has examined all alternatives to avoid impact on the European site(s);
- identify compensatory measures that are necessary to ensure the overall coherence of the Natura 2000 network; and
- be of the opinion that the project should be granted consent for imperative reasons of overriding public interest (IROPI).

Where the European Sites do not host a priority natural habitat type or priority species, the imperative reasons of overriding public interest may also include those of a social or economic nature.

Where the European Site does hosts a priority natural habitat type or priority species, the reasons of IROPI are confined to be human health, public safety and/or relate to beneficial consequences of primary importance to the environment. In limited circumstances, the competent authority may

decide that there are other reason(s) of IROPI, but must obtain the explicit opinion of the European Commission on the other reason(s) before proceeding to inform a consent decision. This could prove a difficult barrier for a private development which may have no clear, overriding public interest. Developers should accordingly exercise caution in selecting sites and investing in projects with limited possibility of successfully obtaining consent if relying on the IROPI.

IROPI is complex processes where it must be shown that public interest clearly outweighs the long term conservation interests of the protected site. Where IROPI is being invoked, the competent authority must prepare a statement of their AA, set out the imperative reasons of overriding public interest that necessitate the carrying out of the plan or project, propose the compensatory measures that are necessary to ensure that the overall coherence of the Natura 2000 network is protected and send them to the Minister Arts, Heritage Regional, Rural and Gaeltacht Affairs for an opinion.

The Minister will then direct the competent authority on whether it may consent or not to the plan or project. Consent may be subject to conditions or other requirements where the Minister has so directed.

5.3 Other statutory consents

In addition to direct licensing/consent requirements associated with offshore renewable energy projects, outlined in Table 2, other statutory authorisations or licences may be required, e.g. Dumping at Sea licence, Waste licence, Integrated Pollution Prevention and Control licence, licence under provisions of the National Monuments Act 1930, consent under Section 5 the Continental Shelf Act 1968 or Waste Water Discharge licence. The developer should review requirements for all consents for the project to ensure that applications are appropriately sequenced and resourced, and that all required authorisations/licences are obtained. The developer should also consult with the public authority to which such additional application will be submitted to ascertain its requirements in relation to EIA and/or AA. It should be noted in this regard that AA requirements may arise under several consent systems having regard to the broad ambit of Regulation 42 of the European Communities (Birds and Natural Habitats) Regulations 2011, and the various definitions given in these regulations.

5.4 EIA and AA monitoring and reporting

While the EIS will outline monitoring proposals, ongoing monitoring during the construction, operation and decommissioning phases will need to be appropriately resourced and implemented.

The competent authority will attach conditions requiring general monitoring and reporting, or may restate the monitoring commitments in any of the consent application documentation, including the EIS and NIS. The relevant authority will also be responsible for the periodic review and enforcement of monitoring requirements. Monitoring measures proposed, and any that may be conditioned in the consent, must be implemented by the developer or operator of the facility in the same way as specified mitigation measures, set out in the EIS and the NIS, will form part of the development project for which consent has been granted.

Appendix I - Main provisions of relevant Directives

EIA Directive

The main provisions of the EIA Directive 2011/92/EU[15], as amended by 2014/52/EU[16], of relevance to the preparation of an EIS are as follows:

Article 1[17] states that *environmental impact assessment means a process consisting of:*

(i) the preparation of an environmental impact assessment report by the developer, as referred to in Article 5(1) and (2);

(ii) the carrying out of consultations as referred to in Article 6 and, where relevant, Article 7;

(iii) the examination by the competent authority of the information presented in the environmental impact assessment report and any supplementary information provided, where necessary, by the developer in accordance with Article 5(3), and any relevant information received through the consultations under Articles 6 and 7;

(iv) the reasoned conclusion by the competent authority on the significant effects of the project on the environment, taking into account the results of the examination referred to in point (iii) and, where appropriate, its own supplementary examination; and

(v) the integration of the competent authority's reasoned conclusion into any of the decisions referred to in Article 8a."

Article 3[18] states:

1. The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors:

(a) population and human health;

(b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;

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15 Directive 2011/92/EU, of 13th December 2011, on the Assessment of the Effects of Certain Public and Private Projects on the Environment (codification). Official Journal of the European Union, L 26/1 28.1.2012.

16 Directive 2014/52/EU Amending Directive 2011/92/EU on the Assessment of the Effects of Certain Public and Private Projects on the Environment (2014/52/EU). Official Journal of the European Union L 124/1 25.4.2014.

