codling wind park

Environmental Impact Assessment Report

Volume 2

Chapter 5 Environmental Impact Assessment Methodology


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Table of contents

List of tables

List of plates

Abbreviations

Abbreviation	Term in Full
ABP	An Bord Pleanála
CEA	Cumulative effects assessment
CWP	Codling Wind Park
CWPL	Codling Wind Park Limited
DCCAE	Department of Communications, Climate Action and Environment (now Department of the Environment, Climate and Communications)
DHPLG	Department of Housing, Planning and Local Government (now Department of Housing, Local Government and Heritage)
EEA	European Economic Area
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EDF R	Électricité de France Renewables
EPA	Environmental Protection Agency
EU	European Union
IAC	Inter-array cable
INNS	Invasive non-native species
LoD	Limit of deviation
NIS	Natura Impact Statement
NTS	Non-Technical Summary
OECC	Offshore export cable corridor
OfTi	Offshore transmission infrastructure
OSS	Offshore substation structure
OWF	Offshore wind farm
O&M	Operations and maintenance
PDA	Planning and Development Act
SEAI	Sustainable Energy Authority of Ireland
TJB	Transition joint bay
WTG	Wind turbine generator

Definitions

Glossary	Meaning
the Applicant	The developer, Codling Wind Park Limited (CWPL).
Codling Wind Park (CWP) Project	The proposed development as a whole is referred to as the Codling Wind Park (CWP) Project, comprising of the offshore infrastructure, the onshore infrastructure and any associated temporary works.
Codling Wind Park Limited (CWPL)	A joint venture between Fred. Olsen Seawind (FOS) and Électricité de France (EDF) Renewables, established to develop the CWP Project.
Environmental Impact Assessment (EIA)	A systematic means of assessing the likely significant effects of a proposed project, undertaken in accordance with the EIA Directive and the relevant Irish legislation.
Environmental Impact Assessment Report (EIAR)	The report prepared by the Applicant to describe the findings of the EIA for the CWP Project.
limit of deviation (LoD)	Locational flexibility of permanent and temporary infrastructure is described as a LoD from a specific point or alignment.
operations and maintenance (O&M) activities	Activities (e.g., monitoring, inspections, reactive repairs, planned maintenance) undertaken during the O&M phase of the CWP Project.
O&M phase	This is the period of time during which the CWP Project will be operated and maintained.
prescribed bodies	The prescribed bodies for the purposes of applications under Section 291 of the Planning and Development Act 2000 are those prescribed by Article 8 of the Planning and Development (Maritime Development) Regulations 2023 (SI 100/2023)

5 EIA METHODOLOGY

5.1 Introduction

1. Codling Wind Park Limited (hereafter 'the Applicant') is proposing to develop the Codling Wind Park (CWP) Project, a proposed offshore wind farm (OWF) located in the Irish sea approximately 13–22 km off the east coast of Ireland, at County Wicklow.

2. This chapter forms part of the Environmental Impact Assessment Report (EIAR) for the CWP Project. The purpose of the EIAR is to provide the decision maker (An Bord Pleanála (ABP)), relevant stakeholders and all interested parties with the environmental information required to develop an informed view of any likely significant effects on the environment resulting from the development. ABP is the 'competent authority' that will examine the EIAR, which will support the determination on whether permission will be granted for the CWP Project.

3. This chapter outlines the EIA methodology that has been applied to develop the EIAR. In summary, this EIAR chapter:

- Details the legislation and guidance relevant to the general approach to EIA;
- Sets out the key stages of the EIA process that the Applicant has followed;
- Outlines the approach taken in the EIA to address and accommodate design flexibility;
- Describes the approach used to evaluate the significance of effects, including the application of mitigation measures; and
- Summarises the approach to the cumulative effects assessment, assessment of transboundary effects and inter-related effects.

5.2 Legislation and guidance

5.2.1 EIA legislation

4. The first EIA Directive was adopted in 1985 (Directive 85/337/EEC) and, following the adoption of amending Directives in 1997, 2003 and 2009, a codified Directive was adopted in 2011 (Directive 2011/92/EU). Directive 2014/52/EU amends the 2011 codified Directive but does not replace it. This EIAR has been prepared in accordance with the requirements of the codified Directive 2011/92/EU as amended by Directive 2014/52/EU (hereafter referred to as the 'EIA Directive').

5. The projects which require EIA are listed in Annex I and Annex II of the EIA Directive. Schedule 5 (Part 1) of the Planning and Development Regulations 2001 (as amended) transposes Annex I of the EIA Directive directly into Irish legislation and establishes thresholds for development for which an EIA is always required.

6. Article 4(2) of the EIA Directive provides that, for projects listed in Annex II, Member States shall determine whether the project shall be subject to an EIA and that this determination shall be made either through a case-by-case examination or thresholds or criteria set by the Member State.

7. In transposing Annex II of the EIA Directive into Irish legislation, Schedule 5 (Part 2) of the Planning and Development Regulations 2001 (as amended) sets mandatory thresholds for each project class. The CWP Project is subject to the EIA process as it falls within the project class definitions specified in Part 2 Category 3(i) of Schedule 5 which states that EIA is required for the following project type:

> *'Installations for the harnessing of wind power for energy production (wind farms) with more than 5 turbines or having a total output greater than 5 megawatts'.*

