4. ENVIRONMENTAL IMPACT ASSESSMENT METHODOLOGY

4.1 Introduction

The principal aim of undertaking an Environmental Impact Assessment (EIA) is to ensure that the authority granting consent (the 'Competent Authority') for a proposed development makes its decision in full knowledge of any likely significant effects on the environment.

EIA is a means of systematically drawing together and evaluating a proposed development's likely environmental impacts and effects, both beneficial and adverse. This helps to ensure that the significance of the predicted effects, and the scope for reducing any adverse effects, is properly understood by the public and the Competent Authority before it makes its decision. Early identification of likely significant effects also leads to the identification and incorporation of appropriate mitigation measures into a proposed development's design.

This chapter sets out the approach and methods used in the EIA for the Project in support of the application for consent. It provides an overview of the key stages followed in line with EIA best practices and in accordance with the EIA guidance and legislation set out in Section 1.2 of Chapter 1: Introduction. The assessment of impacts on each environmental receptor is provided in separate topic-specific chapters within this EIAR (Chapters 6-33).

4.2 EIA Guidance and Legislation

4.2.1 Legislation and Policy

As detailed in Section 1.2.1 of Chapter 1 of this EIAR, the EIA Directive has been transposed into Irish planning legislation by the Planning and Development Act 2000 as amended and the Planning and Development Regulations 2001 as amended. The EIA Directive was amended by Directive 2014/52/EU.

This EIAR complies with the EIA Directive as amended by Directive 2014/52/EU, hereafter referred to as the 'EIA Directive'.

The Environmental Impact Assessment (EIA) of the Project will be undertaken by An Bord Pleanála, as the Competent Authority.

Article 5 of the EIA Directive describes what an environmental impact assessment report (EIAR) is to contain, and details the information to be provided by the developer (i.e. the Applicant):

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.*

In addition, Article 94 of the Planning and Development Regulations 2001 (as amended) sets out the information to be contained in an EIAR, with which this EIAR complies.

The Maritime Area Planning Acts 2021 and 2022, as amended (MAP Act) is the State's leading response to the reform of marine governance. The MAP Act establishes the legislative foundation for the new marine planning system in Ireland, that aims to balance the country's huge offshore wind potential with protecting the marine environment. The MAP Act provides a legislative basis to harness the potential of offshore renewable energy in Ireland's entire Exclusive Economic Zone (EEZ) and beyond the 12 nautical mile coastal zone provided for in the Foreshore Act (1933). Through the MAP Act, the Irish planning system has been extended into the entire maritime area with An Bord Pleanála independently assessing planning applications including environmental assessment of all offshore wind energy projects.

4.2.2 Wind Energy Development Guidelines

There are currently no industry specific guidelines relating to offshore wind in Ireland. For onshore wind, the relevant guidelines are the *'Wind Energy Development Guidelines for Planning Authorities'* (Department of the Environment, Heritage, and Local Government (DOEHLG), 2006). These guidelines were the subject of a targeted review, and proposed changes were outlined in the document *'Draft Revised Wind Energy Development Guidelines'* (December 2019). At time of writing, the Draft Guidelines have not yet been adopted, and the relevant guidelines remain those issued in 2006. It is stated in both the 2006 Guidelines and the 2019 Draft Revised Guidelines that "*these guidelines relate solely to land use and environmental issues related to on-shore wind energy and do not deal with issues concerning purchasing agreements, matters relating to grid capacity or off-shore wind energy*". Despite this, the 2006 Guidelines remain the only enacted guidelines relevant to wind energy development in Ireland and have, where deemed appropriate, been considered during the preparation of this EIAR.