17 Article (1)(a)(g) of Directive 2014/52/EU.

18 Article 3 of Directive 2014/52/EU.

(c) land, soil, water, air and climate;

(d) material assets, cultural heritage and the landscape;

(e) the interaction between the factors referred to in points (a) to (d).

2. The effects referred to in paragraph 1 on the factors set out therein shall include the expected effects deriving from the vulnerability of the project to risks of major accidents and/or disasters that are relevant to the project concerned.

Article 5[19] states, inter alia:

Where an environmental impact assessment is required, the developer shall prepare and submit an environmental impact assessment report. The information to be provided by the developer shall include at least:

(a) a description of the project comprising information on the site, design, size and other relevant features of the project;

(b) a description of the likely significant effects of the project on the environment;

(c) a description of the features of the project and/or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;

(d) a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment;

(e) a non-technical summary of the information referred to in points (a) to (d); and

(f) any additional information specified in Annex IV relevant to the specific characteristics of a particular project or type of project and to the environmental features likely to be affected."

Article 8a [20] states, inter alia:

1. The decision to grant development consent shall incorporate at least the following information:

(a) the reasoned conclusion referred to in Article 1(2)(g)(iv);

(b) any environmental conditions attached to the decision, a description of any features of the project and/or measures envisaged to avoid, prevent or reduce and, if possible, offset

[19] Article 5 (1) of Directive 2014/52/EU.
[20] Article 8 a(1) of Directive 2014/52/EU.

significant adverse effects on the environment as well as, where appropriate, monitoring measures.

2. *The decision to refuse development consent shall state the main reasons for the refusal.*

3. *In the event Member States make use of the procedures referred to in Article 2(2) other than procedures for development consent, the requirements of paragraphs 1 and 2 of this Article, as appropriate, shall be deemed to be fulfilled when any decision issued in the context of those procedures contains the information referred to in those paragraphs and there are mechanisms in place which enable the fulfilment of the requirements of paragraph 6 of this Article.*

4. *In accordance with the requirements referred to in paragraph 1(b), Member States shall ensure that the features of the project and/or measures envisaged to avoid, prevent or reduce and, if possible, offset significant adverse effects on the environment are implemented by the developer, and shall determine the procedures regarding the monitoring of significant adverse effects on the environment.*

   The type of parameters to be monitored and the duration of the monitoring shall be proportionate to the nature, location and size of the project and the significance of its effects on the environment.

   Existing monitoring arrangements resulting from Union legislation other than this Directive and from national legislation may be used if appropriate, with a view to avoiding duplication of monitoring.

5. *Member States shall ensure that the competent authority takes any of the decisions referred to in paragraphs 1 to 3 within a reasonable period of time.*

6. *The competent authority shall be satisfied that the reasoned conclusion referred to in Article 1(2)(g)(iv), or any of the decisions referred to in paragraph 3 of this Article, is still up to date when taking a decision to grant development consent. To that effect, Member States may set time-frames for the validity of the reasoned conclusion referred to in Article 1(2)(g)(iv) or any of the decisions referred to in paragraph 3 of this Article.';*

ANNEX IV INFORMATION REFERRED TO IN ARTICLE 5(1) (INFORMATION FOR THE ENVIRONMENTAL IMPACT ASSESSMENT REPORT)

1. *Description of the project, including in particular:*
   (a) a description of the location of the project;

(b) a description of the physical characteristics of the whole project, including where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases;

(c) a description of the main characteristics of the operational phase of the project (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used;

(d) an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation) and quantities and types of waste produced during the construction and operation phases.

2. *A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.*

3. *A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.*

4. *A description of the factors specified in Article 3(1) likely to be significantly affected by the project: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.*

5. *A description of the likely significant effects of the project on the environment resulting from, inter alia:*

(a) the construction and existence of the project, including, where relevant, demolition works;

(b) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;

(c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste;

(d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters);

(e) the accumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;
(f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change;
(g) the technologies and the substances used.

The description of the likely significant effects on the factors specified in Article 3(1) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the project. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project.

6. *A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.*

7. *A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.*

8. *A description of the expected significant adverse effects of the project on the environment deriving from the vulnerability of the project to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to Union legislation such as Directive 2012/18/EU of the European Parliament and of the Council[21] or Council Directive 2009/71/Euratom[22] or relevant assessments carried out pursuant to national legislation may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such*

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[21] Directive 2012/18/EU of the European Parliament and the Council of 4 July 2012 on the control of major-accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC (OJ L 197, 24.7.2012, p. 1).