8. The above legislative provisions are detailed further in EIAR **Chapter 2 Policy and Legislative Context**.

5.2.2 EIA guidance

9. The following EIA guidelines have been taken into consideration in the preparation of this EIAR:

- Environmental Protection Agency (EPA) (May 2022). Guidelines on the Information to be contained in Environmental Impact Assessment Reports (hereafter referred to as the EIAR Guidelines);
- DHPLG (2018). Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment;
- Department of Communications, Climate Action and Environment (DCCAE) (2018). Guidance on Marine Baseline Ecological Assessments and Monitoring Activities for Offshore Renewable Energy Projects Part 1 and 2;
- DCCAE (2017) Guidance on Environmental Impact Statement (EIS) and Natura Impact Statement (NIS) Preparation for Offshore Renewable Energy Projects;
- European Commission (2017) Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report;
- European Commission (2013). Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment;
- OSPAR Commission (2008). Assessment of the Environmental Impact of Offshore Wind Farms;
- European Commission (1999). Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions;
- Planning Inspectorate for England (PINS) (2019). Advice Note 17: Cumulative Effects Assessment;
- DCCAE and Sustainable Energy Authority of Ireland (SEAI) (2017). Guidance on EIS and NIS Preparation for Offshore Renewable Energy Projects; and
- Renewable UK (2013). Guiding Principles for Cumulative Impact Assessments in Offshore Wind Farms.

10. Where relevant topic-specific guidance and legislation exists, this is discussed within the relevant EIAR topic chapters (EIAR **Chapters 6 to 32**).

5.3 The EIA process

11. The overall objective of the EIA process is to identify, assess and describe the potential direct and indirect significant effects resulting from a project. Where potentially significant adverse effects are identified, appropriate measures to avoid, reduce, and if necessary, offset these effects are prescribed.

12. The principal elements of the EIA process, informed by the EIAR Guidelines (EPA, 2022), are summarised in **Table 5-1** with a high-level description of each stage.

Table 5-1 Principal elements of the EIA process

	Stage	Description
Project inception	Screening	To determine whether an EIA is required for the Project.
	Scoping	To determine the issues to be considered as part of the EIA, information to be included in the EIAR, and the methods used to gather and assess that information.
Preparation of the EIAR	Consideration of alternatives	Describing the reasonable alternatives studied by the developer and the main reasons for choosing the project, outlining how environmental considerations were taken into account.
	Description of the proposed project	A description of the whole proposed project, comprising information on the site, design, size and other relevant features of the project, within the EIAR.
	Describing the baseline environment	The baseline scenario refers to the current state of environmental characteristics. It involves the collection and analysis of information on the condition, sensitivity and significance of relevant environmental factors which are likely to be significantly affected by the project.
	Identification and assessment of effects	The assessment of potential environmental impacts of the project on the existing environment and where the significance of effects is determined.

	Stage	Description
	Mitigation and Monitoring	Description of mitigation measures to avoid and/or reduce significant adverse effects and details any monitoring proposals.
Completion of the EIA	Scrutiny and consent	The competent authority, ABP, will undertake the EIA and decide if the project can be consented. ABP will inform the public and other consultees of its decision.
	Enforcement and monitoring	If consent is granted, the developer will have to adhere to mitigation measures published in the EIAR. Monitoring may be required to confirm the effectiveness of implemented mitigation measures during the construction, operation and maintenance (O&M) and decommissioning phases.

5.4 Consultation

13. Since the earliest stages of the CWP Project, the Applicant has been committed to actively informing and engaging with prescribed bodies, landowners, interested groups and the general public to facilitate the decision-making process, in line with best practice for project development.

14. The aim has been to integrate feedback from stakeholders and the public at all stages of the design evolution. In accordance with this ethos and best practice, consultation has also formed a key component of the EIA process, which is set to continue throughout the lifecycle of the CWP Project.

15. During the pre-application phase, the Applicant has sought to undertake EIA topic-specific engagement with a wide range of stakeholders, with the overall aim of seeking agreement on the approach to the EIA. This engagement has sought to:

- Agree the relevance, appropriateness and sufficiency of baseline data for the specific assessment(s), including both site-specific and contextual data, and agreeing the scope of any project-specific surveys;
- Agree the methods for data analysis;
- Agree parameters for the assessment(s);
- Agree methods for assessment (including, where possible, interpretation of impact and levels of significance);
- Agree the cumulative effects assessment details (see **Section 5.12.1**), including which projects to scope in and which evidence can be used;
- Agree key focus areas for mitigation and post-consent monitoring; and
- Agree how to deal with new emerging evidence.

16. Where appropriate, relevant responses from technical consultation with prescribed bodies and other stakeholders are presented in each EIAR technical chapter (EIAR **Chapters 6–32**). A summary of consultation is also presented in the **Schedule of Pre-Application Consultations** (see **Planning Documents**).

17. In addition, the Applicant has undertaken three phases of non-statutory public consultation. For each stage of public consultation, steps were taken to consult stakeholders and the public on key matters, including project optioneering, design decisions, environmental survey works and proposed mitigation measures.

18. Full details of the consultation process are presented in the **Public and Stakeholder Consultation Report**, which forms part of the planning application.

5.5 EIA scoping

19. An EIA Scoping Report for the CWP Project offshore infrastructure was published on 2 December 2020. Separately, the Applicant prepared an EIA Scoping Report for the onshore infrastructure, which was published on 30 April 2021.

20. A consultation period of eight weeks was provided for responses to each Scoping Report.

21. The purpose of the EIA Scoping Reports was to engage with ABP, relevant stakeholders and other interested parties at an early stage, inviting them to provide relevant information and to comment on the proposed approach to the EIA.

22. Responses to the EIA Scoping Reports have informed the scope of the topic assessments, and specific matters are referenced in the consultation summary tables within each of the EIAR topic chapters (EIAR **Chapters 6–32**).