4.2.3 EIAR Guidance

This EIAR will be produced in accordance with the following EIA guidance documents:

- Environmental Protection Agency (EPA) (2022), Guidelines on the information to be contained in Environmental Impact Assessment Reports;
- European Commission (2017), Environmental Impact Assessment of Projects, Guidance on the preparation of the Environmental Assessment Report;
- Department of Communications, Climate Action and Environment (now DECC), 2017, Guidance on EIA and NIS preparation for Offshore Renewable Energy Projects;
- Department of Housing, Planning and Local Government, (now Department of Housing, Local Government and Heritage), 2018, Guidelines for Planning Authorities and An Bord Pleanála on Carrying out Environmental Impact Assessment;
- European Commission, 2017, Guidance on Screening, Guidance on Scoping and Guidance on the preparation of the Environmental Impact Assessment Report.
- Chartered Institute of Ecology and Environmental Management, CIEEM, 2018, Guidelines for Ecological Impact assessment in Britain and Ireland, Marine and Coastal;
- Department of Housing, Local Government and Heritage (2021). National Marine Planning Framework; and

- Department of Communications, Climate Action and Environment (now DECC) (2018). Guidance on Marine Baseline Ecological Assessments and Monitoring Activities for Offshore Renewable Energy Projects Parts 1 and 2.

4.3 EIA Process

The EIA process systematically identifies the potential impacts that the Project may possibly have on the environment. A comprehensive understanding of the environment within which the Project will be located will be obtained, and the potential impacts will be assessed at all phases of the Project (pre-construction, construction, operation and maintenance, and decommissioning). The potential effects identified for each Project phase, both beneficial and adverse, will then be evaluated to determine how the Project activities may affect the environment, and what the significance of those effects may be. Where potential effects are likely to be significant, specific measures may be identified to manage, reduce, remove, or offset such effects where possible. All EIA topics will be assessed based on the Project as detailed within Chapter 5: Project Description.

The EIA process, including the position of an EIAR within the EIA process, has been illustrated in Figure 4-1 below. The key steps of this process are as follows:

1. *Baseline characterisation to describe the relevant aspects of the receiving environment in which the proposed Project will be set, including over a defined study area.*
2. *Description of the Project Design to set out the range of Project design parameters used to determine the worst-case scenario for each impact.*
3. *Assessment of potential effects to identify and assess likely significant effects that could arise from the Project, including direct, indirect, cumulative, inter-related and transboundary effects. The assessment of likely significant effects is informed by the baseline characterisation, and feedback gained through consultation.*
4. *Assessment of residual effects once all proposed mitigation measures are taken into account.*
5. *Identification of relevant monitoring studies to monitor the predicted effects and impacts of the Project as appropriate for each receptor.*
6. *Publication of EIA Report and Non-Technical Summary and subsequent consultation with An Bord Pleanála, Galway County Council, Clare County Council and other relevant stakeholders.*