[22] Council Directive 2009/71/Euratom of 25 June 2009 establishing a ccommunity framework for the nuclear safety of nuclear installations (OJ L 172, 2.7.2009, p. 18).'.

events on the environment and details of the preparedness for and proposed response to such emergencies.

9. *A non-technical summary of the information provided under points 1 to 8.*

10. *A reference list detailing the sources used for the descriptions and assessments included in the report.*

Habitats Directive (92/43/EEC)[23]

Article 6(3) states:

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.[24]

If, following an AA, it cannot be demonstrated that a plan will not affect the integrity of European site, Article 6(4) states:

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 from the Commission, to other imperative reasons of overriding public interest.

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23 Directive 92/43/EEC, of 21st May, on the Conservation of Natural Habitats and of Wild Fauna and Flora. Commission of the European Communities. Official Journal of the European Union L206 22.7.1992.

24 Since Ireland's ratification of the Aarhus Convention in 2012, an AA and possibly AA screening will be subject to public consultation.

Birds Directive (2009/147/EC)

Council Directive 2009/147/EC, of 30th November, on the Conservation of Wild Birds (codified version). Commission of the European Communities. Official Journal of the European Union L 20/7 26.1.2010

Appendix II - Relevant guidance documents

Topic	Publication	Web link
General	*A Strategic Framework for Scoping Cumulative Effects* (Marine Management Organisation, 2014)	https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/389876/MMO1055_Report_Final.pdf
	Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (EPA, 2003)	https://www.epa.ie/pubs/advice/ea/guidelines/EPA_advice_on_EIS_2003.pdf
	Appropriate Assessment of Plans and Projects – Guidance for Planning Authorities (DECLG, 2009)	http://www.npws.ie/sites/default/files/publications/pdf/NPWS_2009_AA_Guidance.pdf
	Assessment of Impact of Offshore Wind Energy Structures on the Marine Environment (Marine Institute, 2000)	http://oar.marine.ie/bitstream/10793/579/1/Assessment%20of%20Impact%20of%20Offshore%20Wind%20Energy%20Structures.pdf
	Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites. Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (EC, 2001)	http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/natura_2000_assess_en.pdf
	Best-Practice Guidelines for the Irish Wind Energy Industry (IWEA/SEAI, 2012)	http://www.seai.ie/Renewables/Wind_Energy/Best%20Practice%20Guidelines%20for%20the%20Irish%20Wind%20Energy%20Industry.pdf
	Cumulative Impact Assessment Guidelines - Guiding Principles for Cumulative Impacts Assessment in Offshore Wind Farms (Renewable UK, 2013)	http://www.renewableuk.com/en/publications/guides.cfm/cumulative-impact-assessment-guidelines
	Development of a Generic Framework	http://publications.naturalengland.org.uk

Topic	Publication	Web link
	for Informing Cumulative Impact Assessments (CIA) Related to Marine Protected Areas through Evaluation of Best Practice (Natural England, 2014)	/publication/6341085840277504
	Environmental Impact Assessment for Offshore Renewable Energy Projects – Guide (Innovate UK & BSI Group, 2015)	http://shop.bsigroup.com/ProductDetail/?pid=000000000030303879
	Environmental Impact Assessment Guidance for Consent Authorities Regarding Sub-Threshold Development (DECLG, 2003)	http://www.environ.ie/en/DevelopmentHousing/PlanningDevelopment/EnvironmentalAssessment/PublicationsDocuments/FileDownLoad,1804,en.pdf
	Framework for Assessing Ecological and Cumulative Effects of Offshore Wind Farms – Part A: Methods (Ministry of Economic Affairs, 2015)	http://www.noordzeeloket.nl/en/Images/Framework%20for%20assessing%20ecological%20and%20cumulative%20effects%20of%20offshore%20wind%20farms%20-%20Part%20A%20Methods_4644.pdf
	Guidance on Survey and Monitoring in Relation to Marine Renewables Deployments in Scotland. Vol 1: (SNH and Marine Scotland, 2011)	http://www.snh.gov.uk/docs/A585080.pdf
	Guidance on the Application of the Environmental Impact Assessment Procedure for Large-Scale Transboundary Projects (EC, 2013)	http://ec.europa.eu/environment/eia/pdf/Transboundry%20EIA%20Guide.pdf
	Guide to the Environmental Impact Evaluation of Tidal Stream Technologies at Sea : GHYDRO (France Energies Marines, 2013)	http://archimer.ifremer.fr/doc/00179/29025/30871.pdf
	Guidelines for Data Acquisition to Support Marine Environmental Assessments of Offshore Renewable	http://tethys.pnnl.gov/sites/default/files/publications/CEFAS_2012_Eenvironmental_Assessment_Guidance.pdf