5.6 Information to be contained in an EIAR

23. In cases where EIA is required, the developer must prepare and submit an EIAR to the competent authority. An EIAR is defined in the Planning and Development Act (PDA) 2000 as:

> *'a report of the effects, if any, which proposed development, if carried out, would have on the environment and shall include the information specified in Annex IV of the Environmental Impact Assessment Directive'*

24. The EIA Directive describes what an EIAR is to contain, as follows:

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.'*

25. The range of environmental factors to be considered in an EIA is also prescribed in Article 3 of the EIA Directive, as follows:

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;*

    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'.*

26. The following sections outline how the structure and content of this EIAR fully complies with the above legislative requirements.

5.7 Structure of the EIAR

27. This EIAR covers both the offshore and onshore development areas. It comprises five volumes:

- Volume 1: Non-Technical Summary (NTS);
- Volume 2: Introductory Chapters;
- Volume 3: Topic Chapters;
- Volume 4: Appendices; and
- Volume 5: Summary Chapters.

28. A summary of the EIAR volumes is outlined in **Table 5-2**.

Table 5-2 Structure of the EIAR

Chapter	Title
Volume 1 – Non-Technical Summary	
This document provides an overview and summary of the EIAR using non-technical language. It is a standalone document and is intended to offer a clear and concise summary of the characteristics of the development, the existing environment and any likely significant effects, including key mitigation measures for the development.	
Volume 2 – Introductory Chapters	
Chapter 1	Introduction

Chapter	Title	
	An introduction and a brief background to the CWP Project and the legislative requirements under which the document is prepared. It introduces the CWP Project EIAR and the contributors to the EIAR.	
Chapter 2	Policy and Legislative Context Presents the international, national, regional and local planning policy and legislative context that is relevant to the development of the CWP Project and sets out the need for the project.	
Chapter 3	Site Selection and Assessment of Alternatives Provides a description of the reasonable alternatives, in terms of project design, technology, location, size and scale, which were considered by the Applicant.	
Chapter 4	Project Description Provides a full description of the CWP Project offshore and onshore infrastructure, which includes location and layout details for each of the main components. It details the construction procedures and the materials required, the O&M requirements and the proposed approach to decommissioning.	
Chapter 5	EIA Methodology This chapter of the EIAR.	
Volume 2 – Topic Chapters Includes the topic chapters listed below, which provide the examination of effects to topic-specific environmental receptors.		Included in accordance with Article 3.1 of the EIA Directive:
Chapter 6	Marine Geology, Sediments and Coastal Processes	Article 3.1 (c)
Chapter 7	Marine Water Quality	Article 3.1 (c)
Chapter 8	Subtidal and Intertidal Ecology	Article 3.1 (b)
Chapter 9	Fish, Shellfish and Turtle Ecology	Article 3.1 (b)
Chapter 10	Ornithology	Article 3.1 (b)
Chapter 11	Marine Mammals	Article 3.1 (b)
Chapter 12	Commercial Fisheries	Article 3.1 (e)
Chapter 13	Offshore Bats	Article 3.1 (b)
Chapter 14	Marine Archaeology & Cultural Heritage	Article 3.1 (d)
Chapter 15	Seascape, Landscape and Visual Impact Assessment	Article 3.1 (d)
Chapter 16	Shipping and Navigation	Article 3.1 (a)

Chapter	Title	
Chapter 17	Aviation, Military and Radar	Article 3.1 (d)
Chapter 18	Telecommunications and Marine Infrastructure	Article 3.1 (d)
Chapter 19	Land Soils and Geology	Article 3.1 (c)
Chapter 20	Hydrology and Hydrogeology	Article 3.1 (c)
Chapter 21	Onshore Biodiversity	Article 3.1 (b)
Chapter 22	Archaeological, Architectural and Cultural Heritage	Article 3.1 (d)
Chapter 23	Landscape and Visual Impact Assessment	Article 3.1 (d)
Chapter 24	Noise and Vibration	Article 3.1 (c)
Chapter 25	Air Quality	Article 3.1 (c)
Chapter 26	Material Assets - Built Services	Article 3.1 (d)
Chapter 27	Traffic and Transport	Article 3.1 (a)
Chapter 28	Climate: Carbon Balance Assessment	Article 3.1 (c)
Chapter 29	Population	Article 3.1 (a)
Chapter 30	Human Health	Article 3.1 (a)
Chapter 31	Waste & Resource Management	Article 3.1 (d)
Chapter 32	Risk of Major Accidents and Disasters	Article 3.1 (d)

Volume 4 – Appendices

Contains the technical appendices to support the topic chapters (**Chapters 6–32**).

Volume 5 – Summary Chapters

Chapter 33	Summary of Mitigation and Monitoring Provides a summary of the mitigation associated with the CWP Project and the monitoring proposed as a key aspect of environmental management for the construction and O&M of the CWP Project. Mitigation and monitoring, where proposed, are described in more detail in the relevant chapters of the EIAR (**Chapters 6–32**)
Chapter 34	Summary of Residual Effects Provides a summary of the residual impacts identified through the EIA from the construction, operational and decommissioning phases of the Codling Wind Park Project.

Chapter	Title
	A summary identifying and describing residual effects is provided in each chapter of the EIAR (**Chapters 6–32**)

5.8 Characterisation of the existing environment

29. A review of the existing environment has been undertaken to determine, and agree, the current environmental conditions of the receiving environment for the purposes of the EIAR. This characterisation, which was formed based on field-based surveys, desk-based assessments and consultation with prescribed bodies and relevant stakeholders, provides a robust baseline against which effects can be assessed and environmental monitoring of the effects of the CWP Project can be measured. The specific approach to establishing the characteristics of the existing environment (upon which impacts can be assessed) is set out in each topic chapter within this EIAR (**Chapters 6–32**). This approach is based on feedback received during the EIA scoping process and subsequent consultation with the relevant EIA stakeholders.