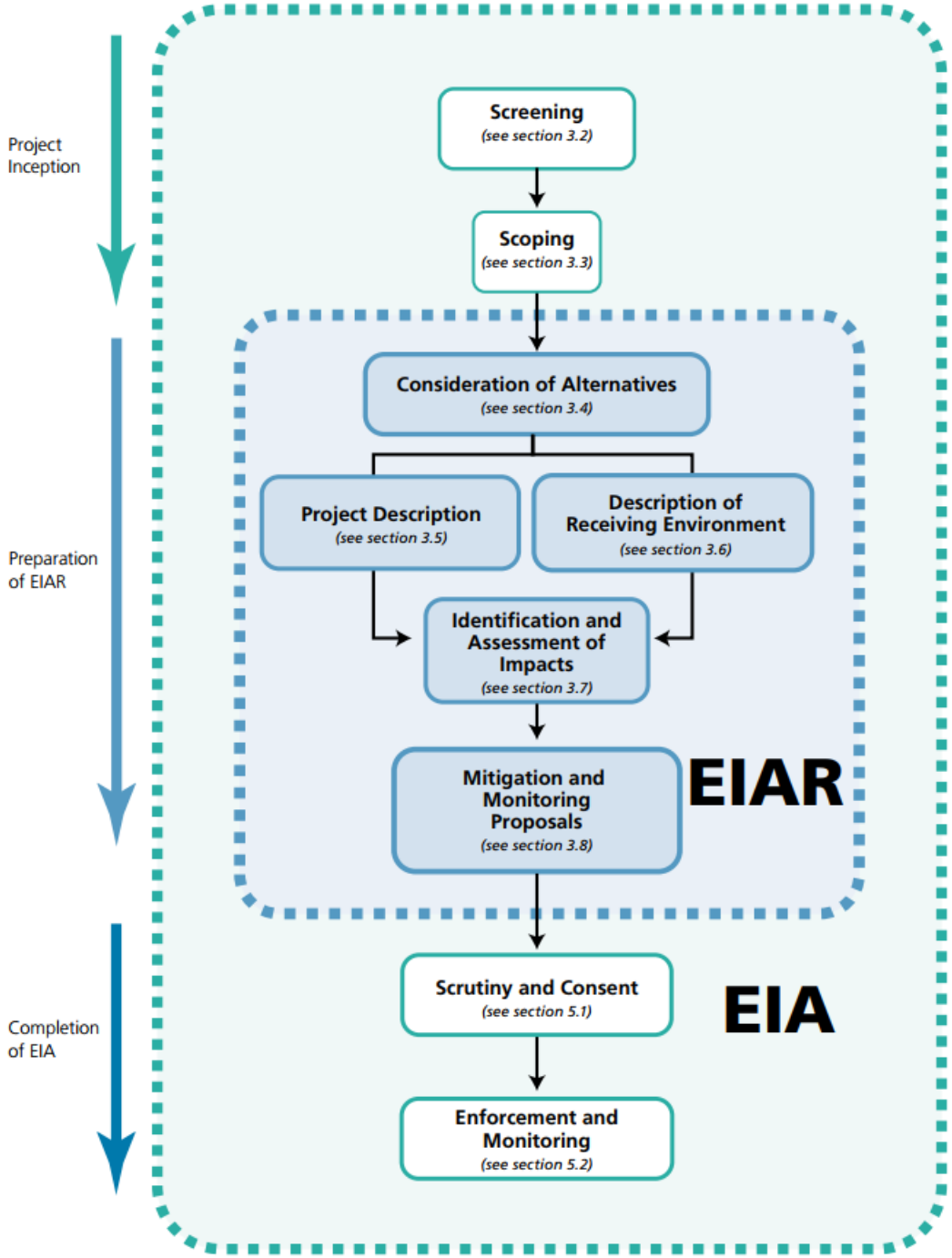

Figure 4-1 EIA Process (EPA, 2022)

4.3.1 EIA Scoping

Scoping is the process of undertaking consultations at an early stage of the EIA process to determine the content, depth, and extent of matters to be covered in the environmental information to be submitted to a competent authority for projects that are subject to EIA. Scoping is carried out in accordance with the Planning and Development Acts 2000 to 2022, as amended. A Scoping Report (MKO/Xodus, 2023) covering the offshore and onshore aspects of the Project, was distributed to stakeholders in September 2023.

The objective of the Scoping Report was to engage with the relevant authorities and Non-Governmental Organisations (NGOs) with interest in the specific aspects of the environment that have potential to be affected by the Project. After reviewing the Scoping Report, consultees were invited to submit comments on the scope of the EIAR and the specific standards of information that they require, and to provide initial feedback during the early stages of the design iteration process. Scoping aids in ensuring that a robust and proportionate EIAR is submitted to the Competent Authority in support of the application for consent. In order to engage in an informed manner, the Scoping Report provided information on:

- The Project, including the Offshore Array Area (OAA), Offshore 220kV Electrical Substation (OSS), Offshore Export Cable Corridor (OECC), Landfall, Onshore Grid Connection (OGC) and Onshore Compensation Compound (OCC) (referred to as the Onshore Substation in the Scoping Document).
- The proposed outline approach to understand the baseline conditions further and address the potential environmental impacts through the EIA process;
- The topics to be 'scoped in' to the offshore and onshore elements of the EIAR, where potentially significant effects may result from the Project on the physical, biological and human environment; and
- The topics to be 'scoped out' of the offshore and onshore elements of the EIAR. Impacts to these receptors were unlikely to occur and, as such, could be scoped out of the assessment, based on the baseline characterisation undertaken and applied expert judgement.