Topic	Publication	Web link
	Energy Projects (CEFAS, 2012)	
	Guidelines for Ecological Impact Assessment in the UK (IEMA, 2006)	http://www.cieem.net/data/files/Resource_Library/Technical_Guidance_Series/EcIA_Guidelines/TGSEcIA-EcIA_Guidelines-Terestrial_Freshwater_Coastal.pdf
	Guidelines for Planning Authorities and An Bord Pleanála on Carrying out Environmental Impact Assessment (DECLG, 2013)	http://www.environ.ie/en/Publications/DevelopmentandHousing/Planning/FileDownLoad,32720,en.pdf
	Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions (EC, 1999)	http://ec.europa.eu/environment/archives/eia/eia-studies-and-reports/pdf/guidel.pdf
	Guidelines on Best Environmental Practice (BEP) in Cable laying and Operation (OSPAR, 2012)	http://www.ospar.org/documents?d=32910.
	Guidelines on the Information to be Contained in Environmental Impact Statements (EPA, 2003)	http://www.epa.ie/pubs/advice/ea/guidelines/epa_guidelines_eis_2002.pdf
	Integrated Biodiversity Impact Assessment – Streamlining AA, SEA and EIA Processes: Practitioner's Manual (EPA, 2013)	https://www.epa.ie/pubs/reports/research/biodiversity/Integrated%20Biodoversity%20Impact%20Assessment%20-%20Streamlining%20AA,%20SEA%20and%20EIA%20Processes%20-%20Practictioner's%20Manual.pdf
	Marine Scotland Licensing and Consents Manual, Covering Marine Renewables and Offshore Wind Energy Development (Marine Scotland, 2012)	http://www.gov.scot/resource/0040/00405806.pdf
	Nature Conservation Guidance on Offshore Windfarm Development. A Guidance Note on the Applications of	http://www.defra.gov.uk/WILDLIFE-COUNTRYSIDE/ewd/windfarms/windfarmguidance.pdf.

Topic	Publication	Web link
	the EC Wild Birds and Habitats Directives for Developers Undertaking Offshore Windfarm Developments (DEFRA, 2005)	
	Offshore Electricity Generating Stations Note for Intending Developers (SEI, 2001)	http://www.sei.ie/uploadedfiles/RenewableEnergy/policydocument.pdf
	OSPAR Guidance on Environmental Considerations for Offshore Wind Farm Development (OSPAR, 2008)	http://qsr2010.ospar.org/media/assessments/p00385_Wind-farms_assessment_final.pdf
	Renewable Energy Resource: Ireland to 2010 and 2020 – A Methodology (SEAI/ESBI, 2004)	http://www.sei.ie/uploadedfiles/FundedProgrammes/REResources20102020MainReport.pdf
	The Planning System and Flood Risk Management (DECLG & OPW, 2009)	http://www.environ.ie/en/Publications/DevelopmentandHousing/Planning/FileDownLoad,21709,en.pdf
	Total Renewable Energy Resource in Ireland (SEAI, 2014)	http://www.seai.ie/Publications/Statistics_Publications/Renewable_Energy_in_Ireland/Renewable-Energy-in-Ireland-2012.pdf
	Using the "Rochdale Envelope". Advice Note Nine (The Planning Inspectorate, 2012)	http://www.thenbs.com/PublicationIndex/DocumentSummary.aspx?PubID=&DocID=300450
	Wind Energy Development Guidelines (DECLG, 2006)	http://www.environ.ie/en/Publications/DevelopmentandHousing/Planning/FileDownLoad,1633,en.pdf
Protected sites and species	*The Implementation of the Birds and Habitats Directives in Estuaries and Coastal Zones* (EC, 2011)	http://ec.europa.eu/transport/modes/maritime/doc/guidance_doc.pdf