30. In general, the characterisation has followed the steps listed below:

- Study areas were defined for each receptor based on the relevant guidance and evidence, and the relevant characteristics of the receptor (e.g. mobility/range). The study areas for each receptor are detailed in the relevant topic chapters within this EIAR (**Chapters 6–32**);
- A desk study was undertaken to identify and review existing information;
- Determination was made as to whether sufficient data was available to undertake an assessment with sufficient accuracy and confidence; and
- If further data was required, additional gathered data was targeted to facilitate the identification and evaluation of all the types of effects that the EIAR was required to consider.

31. Where appropriate, the EIAR draws attention to limitations about factors that may affect the reliability of baseline data. These include the availability, completeness, accuracy, age, accessibility and compatibility of data.

5.9 Approach to assessment of effects

32. As per the EIAR Guidelines, the main purpose of an EIAR is to identify, describe and present an assessment of the likely significant effects of a project on the environment.

33. This chapter sets out the framework methodology for the assessment. Each technical chapter (**Chapters 6–32**) provides details of how the methodology has been applied for that topic, considering the most relevant and latest guidance or best practice.

34. The impact assessment considers the potential for impacts during the construction, O&M and decommissioning phases.

35. ‘Impacts’ are defined as the physical (or chemical) changes that will be caused by CWP Project activities. ‘Effects’ are defined as the consequences of these impacts to biological populations, ecosystems and humans (including their physical and cultural assets). It should be noted that, in some technical chapters, ‘impact’ and ‘effect’ are used interchangeably due to differing conventions and best practice adopted by different technical areas. The significance of an effect is determined by correlating the magnitude of the impact with the value, or sensitivity, of the receptor or resource in accordance with defined significance criteria.

36. As per the EIAR Guidelines, effects can be classified as follows:

- Direct effects: occurring at the same time and place as the action or activity.
- Indirect (or secondary) effects: experienced by a receptor that is removed (e.g. in space or time) from the direct impact.
- Cumulative effects: the addition of many minor or insignificant impacts, including impacts of other projects, to create larger, more significant effects.

5.9.1 Impact identification

37. In general, and where appropriate to do so, the assessment has used the conceptual 'source-pathway-receptor' model. The model identifies potential impacts resulting from the proposed activities on the environment and sensitive receptors within it. This process provides an easy-to-follow assessment route between impact sources and potentially sensitive receptors to ensure a transparent impact assessment. The aspects of this model are defined as follows:

- Source: the origin of a potential impact (i.e. an activity such as earthworks and a resultant effect, e.g. contaminated run-off from the site).
- Pathway: the means by which the effect of the activity could impact a receptor (e.g. for the example above, changes to the water quality in the affected watercourses).
- Receptor: the element of the receiving environment that is impacted (this could be a component of the physical, ecological or human environment, such as water quality or benthic habitat, e.g. for the example above, species living on or in the affected watercourses).

38. Where a different approach has been necessary to reflect the specific assessment requirements of a particular topic, this is described in the corresponding technical chapter.

5.9.2 Significance of the effect

39. The significance of an effect is determined by correlating the magnitude of the impact with the sensitivity of the receptor or resource, in accordance with defined significance criteria.

40. Where guidance is available for defining sensitivity and magnitude (whether from professional guidance, government publications or bespoke definitions agreed with stakeholders), this is referred to. If such sources are available but have not been used, then a justification for not using these sources is given.

Determining receptor sensitivity

41. Receptor sensitivity relates to the degree to which a receptor is affected by an impact. The characterisation of the existing environment helps to determine the receptor sensitivity in order to assess the potential impacts upon it.

42. The overall receptor sensitivity is determined by considering, where relevant, a combination of:

- Value: a measure of the importance of a receptor in terms of its relative ecological, social or economic value or status. It considers whether, for example, the receptor is rare, has protected or threatened status, has importance at a local, regional, national or international scale and in the case of biological receptors, whether the receptor has a key role in the ecosystem function.
- Adaptability: the degree to which a receptor can adapt to an impact.
- Tolerance; the ability of a receptor to accommodate a temporary or permanent change.
- Recoverability: the extent to which a receptor will recover following an impact.

43. The sensitivity of the receptor is defined through applying known research and information on the status and sensitivity of the feature under consideration, coupled with expert judgement and past experience.

44. Expert judgement is particularly important when determining the sensitivity of receptors. For example, an Annex II species (under the Habitats Directive) would have a high inherent value but may be tolerant to an impact or have high recoverability. In this case, sensitivity should reflect the ecological robustness of the species and not necessarily default to its protected status.

45. Each EIA technical chapter (**Chapters 6–32**) includes a 'Determination of receptor sensitivity' table, which clearly presents how the sensitivity has been defined for its receptors based on topic-specific criteria.

Determining the magnitude of impact

46. The magnitude of impact (both beneficial and adverse) depends on the degree and extent to which the proposed development may change the environment, and is defined, where relevant, through consideration of the following factors:

- Scale or spatial extent: the geographical extent over which the impact occurs. For example, whether the impact is spatially limited to the footprint of the project, or if there are other factors that extend the impact beyond it.
- Duration: the duration over which the impact occurs. For example, whether the impact is limited to the construction period or will occur over the lifetime of the project.
- Probability: including the probability that the impact will occur as well as the probability that the receptor will be present.
- Frequency: whether the impact is limited to one occurrence or will occur repeatedly over the duration of the project.
- Nature of change: the expected degree of change relative to the pre-impact condition of the existing environment.

47. Each EIA technical chapter (EIAR **Chapters 6–32**) includes a 'Determination of magnitude of impact' table, which clearly presents how the magnitude of impact has been defined for its receptors based on topic-specific criteria.