The responses received from the various scoping consultees, along with a summary of the points raised by each consultee, are detailed in Chapter 2, Section 2.7.2 of this EIAR. The feedback received has informed the design process for the Project, the scope of surveys and assessments undertaken, and the contents of this EIAR.

4.3.2 Consideration of Alternatives and Project Description

The EIAR provides a description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) that were investigated and considered during the design process, as required by the EIA Directive. Further coverage of the site selection process and the alternatives considered is provided in Chapter 3: Site Selection and Alternatives. Additionally, the EIAR provides a detailed description of the Project, comprising information on the site, design, size, and other relevant features of the Project. This is set out in Chapter 5: Project Description.

4.3.3 Impact Assessment

4.3.3.1 Baseline Characterisation

Each chapter within Volume 1, 2 and 3 of the EIAR provides a description of the relevant aspects of the existing environmental conditions within the Offshore Site and Onshore Site, as defined in Chapter 1. Annex IV in point 3 of the EIA Directive has a requirement to include the following in the EIAR:

> *'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.'*

This characterisation of the existing environment is undertaken in order to determine the baseline conditions in the area covered by the Project, including relevant study areas for those issues scoped into the EIA Report. This involves the following steps:

- Define study areas for each receptor based on the relevant characteristics of the receptor (e.g. mobility / range);
- Review available information (e.g. publicly available data / reports and site-specific surveys);
- Identify likely or potential impacts that might be expected to arise from the offshore Project;
- Determine if there is sufficient data to make the EIA judgements with sufficient confidence;
- If further data is required, ensure data gathered is targeted and directed at answering the key questions and filling key data gaps;
- Review information gathered to ensure the environmental baseline can be sufficiently characterised in appropriate detail;
- Identify any remaining data gaps or limitations and describe the implications of these on the baseline characterisation; and
- Consideration of the future baseline and potential changes in the baseline over the lifetime of the Project, including climate change, changes in practices and other reasonably foreseeable changes.

The specific methodology to establish a robust baseline (upon which impacts can be assessed) for each receptor is set out under each topic chapter within this EIA Report. This has been guided by feedback gained through scoping and consultation.

4.3.3.2 Assessment of Potential Effects

The primary purpose of this EIAR is to identify, describe and present an assessment of the likely significant effects of the Project on the environment. This assessment informs the Competent Authority's impact assessment process, its decision on whether or not to grant consent, and if granting consent, what conditions to attach. The Project has the potential to have effects on the environment during the Construction, Operation and Maintenance, and Decommissioning phases. The EIAR focuses on effects that are both likely and significant, and descriptions of effects that are accurate and credible.

According to Annex IV, point 5 of the EIA Directive, the EIAR should contain 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 cumulation 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.'*

In addition:

> *'The description of the likely significant effects on the [environmental] factors 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.'*

Within the source-pathway-receptor model illustrated in Figure 4-2, the source represents the origin/activity of an impact related to the Project (e.g. piling resulting in generation of underwater noise). The pathway represents the route through the environment by which the effects of an activity are transmitted. The receptor is the environment or resource that receives the impact, which then causes an effect on the receptor (e.g. marine mammals). Where there is no known 'pathway' then no effect is considered to occur on a receptor.