Topic	Publication	Web link
	Wind Energy Development and Natura 2000 (EC, 2011)	http://ec.europa.eu/environment/nature/natura2000/management/docs/Wind_farms.pdf
Benthic ecology	*Guidance on Survey and Monitoring in Relation to Marine Renewables Deployments in Scotland Volume 5: Benthic Habitats* (SNH, 2011)	http://www.snh.gov.uk/docs/A585079.pdf
Fish and shellfish	*Collision Risks Between Marine Renewable Energy Devices and Mammals, Fish and Diving birds* (SAMS, 2007)	http://depts.washington.edu/nnmrec/workshop/docs/Wilson_Collisions_report_final_12_03_07.pdf
	Fish Behaviour in the Vicinity of Renewable Energy Devices - Completed Project (DECC, 2013)	https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/286662/Fish_around_renewable_energy_devices_-_completed_project.pdf
Marine mammals and reptiles	*Assessment and Monitoring of Ocean Noise in Irish Water* (EPA, 2011)	https://www.epa.ie/pubs/reports/research/water/STRIVE_96_web.pdf
	Guidance to Manage the Risk to Mammals from Man-Made Sound Sources in Irish Waters (NPWS, 2014)	http://www.npws.ie/sites/default/files/general/Underwater%20sound%20guidance_Jan%202014.pdf
	Guidance on Survey and Monitoring in Relation to Marine Renewables Deployments in Scotland. Volume 2. Cetaceans and Basking Sharks (SNH and Marine Scotland, 2011)	http://www.snh.gov.uk/docs/A585083.pdf
	Guidance on Survey and Monitoring in Relation to Marine Renewables Deployments in Scotland. Volume 3.	http://www.snh.gov.uk/docs/A585082.pdf

Topic	Publication	Web link
	Seals. (SNH and Marine Scotland, 2011)	
	Methodologies for Measuring and Assessing Potential Changes in Marine Mammal Behaviour, Abundance or Distribution Arising from the Construction, Operation and Decommissioning of Offshore Windfarms. (Diederichs, A., G. Nehls, M. Dähne, S. Adler, S. Koschinski, U. Verfuß. for COWRIE Ltd, 2008)	http://www.thecrownestate.co.uk/media/5925/cowrie-methodologies-for-measuring-and-assessing-potential-changes-in-marine-mammal-behavior.pdf
	Recommendations for the Presentation and Content of Interim Marine Bird, Mammal and Basking Shark Survey Reports for Marine Renewable Energy Development (Scotland Natural Heritage, 2014)	http://www.snh.gov.uk/docs/A1325759.pdf
	Statistical Modelling of Seabird and Cetacean Data: Guidance Document (Marine Scotland, 2014)	http://www.gov.scot/Resource/0046/00460870.pdf
Birds	*Assessing the Sensitivity of Seabird Populations to Adverse Effects from Tidal Stream Turbines and Wave Energy Devices* (ICES Journal of Marine Science, 2012)	http://icesjms.oxfordjournals.org/content/69/8/1466.full
	Developing Guidance on Ornithological Cumulative Impact Assessment for Offshore Wind Farm Developers. (SNH, 2014)	http://www.researchgate.net/publication/228748164_Developing_guidance_on_ornithological_cumulative_impact_assessment_for_offshore_wind_farm_developers
	Guidance on Survey and Monitoring in	http://www.snh.gov.uk/docs/A585081.p

Topic	Publication	Web link
	Relation to Marine Renewables Deployments in Scotland. Volume 4: Birds (SNH and Marine Scotland, 2011)	df
	Renewable Energy Technologies and Migratory species: Guidelines for Sustainable Deployment (UNEP, 2014)	http://www.cms.int/sites/default/files/document/Doc_10_2_Renewable_Energy_E.pdf
	Revised Best Practice Guidance for the Use of Remote Techniques for Ornithological Monitoring at Offshore Windfarms (RPS, University of Aberdeen, FERA and COWRIE, 2009)	http://www.thecrownestate.co.uk/media/6000/2009-06%20Revised%20best%20practice%20guidance%20for%20the%20use%20of%20remote%20techniques%20for%20ornithological%20monitoring%20a%20offshore%20windfarms.pdf
	Standardised Methods for Seabird Survey at Sea from Ships in Europe (JNCC, 2010)	http://jncc.defra.gov.uk/pdf/AndyWebb_AtSeaMethods_PSG07.pdf
	Statistical Modelling of Seabird and Cetacean Data: Guidance Document (Marine Scotland, 2012)	http://www.gov.scot/Resource/0043/00437903.pdf
	Windfarms and Birds: Calculating a Theoretical Collision Risk Assuming no Avoiding Action (SNH, 2012)	http://www.snh.gov.uk/docs/C205425.pdf
Bats	*Bats and Offshore Wind Turbines Studies in Southern Scandinavia, Report 5571* (Swedish EPA, 2007)	http://www.naturvardsverket.se/Documents/publikationer/620-5571-2.pdf
	Wind Farm Development / Bat Survey Guidelines (Bat Conservation Ireland, 2012)	http://www.batconservationireland.org/pubs/reports/BCIreland%20Wind%20Farm%20Turbine%20Survey%20Guidelines%20Version%202%208.pdf