Evaluation of significance

48. As previously noted, the significance of the effect is a function of both the character of the predicted impact (i.e. the impact magnitude) and the sensitivity of the receiving environment.

49. **Plate 5-1, extracted from the EIAR Guidelines**, demonstrates how comparing the magnitude of the predicted impact to the sensitivity of the receiving environment can determine the significance of the effect.

50. The EIAR Guidelines refer to seven generalised degrees of effect significance that are commonly used in EIA: Imperceptible, Not Significant, Slight, Moderate, Significant, Very Significant and Profound. Generalised definitions of each of these are provided in **Table 5-3**.

51. The quality of these effects may also be positive (improving the quality of the environment), neutral (having no effect or imperceptible effect) or negative/adverse (a change that reduces the quality of the environment). When more specific definitions exist within a specialised topic, e.g. biodiversity, these are used in preference to these generalised definitions, and are clearly defined within the relevant EIA technical chapter.

52. The EIAR Guidelines also highlight that 'Significance' is a concept that can have different meanings for different topics. For the purposes of this EIAR, effects rated as being 'Significant', 'Very Significant' and 'Profound' are considered to be significant in EIA terms. Effects rated as being 'Moderate' are effectively significant or not significant, subject to professional judgement, and effects rated as 'Imperceptible', 'Not Significant' and 'Slight' are considered to be not significant in EIA terms.

53. It should be noted that, for some topics, significance is established by simply comparing the magnitude of an impact with a quantified standard based on a level at which recognised effects are triggered. Where relevant, topic-specific methodologies followed during the EIA are clearly defined in each chapter, with assessments carried out by suitably qualified technical experts.

54. The generic methodology set out in this chapter for determining significance is overarching guidance to enable a more consistent approach and more comparative results within the overall impact assessment. There is, however, necessarily scope for deviation from this methodology, where deemed appropriate based on expert judgement and experience. Where required, topic-specific methodologies are detailed in relevant technical chapters, with their significance clearly defined.

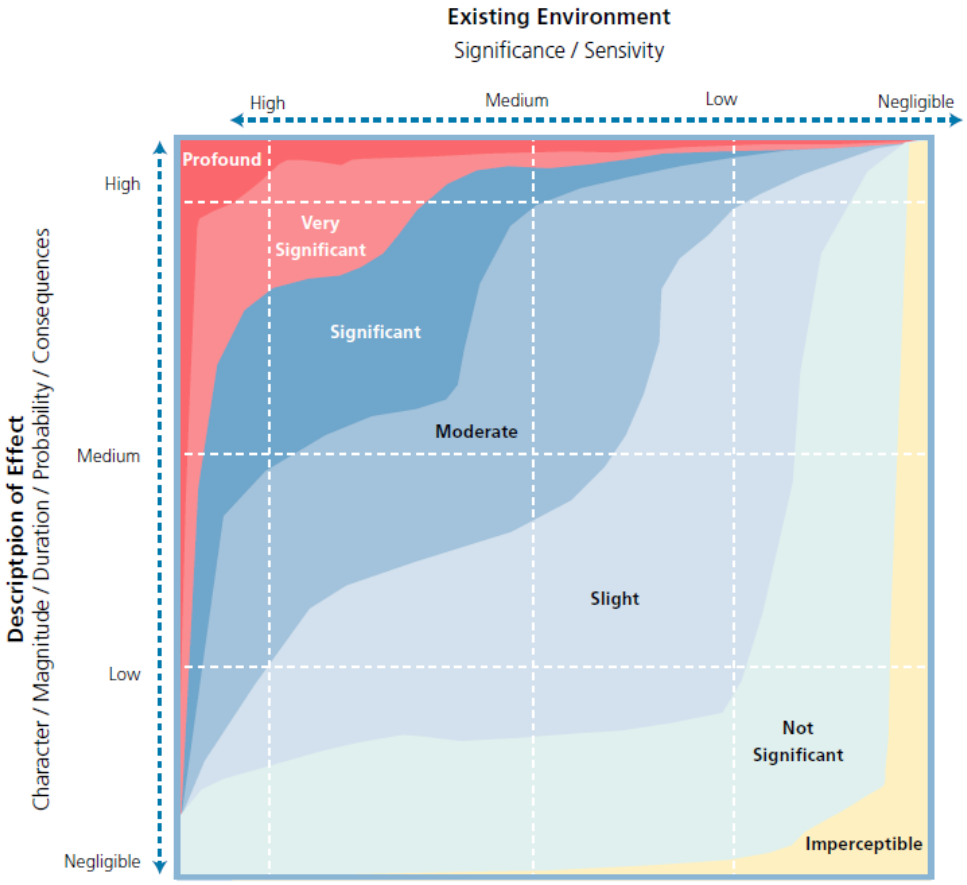

Plate 5-1 Matrix approach to determining significance of effect (EIAR Guidelines, EPA, 2022)

Table 5-3 Describing the significance of effects

Level	Definition	Significant in EIA terms?
Imperceptible	An effect capable of measurement but without significant consequences.	No
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.	No
Slight Effects	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.	No
Moderate Effects	An effect which alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.	Moderate is effectively significant/not significant subject to professional judgement
Significant Effects	An effect which, by its character, magnitude, duration or intensity, alters a sensitive aspect of the environment.	Yes
Very Significant	An effect which, by its character, magnitude, duration or intensity, significantly alters most of a sensitive aspect of the environment.	Yes
Profound Effects	An effect which obliterates sensitive characteristics.	Yes

5.10 Approach to addressing design flexibility

5.10.1 Background and process

55. Complex, large-scale infrastructure projects with a terrestrial and marine interface, such as the CWP Project, are consented and constructed over extended timeframes. The ability to adapt to changing supply chain, policy or environmental conditions, and to make use of the best available information to feed into project design, promotes environmentally sound and sustainable development. This ultimately reduces project development costs and therefore electricity costs for consumers, and reduces CO_2 emissions.