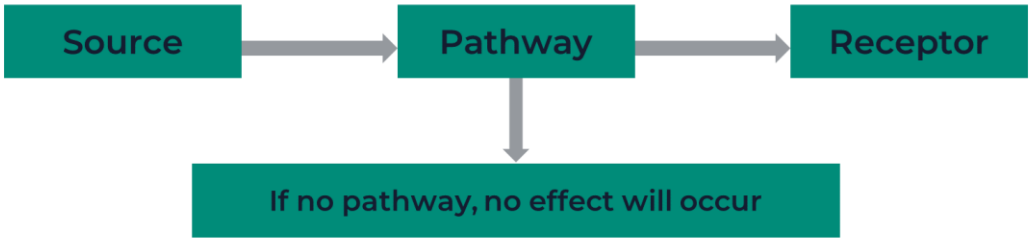

Figure 4-2 Source pathway receptor model.

An effect is the consequence of an impact on a given receptor, and can be positive, negative or neutral. The approach to making balanced assessments for the Project for each identified receptor was guided by the authoring technical experts using available data, experience and expert judgement, as well as relevant guidance and standards. In the context of this EIAR, an effect is described by reference to the individual environmental factors, their sensitivities and the criteria listed in Annex III of the EIA Directive:

> *a) 'the magnitude and spatial extent of the impact (for example geographical area and size of the population likely to be affected);*
>
> *b) the nature of the impact;*
>
> *c) the transboundary nature of the impact;*
>
> *d) the intensity and complexity of the impact;*
>
> *e) the probability of the impact;*
>
> *f) the expected onset, duration, frequency and reversibility of the impact;*
>
> *g) the cumulation of the impact with the impact of other existing and/or approved projects;*
>
> *h) the possibility of effectively reducing the impact.'*

Throughout this EIAR, the likely significant effects related to the Project have been identified and described in accordance with all of the guidance documents identified in Section 4.2.3 of this chapter, including the EPA's *'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports'* (EPA, May 2022), hereafter referred to as the EPA Guidelines. The process set out in the EPA Guidelines considers the following:

4.3.3.2.1 Documenting the Process

The assessment of effects needs to provide clear details of the analysis used to make conclusions. This includes a description of data and methodologies used, the rationale for their selection from a range of reasonable alternative means of assessment, together with descriptions of the reliability and certainty of the results as well as the limitations and difficulties encountered. All the preceding information should, wherever possible or relevant, be set out using referable standards and methods that demonstrably conform to peer-reviewed standards used by established specialist organisations.

4.3.3.2.2 Descriptions of Effects

As stated in the EPA Guidelines, an assessment of the likely effects of a development is a statutory requirement of the EIA process. This EIAR provides precise and concise descriptions of effects, and where possible, each effect is qualified to provide a comprehensive description of the predicted effect on receptors. The focus of the EIAR is on likely, significant effects.

Table 4-1 below (taken from Table 3.4 of the EPA Guidelines) presents the glossary of impacts as published in the EPA guidance documents. Standard definitions are provided in this glossary, which permit the evaluation and classification of the quality, significance, duration, and type of impacts associated with a Project on the receiving environment. The use of pre-existing standardised terms for the classification of impacts ensures that the EIA employs a systematic approach, which can be replicated across all disciplines covered in this EIAR. The consistent application of terminology throughout this EIAR facilitates the assessment of the Project on the receiving environment. Within each chapter of the EIAR, the below table will be used in conjunction with a binary statement in relation to each particular effect (i.e. whether the effect is Significant or Not Significant) that is being assessed, to ensure compliance with the EIA Directive.

Table 4-1 Impact Classification Terminology (EPA, 2022)

Impact Characteristic	Term	Description
Quality	Positive	A change which improves the quality of the environment
	Neutral	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
	Negative	A change which reduces the quality of the environment
Significance	Imperceptible	An effect capable of measurement but without significant consequences
	Not significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.