Topic	Publication	Web link
Coastal erosion	*Coastal Process Modelling for Offshore Wind Farm Environmental Impact Assessment* (ABPmer and HR Wellington, 2009)	http://www.thecrownestate.co.uk/media/5903/ei-km-ex-pc-physical-092009-coastal-processes-modelling-for-offshore-wind-farm-environmental-impact-assessment-best-practice-guide.pdf
	Guidance for Numerical Modelling of Wave and Tidal Energy. SuperGen Marine (Topper, 2010)	http://www.supergen-marine.org.uk/drupal/files/reports/Topper_Numerical_Modelling_SuperGen_2010.pdf
	Potential Effects of Offshore Wind Developments on Coastal Processes (ABPmer and Metoc Plc, 2002)	http://www.offshorewindenergy.org/reports/report_002.pdf
Sediment-ation processes and water quality	*Pollution Prevention Guidelines* (Environment Agency, the Environment and Heritage Service for Northern Ireland and Scottish Environment Protection Agency, 2007)	https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/290145/pmho1107bnkg-e-e.pdf
Seascape, landscape and visual	*Guide to Best Practice in Seascape Assessment* (Briggs et al, 2001)	http://oar.marine.ie/handle/10793/553
	Guidelines for Landscape and Visual Impact Assessment (The Landscape Institute and the Institute of Environmental Management and Assessment 2002)	http://www.landscapeinstitute.org/PDF/Contribute/GLVIA3consultationdraftformembers.pdf
	Offshore Renewables: Guidance on Assessing the Impact on Coastal Landscape and Seascape: Guidance for Scoping an Environmental Statement (SNH, 2012)	http://www.snh.gov.uk/docs/A702206.pdf

Topic	Publication	Web link
	Visual Representation of Wind Farms (SNH, 2014)	http://www.snh.org.uk/pdfs/publications/heritagemanagement/Visual%20representation%20of%20wind%20farms%20-%20version%202.1%20-%20December%202014.pdf
Marine noise	*Assessment and Monitoring of Ocean Noise in Irish Waters* (Beck, O'Connor, Berrow, O'Brien, 2013)	http://www.epa.ie/pubs/reports/research/water/strive120-ssessmentandmonitoringofoceannoiseinirishwaters.html#.VZVRi_lVhHw
	Assessment of Impact of Offshore Wind Energy Structures on the Marine Environment (Marine Institute, 2000)	http://oar.marine.ie/bitstream/10793/579/1/Assessment%20of%20Impact%20of%20Offshore%20Wind%20Energy%20Structures.pdf
Climate change	*Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment* (EC, 2013)	http://ec.europa.eu/environment/eia/pdf/EIA%20Guidance.pdf
Coastal archaeology and shipwrecks	*Guidance for Assessment of Cumulative Impacts on the Historic Environment from Offshore Renewable Energy* (COWRIE, 2007)	http://www.thecrownestate.co.uk/media/5876/km-ex-pc-historic-012007-historic-environment-guidance-for-the-offshore-renewable-energy-sector.pdf
Ports, shipping and navigation	*Methodology for Assessing the Marine Navigational Safety Risks of Offshore Wind Farms (Department of Trade and Industry* (DTI), 2005)	http://webarchive.nationalarchives.gov.uk/+/http:/www.berr.gov.uk/files/file22888.pdf
	International Association of Marine Aids to Navigation and Lighthouse	http://www.iala-aism.org/product/marking-of-man-made-