56. In this regard, the approach to the design development of the CWP Project has sought to introduce flexibility where required, among other things, to enable the best available technology to be constructed. At the same time the CWP Project also seeks to specify project boundaries, project components and project parameters wherever possible, having regard to known environmental constraints.

57. Recognising this requirement for flexibility for large-scale projects, the Planning and Development, Maritime and Valuation (Amendment) Act 2022 introduced amendments to the PDA to facilitate procedures that enable planning authorities to consider design flexibility as part of the assessment of planning applications.

58. Prior to making a planning application to ABP, an applicant is required to enter into pre-planning consultation with ABP, as per Section 287 of the PDA. In addition to this consultation, Section 287A of the PDA provides that an applicant may request an opinion from ABP under Section 287B with regard to design flexibility for a proposed development.

59. Full details of the CWP Section 287A and 287B process are provided in the **Planning Report.**

5.10.2 Section 287A and B

60. In line with the Section 287A and B process outlined above, the Applicant was required to procure an opinion from ABP to confirm that it was appropriate that the CWP Project planning application be made and determined before certain details of the development were confirmed.[1] ABP issued that opinion on 22 March 2024 (ABP-318588-23), as amended on 25 April 2024 (ABP-318588M), which confirmed that the CWP Project could make an application for permission before certain details of the project were confirmed. These details or groups of details are summarised in **Form 22 Supplementary information to accompany an application accompanied by an opinion on flexibility** (see **Planning Documents**).

61. A brief summary of the flexibility sought is described in the sections below.

5.10.3 Design elements included in Sections 287A and B

62. EIAR **Chapter 4 Project Description** describes the design approach that has been taken for each component of the CWP Project. Wherever possible, the location and detailed parameters of the CWP Project components are identified and described in full within the EIAR. However, for the reasons outlined above, certain design decisions and installation methods will be confirmed post-consent, requiring a degree of flexibility in the planning consent.

63. All of the design elements within the scope of Section 287A and B are described in the planning application by way of options or parameters, or a combination of options and parameters. It also uses parameters to describe two kinds of flexibility: dimensional flexibility, where the range of dimensions is described using a minimum to maximum range, and locational flexibility, where the range of locations is described by identifying a specific preferred location and a limit of deviation (LoD) from that location.

64. The Section 287B Opinion confirms the details, or groups of details, of the CWP Project that may be confirmed after the proposed application has been made and decided. These details or groups of details are limited and have been summarised in the sections below and are confirmed for the purposes of the planning application in **Form 22 Supplementary information to accompany an application accompanied by an opinion on flexibility** (see **Planning Documents**).

Generating station

- The Applicant is seeking limited flexibility on the size, and therefore the number, of wind turbine generators (WTGs), that will be installed. Two WTG layout options are proposed:
    - **WTG Layout Option A**, consisting of 75 WTGs with a rotor diameter of 250 m; and
    - **WTG Layout Option B**, consisting of 60 WTGs with a rotor diameter of 276 m
- The Applicant is seeking planning permission for both WTG layout options, but only one of them will be constructed (and therefore not both or a combination of both). The WTG parameters for each option are described as specific. These parameters include WTG hub height, blade tip height, tower diameter and blade chord.

[1] The Applicant request for an Opinion under section 287B on the design flexibility sought under section 287A was based on information contained in the Department of Housing issued Circular MPP 01/2023 - An Opinion on Design Flexibility for Maritime Development, published on 17 July 2023 and guidance from ABP received via letter on 31 July 2023, which set out the details that were required in relation to any request for a consultation under Section 287A(2) of the PDA.

- The preferred location of the WTGs for each of the two WTG layout options, including foundation scour protection, are described, with a LoD around the centre point of each WTG.
- Flexibility is sought in relation to the dimension of the monopile foundations in respect of height, diameter, length, embedment depth and grout volume.
- The preferred alignment of the inter-array cables (IACs) and interconnector cables for each of the two WTG layout options are described within a defined LoD.
- The length of the IACs and interconnector cables is described within defined minimum and maximum parameters.

Transmission component 1 – Offshore transmission infrastructure

- Flexibility is sought in relation to the dimension of the offshore substation structures (OSS) monopile foundations in respect of height, diameter, length, embedment depth and grout volume.
- Preferred locations for the OSSs, including foundation scour protection, are described, and these are the same as for the two WTG layout options. However, limited locational flexibility is sought in the form of an LoD around the centre point of each OSS.
- Similarly, preferred alignments for the offshore export cables are described. However, limited locational flexibility is sought within a defined LoD.
- The length of the offshore export cable is described within defined minimum and maximum parameters.

Transmission component 2 – Landfall

- The offshore export cables will be joined to the onshore export cables in separate underground chambers known as transition joint bays (TJBs). Specific locations of the TJBs are described as specific within a defined LoD.
- The preferred alignment of the landfall cable ducts, intertidal cable ducts and intertidal offshore export cables (non-ducted sections) are described within a defined LoD.

Transmission component 3 – Onshore transmission infrastructure

- The preferred location of the onshore substation revetment at the interface with the River Liffey is described within a defined LoD.

5.10.4 Design elements excluded in Sections 287A and B

65. Details of construction methodologies were not included in the Applicant's request for design flexibility under Section 287A. The Applicant is therefore applying for a permission that allows for the customary flexibility in the choice and parameters of final construction methodology, subject to whatever limit values, mitigation measures, monitoring and other requirements are provided for in the planning permission.

66. The approach to design flexibility supports a good understanding of the project that is being consented, and robust assessment of effects as described below.