Impact Characteristic	Term	Description
	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 consistent with existing and emerging baseline trends
	Significant	An effect, which by its character, magnitude, duration, or intensity alters a sensitive aspect of the environment
	Very significant	An effect which, by its character, magnitude, duration, or intensity significantly alters most of a sensitive aspect of the environment
	Profound	An effect which obliterates sensitive characteristics
Extent & Context	Extent	Describe the size of the area, number of sites and the proportion of a population affected by an effect
	Context	Describe whether the extent, duration, or frequency will conform or contrast with established (baseline) conditions
Probability	Likely	Effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented
	Unlikely	Effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented

Impact Characteristic	Term	Description
Duration and Frequency	Momentary	Effects lasting from seconds to minutes
	Brief	Effects lasting less than a day
	Temporary	Effects lasting less than a year
	Short-term	Effects lasting one to seven years
	Medium-term	Effects lasting seven to fifteen years
	Long-term	Effects lasting fifteen to sixty years
	Permanent	Effect lasting over sixty years
	Reversible	Effects that can be undone, for example through remediation or restoration
	Frequency	Describe how often the effect will occur. (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually)
Type	Indirect	Impacts on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway
	Cumulative	The addition of many minor or significant effects, including effects of other projects, to create larger, more significant effects.
	'Do Nothing'	The environment as it would be in the future should the subject project not be carried out
	'Worst Case'	The effects arising from a project in the case where

Impact Characteristic	Term	Description
		mitigation measures substantially fail
	Indeterminable	When the full consequences of a change in the environment cannot be described
	Irreversible	When the character, distinctiveness, diversity, or reproductive capacity of an environment is permanently lost
	Residual	Degree of environmental change that will occur after the proposed mitigation measures have taken effect
	Synergistic	Where the resultant effect is of greater significance than the sum of its constituents

The Likelihood of Effects

To ensure that the EIAR adds value to the Competent Authority undertaking the EIA as part of the consent process, the EIAR focuses on those effects that are probable, planned or likely to occur. Examples of likely effects include the project emissions, the proposed earthmoving etc, and those which can be reasonably foreseen to be inevitable outcomes during the construction, operation and maintenance, and decommissioning of the Project. The Scoping process, detailed above, has aided in focusing attention on the key areas of concern and identifying effects that are reasonably predicted to be likely. The EIA Directive further requires unforeseen or unplanned effects to be addressed through consideration of the vulnerability of the Project to risk of major accidents and natural disasters relevant to the Project, as detailed in Chapter 31 of this EIAR.

The Significance of Effects

Significance of effects refers to the importance attributed to the outcome of the effects, i.e. the consequence of the change that has occurred. The decision process related to defining whether or not a development is likely to significantly affect the environment is the core principle of the EIA process. The EIA Directive does not provide a specific definition of "significance". However, the methods used for identifying and assessing effects should be transparent and verifiable. Significance is determined by a combination of scientific and subjective concerns. Determination of significance relies on the professional judgement of competent experts, in addition to guidelines and standards.

The EIAR sets out the basis of these judgements so that the varying degrees of significance attributed to different factors are made clear. According to the EPA Guidelines, there are seven generalised degrees of effect significance that are commonly used in EIA: Imperceptible, Not Significant, Slight, Moderate, Significant, Very Significant and Profound, each of which is defined above in Table 4-1. Certain topics, such as biodiversity and SLVIA, have more specific definitions of effect significance. However, in the absence of specific definitions, the generalised definitions provided in Table 3.4 of the EPA Guidelines have been utilised within this EIAR.

Descriptive Terminology

Clarity of methods, language and meaning are all essential to describe the full range of effects clearly and accurately, as well as consistency in their descriptions. This ensures that the EIA employs a systematic approach that is replicated across all disciplines covered in this EIAR. The EIAR adheres to the systematic methods of description in Table 4-1, which presents the various descriptive terminologies to be utilised when documenting the quality, significance, extent and context, probability, duration and frequency, and types of effects. As mentioned previously, the terminology and descriptions listed in Table 4-1 will be used in together with a binary statement in relation to each particular effect (i.e. whether the effect is Significant or Not Significant) that is being assessed.

4.3.3.2.3 *Criteria for Assessment of Effects*

The likely significant effects of the Project on the environment must be considered in accordance with the criteria contained in Annex III of the EIA Directive. Table 3.5 of the EPA Guidelines further expands on these criteria and lists questions that this EIAR aims to address in order to ensure sufficient information has been provided, and a robust impact assessment can be undertaken by the Competent Authority.

Where relevant, this EIAR describes the forecasting methods and evidence used to identify and assess the significant effects on the environment, including any uncertainties that exist.

4.3.3.3 Mitigation

Mitigation measures are integrated into the design process at an early stage in order to address potential adverse effects. According to Annex IV, point 7 of the EIA Directive, an EIAR should include:

> *'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 operation and maintenance phases.'*

As per Section 3.8.1 of the EPA Guidelines, there are three established strategies for the mitigation of effects:

1. **Mitigation by Avoidance:** generally the most effective form of mitigation, environmental impacts and the consideration of alternatives need to be taken into consideration at the earliest possible stage. Adverse effects can be avoided entirely through alternative design options or avoidance of environmentally sensitive sites.
2. **Mitigation by Prevention:** technical measures to limit or prevent potential unacceptable significant effects to a permissible and acceptable level.
3. **Mitigation by Reduction:** for effects that cannot be avoided, these measures aim to limit the impact or magnitude of effects, rather than affecting the source. Reduction can be achieved by reducing the effect through interception of emissions, effects and wastes before they enter the environment, and reducing exposure to the effect by installing protection or barriers between the receptor and the source of the effect.
4. **Mitigation by Offsetting:** for effects that cannot be avoided, prevented or reduced. It includes measures to compensate for adverse effects. Offsetting can be achieved for example; with the planting of new vegetation elsewhere to replace unavoidable loss of similar vegetation.

4.3.3.4 Cumulative Effects Assessment Approach

The EIA Directive and associated guidance documents state that as well as considering any direct, indirect, secondary, transboundary, short, medium, and long term, permanent and temporary, positive and negative effects of the Project (all of which are considered in the various chapters of this EIAR), the description of likely significant effects should include an assessment of cumulative impacts that may arise. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the Project. Cumulative effects result from the addition of many minor or insignificant effects, such as effects of other projects, plans and activities, to create larger, more significant effects.

The cumulative impact assessment of projects has three principle aims:

- To establish the range and nature of existing and approved projects within the cumulative study area of the Project;
- To summarise the relevant projects which have a potential to create cumulative impacts; and,
- To identify the projects that hold the potential for cumulative interaction within the context of the Project and discard projects that will neither directly nor indirectly contribute to cumulative impacts (note: this is done by individual experts with respect to their specialist area of expertise.)

The cumulative effects assessment considers developments that are 'reasonably foreseeable' such as:

- Existing developments either built or in construction;
- Approved developments, awaiting implementation; and
- Potential developments awaiting determination within the planning process with design information in the public domain.

Assessment material for this cumulative impact assessment was compiled on the relevant developments within the vicinity of the proposed Project. The material was gathered, based on defined cumulative study areas for each EIAR topic, through a search of relevant online Planning Registers, reviews of relevant EIAR (or historical EIS) documents, planning application details and planning drawings, and served to identify past and future projects, their activities and their environmental impacts. Each cumulative study area was established with regard for the potential environmental receptors, potential impact pathways, topic specific guidance, best practice and professional judgement.

When completing the cumulative effects assessment, it is important to note that some of the proposed developments assessed may not be taken forward and built out as described in the most up-to-date information, and therefore, there is a level of uncertainty with respect to the potential impacts which may arise. The 'phase' of a development, in relation to the certainty or uncertainty over whether the development will be brought forward as described, was considered when drawing conclusions on cumulative effects.

Further details on the Cumulative Impact Assessment methodology for the Project, including the cumulative long lists are set out in Appendix 4-1 for the Offshore Site, and Appendix 4-2 for the Onshore Site.

4.3.3.5 Interaction of Effects

Consideration of the interactions between effects on different environmental factors is a requirement of the EIA Directive and is addressed as relevant throughout this EIAR. Interactions may occur between the effects assessed within different topic assessment chapters on a receptor (e.g. impacts on water and

sediment quality may indirectly impact benthic ecology). Interactions are identified through the consideration of the potential interaction of all effects across topics on a given receptor.

Inter-related effects are also considered by the EIA, which are potential effects of multiple impacts affecting one receptor. These potential effects may have a temporal or spatial element and may be temporary, short-term, or long-term over the life cycle of the Project. Inter-related effects consider the interactions between the effects of the different phases of the Project (e.g. pre-construction, construction, operation and maintenance and decommissioning) as well as the interaction between impacts on a receptor within a Project stage.

Further coverage of the interaction of effects is provided in Chapter 32: Interactions of this EIAR. This chapter also includes a matrix that identifies potential interactions between the various aspects of the environments assessed within the EIAR.

4.3.3.6 Transboundary Effects

Transboundary effects arise when impacts from a development within one European Economic Area (EEA) state's territory affect the environment of another EEA state(s). The EIA Directive requires assessment of transboundary effects. Consideration of transboundary environmental effects is also required in line with The Espoo (EIA) Convention adopted in 1991 in Espoo, Finland. The Convention sets out the obligations of involved Parties, including Ireland, to assess the environmental impact of certain activities and the obligation of States to notify and consult each other on all major developments under consideration that are likely to have a significant adverse environmental impact across boundaries. Where there is a potential for a transboundary effect as a result of the Project, such effects are assessed and detailed within the relevant topic specific chapter.

Potential transboundary impacts are identified and assessed within each topic chapter within this EIAR where relevant.

4.3.3.7 Residual Effects

As per the EPA Guidelines, residual effects are the final predicted or intended effects that occur after the proposed mitigation measures have been implemented. It will not always be possible or practical to mitigate all adverse effects, meaning there will remain environmental 'costs' of a project that could not be reasonably avoided. Any residual effects of the Project are described clearly in this EIAR in accordance with the standardised terminology set out in the EPA Guidelines.

4.3.3.8 Structure and Content of the EIAR

This EIAR uses the grouped structure method to describe the existing environment, the potential impacts of the Project thereon and the proposed mitigation measures. Background information relating to the Project, scoping and consultation undertaken and a description of the Project are presented in separate sections. The grouped format sections describe the impacts of the Project in terms of both its offshore and onshore elements under Directive 92/43/EEC and Directive 2009/147/EEC. As outlined in Section 1.8.1 of Chapter 1, this EIAR is split into four different volumes, with Volume 1 containing the main EIAR Chapters and Non-Technical Summary, Volume 2 containing the SLVIA and LVIA Photomontage Booklets, and Volumes 3 and 4 containing the Appendices. The EIAR also includes a Non-Technical Summary, which is a condensed and easily comprehensible version of the EIAR document.

4.3.3.8.1 *Appropriate Assessment Screening and Natura Impact Statement*

An Offshore and Onshore Appropriate Assessment Screening Report and Natura Impact Statement have been prepared and accompany this EIAR, with respect to the onshore and offshore elements of the Project. These reports were prepared in accordance with the European Commission's *Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC* (EC, 2021) and M*anaging Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC* (EC, 2018), as well as the Department of the Environment's *Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities* (DoEHLG, 2010) and the *Appropriate Assessment Screening for Development Management*. Office of the Planning Regulator, Dublin 7, Ireland OPR (2021).