Topic	Publication	Web link
	Authorities (IALA) Recommendation O-139 on the Marking of Man-Made Offshore Structures	offshore-structures-o-139/
	Working at sea: Guidance – Offshore Renewable Energy Installations: Impact on Shipping (Maritime and Coastguard Agency, 2014)	https://www.gov.uk/offshore-renewable-energy-installations-impact-on-shipping
Aviation safety and military exercise	*Aviation and Construction Co-Existing: Irish Aviation Authority Policy on Land Use Planning and Offshore Development – Draft for Public Consultation* – (Irish Aviation Authority, 2014)	https://www.iaa.ie/media/IAAPlanningPolicy.10October20141.pdf
	Managing the Impact of Wind Turbines on Aviation (Airspace and Safety Initiative (2013)	http://airspacesafety.com/wp-content/uploads/2013/09/20130701ManagingTheImpactOfWindTurbinesOnAviation_Script_FINAL_V1.pdf
	Wind Energy and Aviation Interest Interim Guidelines (DTI, 2002)	https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48101/file17828.pdf
Recreation and tourism	*Guidance on Environmental Impact Assessment of Offshore Renewable Energy Development on Surfing Resources and Recreation* (SAS, 2009)	https://www.sas.org.uk/wp-content/uploads/sas-guidance-on-environmental-impact-assessment.pdf
	Guidelines on the Treatment of Tourism in an Environmental Impact Statement (Fáilte Ireland, 2011)	http://www.yellowriverwindfarm.com/files/EisAppendices/Appendix%20F%20-%20Statutory%20&%20Non-statutory%20Consultees/02.%20F%C3%A1ilte%20Ireland%20EIS%20and%20Tourism%20Guidelines%202011.pdf

Topic	Publication	Web link
Commercial fisheries	*Economic Impact Assessments of Spatial Interventions on Commercial Fishing: Guidance for Practitioners. Second Edition* (Seafish and UKFEN, 2013)	http://www.seafish.org/media/1133259/ukfen%20ia%202nd%20ed%20final%2011dec13.pdf
	Guidance Note for Environmental Impact Assessment in Respect of FEPA and CPA Requirements (CEFAS and MCEU, 2004)	http://www.cefas.co.uk/publications/files/windfarm-guidance.pdf

Appendix III - Offshore renewable energy device types

Wave Energy Devices			
Device Type	**Features**	**Description**	**Location**
Attenuator	Surface and subsurface	Sits high on water column or floats on water. Works perpendicular to wave direction. Jointed device. Anchored with single cable to seabed.	Offshore
Point absorber	Surface and subsurface	Floats and absorbs energy through its movement at/near surface. Moored buoys or articulated units absorb energy along the line of travel of the wave.	Nearshore and offshore
Over-topping device	Surface and subsurface	This consists of a wall over which the waves wash, collecting the water in a storage reservoir. The incoming waves create a head of water, which is released back to the sea through conventional low-head turbines installed at the bottom of the reservoir. An overtopping device may use collectors to concentrate the wave energy. Overtopping devices are typically large structures due to the space requirement for the reservoir, which needs to have a minimum storage capacity. Floating or fixed land based.	Nearshore and offshore
Oscillating water column	Surface and Subsurface	This is a partially submerged, hollow structure, which is open to the sea below the water surface so that it contains air trapped above a column of water. Waves cause the column to rise and fall, acting like a piston, compressing and decompressing the air. This air is channelled through an air turbine to produce power. When properly designed for the prevailing sea state,	Nearshore, onshore and offshore

		OWCs can be tuned to the incident wave period in order to resonate. By this means, OWC can actually be quite efficient and present point absorbing characteristics.	
Submerged pressure differential	Subsurface only	This is a submerged device typically located near shore and attached to the seabed. The motion of the waves causes the sea level to rise and fall above the device, inducing a pressure differential which causes the device to rise and fall with the waves. When properly designed for the sea state, this category also has significant point absorbing characteristics.	Nearshore
Oscillating wave surge converter	Subsurface only	This is a near-surface collector, mounted on an arm pivoted near the seabed. The arm oscillates as an inverted pendulum due to the movement of the water particles in the waves.	Nearshore
Tidal Energy Devices			
Device Type	**Features**	**Description**	**Location**
Horizontal axis	Surface and subsurface	Horizontal axis turbines work in a similar manner to wind turbines. The turbine is placed in the water and the tidal stream causes the rotors to rotate around the horizontal axis and generate power.	Nearshore
Vertical axis	Surface and subsurface	Vertical axis turbines work in a similar manner to horizontal axis turbines but the tidal stream causes the rotors to rotate around the vertical	Nearshore