5.10.5 Representative scenario assessment

67. Where the planning application seeks options (i.e. WTG layout options) or dimensional flexibility for infrastructure or installation methods, the impacts on the environment are assessed using a representative scenario approach.

68. To achieve this, and at the same time to produce application documents that are concise and readable, each relevant chapter of the EIAR identifies a representative scenario for each impact that forms the presentational basis of the assessment.

69. In addition, detailed consideration of the alternative scenario(s) is provided in an appendix to each relevant chapter, in order to demonstrate that the representative scenario for any given impact identifies, describes and assesses all of the likely significant effects on the environment. Where alternative scenarios could give rise to new effects or a materially different magnitude of effects, or will introduce a material change in the sensitivity of the receptor, these scenarios have been fully assessed and the results presented in the relevant EIAR chapter.

70. As noted above, this approach has been applied only where flexibility in project infrastructure design exists, either in terms of options or dimensional flexibility (i.e. a parameter range), or where flexibility for installation methods has been sought.

71. As is evident from **Section 5.10.3**, the Applicant is seeking limited flexibility in relation to options and dimensional flexibility in relation to the generating station and offshore transmission infrastructure (OfTI) only, with some limited flexibility also being sought for installation methods associated with these main components (i.e. offshore cable installation techniques). Therefore, a representative scenario approach is applied only for EIA topics that consider the construction and operational impacts of the generating station and OfTI, using an appendix to the main EIAR chapter, as noted above. For the onshore components of the CWP Project, no flexibility is sought by the Applicant in terms of options, dimensional flexibility or construction methods, and therefore a representative scenario approach or a standalone appendix to consider alternative scenarios is not required for EIAR chapters that consider only these components.

72. Overall, the most significant component of the CWP Project for which flexibility is sought is the WTG size, and therefore the number of WTGs that will be installed. Two WTG layout options are therefore proposed. This forms a key consideration in the EIA. Consequently, EIAR **Chapter 34 Summary of Residual Effects** provides a summary of the WTG layout option assessed as the representative scenario for each relevant impact in the EIA. As noted above, the other option is considered in Representative Scenario appendices to relevant EIAR chapters.

5.10.6 LoD assessment

73. In addition to the above, each EIAR chapter assesses the specific preferred location or alignment of the proposed infrastructure, while also considering the proposed LoD for that infrastructure, where relevant.

74. Again, for EIA topics that consider the construction and operational impacts of the generating station and OfTI, a consideration of proposed LoD for all relevant infrastructure is provided in a separate appendix to the main EIAR chapter. This demonstrates that the LoD would not give rise to new effects or a materially different magnitude of impact. Where alternative locations could give rise to new effects or a materially different magnitude of impact, then this too has been fully assessed in the relevant EIAR chapter.

75. As is evident from **Section 5.10.3**, there is some limited locational flexibility for the landfall and onshore components of the CWP Project. For EIAR chapters that consider only these components, consideration of the LoD is provided in the main EIAR chapter.

5.10.7 Summary

76. Taken together, the above approaches ensure that the EIAR identifies, describes and assesses:

1. Every impact type that could arise from the proposed development within the flexibility permitted;
2. Every materially different magnitude of impact that could arise from the proposed development within the flexibility permitted; and
3. Every materially different sensitivity of receptor that could arise from the proposed development within the flexibility permitted.

77. For certain construction stage impacts, the EIAR identifies, describes and assesses only the greatest magnitude of impacts. That limitation is proposed where the resources required to describe and assess all lesser magnitudes of impact would be wholly disproportionate to the additional information that would become available. For example, the traffic and transport assessment required detailed modelling that was run only for the greatest magnitude of impact (i.e. the scenario with the greatest number of construction vehicle movements). The development of these models is extremely resource intensive and their primary purpose is to demonstrate that the proposed development can be constructed within certain thresholds, and which mitigation measures will be imposed by way of planning condition. Any mitigations relevant to the scenario leading to greatest impact will also be appropriate for other scenarios leading to lesser impacts.

The approach taken to assessing design flexibility ensures a legally compliant EIA, consistent with the EIA Directive where the design flexibility has been appropriately assessed or considered. Furthermore, it ensures that the mitigation and monitoring described in the assessment of effects are appropriate for all options and methods proposed.

5.11 Approach to mitigation and monitoring

5.11.1 Mitigation and residual effects

78. Mitigation measures are developed to eliminate or reduce adverse effects identified in the EIA. The approach to mitigation for the CWP Project is a hierarchical one, which seeks to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment.

79. For the purposes of the EIA, two types of mitigation are defined:

- Primary (or embedded) mitigation: Throughout the development of the CWP Project, measures have been adopted as part of the evolution of the project design and approach to construction to avoid or otherwise reduce adverse impacts on the environment. These mitigation measures are referred to as ‘primary mitigation’. They are an inherent part of the CWP Project and are effectively ‘built in’ to the impact assessment.
- Additional (or secondary) mitigation: Additional mitigation includes measures that are not incorporated into the design of the CWP Project and require further activity to secure the required outcome of avoiding or reducing the significance of an effect. Additional mitigation is normally receptor specific and may make reference to management plans to control activities or specific commitments.

80. Following initial assessment, if the impact does not require additional mitigation (or none is possible) the residual effect remains the same. However, if additional mitigation measures are identified, impacts

are reassessed and all residual effects clearly described. The residual effects are identified and described in each chapter of the EIAR and summarised in **Chapter 34 Summary of Residual Effects**.

81. The mitigation associated with the CWP Project is identified and described in more detail in the relevant chapters of the EIAR (**Chapters 6–32**) and summarised in **Chapter 33 Summary of Mitigation and Monitoring**.