		axis and generate power.	
Reciprocating devices (Oscillating hydrofoils)	Subsurface	Reciprocating hydrofoils have a hydrofoil attached to an oscillating arm. The lift caused by the tidal stream causes the arm to oscillate and generate power.	Nearshore
Venturi effect	Subsurface	Venturi effect devices are devices which funnel the water through a duct, increasing the water velocity. The resultant flow can drive a turbine directly or the induced pressure differential in the system can drive an air turbine.	Nearshore
Wind Energy Devices			
Device Type	**Features**	**Description**	**Location**
Horizontal axis	Above and below surface	Horizontal axis wind turbines operate in the conventional sense with a main rotor shaft and electrical generator at the top of a tower. To operate they need to be pointed towards the direction of the prevailing wind.	Nearshore and offshore
Vertical axis	Above and below surface	Vertical axis turbines have the main rotor shaft arranged vertically. In this arrangement the wind turbine does not need to be pointed into the wind.	Nearshore and offshore

Appendix IV – Statutory and non-statutory consultees

Marine Topics	Consultees
Protected sites and species **Benthic ecology** **Fish and shellfish** **Marine mammals and reptiles** **Birds and bats**	Bats Conservation Ireland Birdwatch Ireland Coastwatch: Environmental Pillar Environmental Protection Agency Irish Seal Sanctuary Irish Whales and Dolphins Group Irish Wildlife Trust National Parks and Wildlife Services of the Department of Arts, Heritage, Regional Rural and Gaeltacht Affairs The Marine Institute
Coastal processes **Sedimentation processes** **Seabed geology/morphology**	The Environmental Protection Agency The Geological Survey of Ireland The Office of Public Works
Water quality	Coastwatch The Minister of Communications, Climate Action and Environment The Environmental Protection Agency Irish Water, The Local Authority (in affected area) The Marine Institute EPA Office of Radiological Protection
Seascape, landscape and visual	The Heritage Council Local Authority (in affected area) An Taisce An Bord Pleanála Failte Ireland The Minister of Communications, Climate Action and Environment

Air and climate	The Environmental Protection Agency Met Éireann Office of Public Works Universities and other third level institutions (depending on involvement in relevant research projects) The Local Authority
Marine, coastal archaeology and shipwrecks	The Arts Council,An Chomhairle Ealaíon, An Taisce Minister of Arts, Heritage, Regional Rural and Gaeltacht Affairs The Heritage Council Local Authority (in affected area) The National Monuments Service
Ports, shipping and navigation **Aviation safety, military exercise, telecommunications** **Recreation and tourism** **Commercial fisheries** **Aquaculture** **Socio-economic**	Commissioners of Irish Lights Relevant Port Authorities Bord Iascaigh Mhara Chambers of Commerce (affected area) Coastal Community (in affected area) The Minister for Agriculture, Food & the Marine The Minister of Communications, Climate Action and Environment The Minister for Defence The Minister for Finance The Minister for Jobs, Enterprise & Innovation The Minister for Justice, Equality and Law Reform The Minister for Transport, Tourism and Sports Enterprise Ireland The Economic and Social Research Institute Faílte Ireland Fishing co-ops (in the affected areas) The Fishing Industry The Health and Safety Authority The Health Service Executive The Industrial Development Authority of Ireland The Inland Fisheries Ireland / Regional Fisheries Office

	The Irish Coast Guards The Irish Naval Services The Irish Tourist Industry Confederation The Port and Harbour Company/Authority (in affected areas) Leisure clubs – e.g. angling, scuba diving, yachting The Local Authority The Marine Survey Office National Parks and Wildlife Services of the Department of Arts, Heritage, Regional Rural and Gaeltacht Affairs RNLI The Regional Assembly Sea Fisheries Protection Authority Teagasc Údarás na Gaeltachta
Oil and gas **Dredging and dumping** **Cables and pipelines**	Bord Gaís Gaslink Coastal Communities The Commission for Energy Regulation The Minister of Communication, Energy & Natural Resources Eircom EirGrid The Environmental Protection Agency ESB, ESBI, ESB Networks The Irish Aviation Authority Irish Water The Irish Wind Energy Association The Marine Institute The Marine Renewable Energy Association The National Roads Authority The National Transport Authority The National Offshore Wind Association of Ireland The Railway Procurement Agency Sustainable Energy Authority of Ireland

Underline denotes statutory consultee