5.11.2 Monitoring

82. To verify predictions and to address areas of uncertainty, monitoring is proposed as a key aspect of environmental management for the construction and O&M of the CWP Project. Monitoring, where proposed, is described within the relevant chapters of the EIAR (**Chapters 6–32**) and summarised in **Chapter 33 Summary of Mitigation and Monitoring** and the **In Principle Project Environmental Monitoring Plan (IPPEMP)**.

5.12 Approach to cumulative, transboundary and inter-related effects

5.12.1 Cumulative effects assessment

83. A fundamental component of the EIA is to consider and assess the potential for cumulative effects of the project with other projects, plans and activities.

84. The EIAR Guidelines define cumulative effects as:

> *'The addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects.*
>
> *While a single activity may itself result in a minor impact, it may, when combined with other impacts (minor or insignificant), result in a cumulative impact that is collectively significant. For example, effects on traffic due to an individual industrial project may be acceptable; however, it may be necessary to assess the cumulative effects taking account of traffic generated by other permitted or planned projects.'*

85. The principal guidance document that has informed the approach to the CWP CEA is the Planning Inspectorate (PINS) for England 'Advice Note 17: Cumulative Effects Assessment' (PINS, 2019), which provides guidance on a staged process that can be used for Cumulative Effects Assessments (CEAs) for Nationally Significant Infrastructure Projects (NSIPs), as defined by the UK Planning Act 2008.

86. This guidance has been applied for a number of OWF and non-OWF projects in the UK and provides the developer with a structured approach to assessing cumulative effects. The guidance is also regularly applied in Ireland for large-scale projects, noting that there is no single, industry standard approach to CEA in Ireland, where it often varies between projects. Adopting this approach allows a comparable cross-jurisdictional approach from which to better understand the potential cumulative effects.

87. In developing the CEA methodology, the EPA Guidelines and Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions (European Commission, 1999) have also been considered.

88. More specific details of how the approach has been applied are set out in **Appendix 5.1 Cumulative Effects Assessment Methodology**. In summary, this document:

- Identifies the key legislation, policy and guidance relevant to the assessment, with reference to the latest updates in guidance and approaches;
- Details relevant consultation that has informed the scope of and approach to the CEA; and
- Explains the stages of the CEA process, including the approach to compiling the long and short list of other developments that have been considered within the CEA.

89. Each of the EIAR topic chapters (**Chapters 6–32**) include a CEA, which considers the other developments that have been carried through to the shortlist for that particular topic.

90. It should be noted that an in-combination assessment has been undertaken as part of the **Natura Impact Statement** (NIS), comprising the examination of possible effects on Natura 2000 sites from the CWP Project alone and in combination with other plans and projects. Elements of the approach to CEA are mirrored by the in-combination assessment for the NIS process, but there are also some differences, including the screening impact ranges that are applied for certain receptors.

91. The **NIS Volume 6 – In-combination Assessment - Part 1** and **NIS Volume 6 - In-combination Assessment – Part 2** sets out in detail the methodology that has been applied for the in-combination assessment.

5.12.2 Transboundary Effects

92. Transboundary effects arise when impacts from the development within one European Economic Area (EEA) state affects the environment of another EEA state(s).

93. The United Nations Economic Commission for Europe (UNECE) Convention on Environmental Impact Assessment in a Transboundary Context (referred to as the Espoo Convention) requires states to notify and consult each other on all major projects under consideration that are likely to have a significant adverse environmental impact across boundaries. This convention is not limited to EU Member States and includes Great Britain and Northern Ireland.

94. The potential for transboundary effects is considered in each EIAR topic chapter (**Chapters 6–32**). Where required, transboundary consultation has been undertaken with other EEA states and a record of this is provided in the consultation summary tables within each of the relevant EIAR chapters.

5.12.3 Inter-related effects

95. The inter-related effects assessment within each EIAR topic chapter (**Chapters 6–32**) considers the potential for all relevant effects across multiple topics to interact, spatially and temporally, to create inter-related effects on a receptor group. This includes bringing together the findings of the individual assessment chapters to describe potential additional effects that may be of greater significance when compared to individual effects acting on a receptor group.

96. The term ‘receptor group’ is used to highlight the fact that the proposed approach to the inter-relationships assessment does not consider every individual receptor considered in the relevant EIAR chapters, but instead focuses on groups of receptors that may be sensitive to inter-related effects.

97. **Appendix 5.2 Inter-related effects matrix** provides a matrix to show at a broad level where across the EIAR potential inter-related effects on different receptor groups have been identified.

5.13 References

98. Codling Wind Park (2020). Offshore Scoping Report [online] Available at: https://codlingwindpark.ie/library/ [Accessed October 2021]

99. Codling Wind Park (2021). Onshore Infrastructure Scoping Report [online] Available at: https://codlingwindpark.ie/library/ [Accessed October 2021]

100. Department of Housing, Planning and Local Government (2018). Circular PL05/2018 – Transposition into Planning Law of Directive 2014/52/EU amending Directive 2011/92/EU on the effects of certain public and private projects on the environment (the EIA Directive): Advice on the Administrative Provisions in Advance of Transposition

101. Department of Housing, Planning, Community and Local Government (2017) Transposition of 2014 EIA Directive (2014/52/EU) in the Land Use Planning and EPA Licensing Systems

102. Environmental Protection Agency (2022). Guidelines on the Information to be contained in Environmental Impact Assessment Reports

103. European Commission (2017). Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Reports

104. Department of the Housing, Planning, Community and Local Government (2018). Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment

105. Department of Housing, Local Government and Heritage (2023). Circular MPP 01/2023 – An Opinion on Design Flexibility for Maritime Development

106. European Commission (1999). Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions