codling wind park

Environmental Impact Assessment Report

Volume 4

Appendix 29.2 Representative Scenario and Limits of Deviation Assessment


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APPENDIX 29.2 REPRESENTATIVE SCENARIO AND LIMITS OF DEVIATION ASSESSMENT

1 Introduction

1. 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.

2. Case law recognises that the plans and particulars submitted with planning applications can allow for a certain limited flexibility, where this is applied reasonably and, in a context-specific way. In addition, section 287A of the Planning and Development Act (PDA) (as inserted by the Planning and Development, Maritime and Valuation (Amendment) Act 2022) has expanded the flexibility available and allows planning applications to be made and decided before the Applicant has confirmed certain details of the project.

3. Due to the complexity of the Codling Wind Park (CWP) Project, significant and rapid progression in wind farm technology development, potential changes in environmental conditions and in policy and legislation, the Applicant considers that consenting a degree of design flexibility is appropriate and legally compliant.

4. In this regard the approach to the design development of the CWP Project has sought to introduce flexibility where required to enable the best available technology to be constructed, whilst at the same time to specify project boundaries, project components and project parameters wherever possible, whilst having regard to known environmental constraints.

2 Approach to Presenting the Project Design

5. The approach to the design development of the CWP Project considers permanent infrastructure, temporary infrastructure and installation methods.

6. In general, the CWP Project has sought to specify the location, scale and extents of permanent and temporary infrastructure, however in some cases a degree of design flexibility is required. Subject to the detail concerned, this flexibility is presented in three ways:

   - **Options**: Consent is sought for up to two options for certain permanent infrastructure details and layouts, for example, wind turbine generator (WTG) Layout Option A (250 m rotor diameter) or WTG Option B (276 m rotor diameter). Each design option is described in detail in **Chapter 4 Project Description**, which provides the details associated with each option.
   - **Dimensional flexibility**: Dimensional flexibility is described as a limited parameter range i.e. upper (maximum) and lower (minimum) values for a given detail such as cable length.
   - **Locational flexibility**: Locational flexibility of permanent infrastructure is described as Limit of Deviation (LoD) from a specific point or alignment.

7. Installation methods for the permanent infrastructure have been identified and described in full, however, as with the design of permanent infrastructure, a degree of flexibility is required as final

decisions on methods and techniques to be employed will not be made until the appointment of the primary contractors closer to the time of construction.

8. Where required, flexibility concerning installation methods is presented by means of options. The details associated with the installation methods are specified, where possible, or otherwise described as a limited parameter range i.e. upper (maximum) and lower (minimum) values for a given detail.

3 Representative Scenario Assessment

9. The CWP Project Environmental Impact Assessment Report (EIAR) will identify, describe and assess all of the likely significant effects of the proposed development on the environment. To achieve this for all options and dimensional flexibility, and at the same time to produce application documents that are concise and readable, each chapter of the EIAR will assess a selection of representative scenarios, rather than assessing every possible scenario. A “representative scenario” is a combination of options and dimensional flexibility that has been selected to represent all of the likely significant effects of the project on the environment. Some topics may require several representative scenarios to be identified to ensure all impacts are identified, described and assessed.

10. For Population this analysis for construction and operation and maintenance (O&M) phase impacts is presented in **Table 1** and **Table 2,** respectively. Each table identifies one or more representative scenarios for each impact with supporting text to demonstrate that no other scenarios would give rise to new or materially different effects; taking into consideration the potential impact of other scenarios on the magnitude of the impact or the sensitivity of the receptor(s) that is being considered.

11. Where the potential for a new or materially different impact is identified, then further representative scenarios must be assessed in full within the main chapter.

12. This is distinct from the approach to assessing locational flexibility, where differences in impacts are assessed in this Appendix. The difference in approaches arises because there is a much higher degree of confidence in the locations and alignments assessed in the main chapter than there is for the final options and dimensions.

13. Overall, this approach will ensure that the EIAR will identify, describe and assess:

- Every impact type that could arise from the proposed development, taking account of the full range of options and dimensional flexibility;
- Every materially different magnitude of impact that could arise from the proposed development within the proposed options and dimensional flexibility; and
- Every materially different sensitivity of receptor that could arise from the proposed development within the proposed options and dimensional flexibility.

Table 1 Representative scenario assessment - construction phase impacts

Impact	Relevant project details		Representative scenario(s) and notes / assumptions	Rationale for representative scenario(s)	
Impact 2: Impact on the tourism economy during the construction phase of the offshore infrastructure**.**	Offshore infrastructure			Questions to demonstrate assessment has considered all scenarios	Response
	N/A		This impact relates to changes in the tourism economy during the construction phase of the offshore infrastructure. Changes in the tourism economy would not be dictated by WTG layout options or installation options for offshore infrastructure. As such, layout and installation options would not influence the determination of an overall magnitude of impact or introduce new impacts relative to tourism economy. The identification of a representative scenario relative to layout and installation methods was considered not applicable for **Impact 2.**	*1. Are there infrastructure layout options (permanent or temporary) which may introduce new impacts?* *Note - this could be a new impact entirely or the introduction of an existing impact pathway to a new receptor.* *2. Are there infrastructure layout options (permanent or temporary) which may introduce a materially different magnitude of impact?* *3. Are there infrastructure layout options (permanent or temporary) which may introduce a material change in the sensitivity of the receptor(s) (greater or lesser)?* *4. Are there alternative installation methods which may introduce new impacts?* *5. Are there alternative installation methods which may introduce a materially different magnitude of impact?* *6. Are there alternative installation methods which may materially alter the sensitivity of the relevant receptor(s) (greater or lesser).*	1. N/A 2. N/A 3. N/A 4. N/A 5. N/A 6. N/A
Impact 3: Economic effects associated with the construction phase of the CWP Project.	The CWP Project incorporating the offshore infrastructure		Representative scenario(s) and notes / assumptions	Questions to demonstrate assessment has considered all scenarios	Response
	Total FTE (years) created locally (direct & indirectly) during construction stage (installation and commissioning)	390 (190 direct +200 indirect)	This impact relates to changes in the economic and employment profile relative to the construction phase of the CWP Project. Changes in economic and employment profile would not be dictated by wind turbine generator (WTG) layout options or installation options for the offshore infrastructure. It is	*1. Are there infrastructure layout options (permanent or temporary) which may introduce new impacts?* *Note - this could be a new impact entirely or the introduction of an existing impact pathway to a new receptor.* *2. Are there infrastructure layout options (permanent or temporary)*	1. N/A. 2. N/A 3. N/A 4. N/A 5. N/A 6. N/A
	Total GVA (million €) created locally (directly & indirectly) during construction stage (installation and commissioning)	45 (15 direct +30 indirect)			

Impact	Relevant project details		Representative scenario(s) and notes / assumptions	Rationale for representative scenario(s)	
			noted that the OTI presents a fixed design. An Economic Impact Analysis was conducted by BVG Associates which considered the economic generation and employment likely to be provided by each stage of the CWP Project. As such, offshore infrastructure layout and installation options would not influence the determination of an overall magnitude of impact or introduce new impacts relative to economic and employment profile. The identification of a representative scenario relative to layout and installation methods was considered not applicable for **Impact 3.**	*which may introduce a materially different magnitude of impact?* *3. Are there infrastructure layout options (permanent or temporary) which may introduce a material change in the sensitivity of the receptor(s) (greater or lesser)?* *4. Are there alternative installation methods which may introduce new impacts?* *5. Are there alternative installation methods which may introduce a materially different magnitude of impact?* *6. Are there alternative installation methods which may materially alter the sensitivity of the relevant receptor(s) (greater or lesser).*	

Table 2 Representative scenario assessment - operational phase impacts

Impact	Relevant project details	Representative scenario(s) and notes / assumptions	Rationale for representative scenario(s)	
Impact 1: Impacts on recreational receptors associated with the O&M phase of the offshore infrastructure	Offshore Infrastructure		Questions to demonstrate assessment has considered all scenarios	Response
	N/A	This impact relates to potential O&M phase impacts from the offshore infrastructure on recreational receptors. This impact references out to the findings of topic specific assessments, where these receptors have been considered. This includes: • **Chapter 15 Seascape Landscape and Visual Impact Assessment** • **Chapter 16 Shipping and Navigation**. Representative scenario is specifically addressed within these topic specific assessments.	*1. Are there infrastructure layout options which may introduce new impacts?* *Note - this could be a new impact entirely or the introduction of an existing impact pathway to a new receptor.* *2. Are there infrastructure layout options which may introduce a materially different magnitude of impact (greater or lesser)?*	1. N/A. 2. N/A 3. N/A

Impact	Relevant project details		Representative scenario(s) and notes / assumptions	Rationale for representative scenario(s)	
			As such, the identification of a representative scenario was considered to be not applicable for **Impact 1.**	*3. Are there infrastructure layout options which may introduce a material change in the sensitivity of the receptor(s) (greater or lesser)*	
Impact 2: Impacts on the tourism economy associated with the operation and maintenance of the offshore infrastructure.	Offshore Infrastructure				
	N/A		This impact relates to potential changes in tourism economy which would be associated with the operational and maintenance phase of the offshore infrastructure. Impacts would not be dictated by permanent layout options for the offshore infrastructure, as these would have no discernible difference on the tourism economies. As such, permanent layout options would not influence the determination of an overall magnitude of impact or introduce new impacts relative to the tourism economy. As such, the identification of a representative scenario was considered to be not applicable for **Impact 2.**	*1. Are there infrastructure layout options which may introduce new impacts?* *Note - this could be a new impact entirely or the introduction of an existing impact pathway to a new receptor.* *2. Are there infrastructure layout options which may introduce a materially different magnitude of impact (greater or lesser)?* *3. Are there infrastructure layout options which may introduce a material change in the sensitivity of the receptor(s) (greater or lesser)*	1. N/A. 2. N/A 3. N/A
Impact 3: Economic effects associated with the operation and maintenance of the CWP Project.	The CWP Project incorporating the offshore infrastructure				
	Total FTE (years) created locally (directly & indirectly) during the O&M phase	3,750 (2,010 direct + 1,740 indirect)	This impact relates to potential changes in employment and economic benefits which would be associated with the operational and maintenance phase of the CWP Project. This impact has considered aspects such as employment numbers and economic generation during the operational and maintenance phase. Impacts would not be dictated by permanent layout options for the CWP Project, as these would have no discernible difference on employment and economic benefits. As such, permanent layout options would not influence the determination of an overall magnitude of impact or introduce new impacts relative to employment and economic benefits. As such, the identification of a representative scenario was considered to be not applicable for Impact 3.	*1. Are there infrastructure layout options which may introduce new impacts?* *Note - this could be a new impact entirely or the introduction of an existing impact pathway to a new receptor.* *2. Are there infrastructure layout options which may introduce a materially different magnitude of impact (greater or lesser)?* *3. Are there infrastructure layout options which may introduce a material change in the sensitivity of the*	1. N/A. 2. N/A 3. N/A
	Total GVA (million €) created locally (directly & indirectly) during the O&M phase	470 (270 direct + 200 indirect)			

Impact	Relevant project details		Representative scenario(s) and notes / assumptions	Rationale for representative scenario(s)	
				receptor(s) (greater or lesser)?	

4 Limit of Deviation Assessment

14. As described in **Section 1** of this document, locational flexibility of permanent and temporary infrastructure is described as a LoD from a specific point or alignment.

15. The project components for which a LoD has been defined are presented in **Table 3**. These are further described in EIAR **Chapter 4 Project Description** and have been presented on the planning drawings that accompany the planning application.

Table 3 Defined limits of deviation

Project component	LoD
Offshore project components	
WTGs	100 m from the centre point of each WTG location
WTG monopile locations	Same as WTGs
WTG monopile scour protection	Same as WTGs
OSSs	100 m from the centre point of each OSS location
OSS monopile locations	Same as OSSs
OSS monopile scour protection	Same as OSSs
IACs and interconnector cables	100 m either side of the preferred alignment of each IAC and interconnector cable 200 m from the centre point of each WTG location
Offshore export cables	250 m either side of the preferred alignment within the array site. The offshore export cable corridor (OECC) outside of the array site
Landfall	
Transition Joint Bays (TJBs)	0.5 m either side (i.e. east / west) of the preferred TJB location
Landfall cable ducts (and associated offshore export cables within the ducts)	Defined LoD boundary with 30 – 55 m horizontal width
Intertidal cable ducts (and associated offshore export cables within the ducts)	The OECC
Intertidal offshore export cables (non ducted sections)	The OECC
Onshore substation	
Location of onshore substation revetment perimeter structure	Defined LoD for sheet piling at toe of the revetement with 0.5 – 1.0 m horizontal width

16. For the purposes of the EIAR, the main chapter for Population assesses the specific preferred location for permanent infrastructure. However, this document provides further analysis to determine if the proposed LoD for permanent infrastructure may give rise to any new or materially different effects, taking into consideration the potential impact of the proposed LoD on the magnitude of the impact.

17. For Population this analysis for construction and O&M phase impacts is presented in Table 4 and Table 5 respectively. Where the potential for a LoD to cause a new or materially different effect is identified, then this is noted in the tables below and is considered in full within the main chapter.

Table 4 Limit of deviation assessment - construction phase impacts

Impact	Relevant project element	Limit of deviation	Questions to demonstrate assessment has considered all scenarios	Response
Impact 1: Impacts on onshore and nearshore recreation receptors during the construction phase of the OTI and Landfall works.	**OTI & Landfall**		*1. Does the proposed LoD (locational flexibility) introduce new impacts? (i.e., the introduction of an existing impact pathway to a new receptor).* *2. Does the proposed LoD (locational flexibility) introduce a materially different magnitude of impact?*	1. No, the implementation of the LoD do not introduce any new impact receptor pathways that have not already been considered as part of the assessment. 2. No, the proposed LoD do not introduce a materially different magnitude of impact
	Landfall			
	TJBs	0.5 m either side (i.e. east / west) of the preferred TJB location.		
	Landfall cable ducts (and associated offshore export cables within the ducts)	Defined LoD boundary.		
	Intertidal cable ducts (and associated offshore export cables within the ducts)	The OECC.		
	Intertidal offshore export cables (non ducted sections)	The OECC.		
	Onshore substation			
	Location of onshore substation revetment perimeter structure	Defined LoD for sheet piling at toe of the revetement.		
Impact 2: Impact on the tourism economy during the construction of the Offshore Infrastructure.	**Offshore Infrastructure**		*1. Does the proposed LoD (locational flexibility) introduce new impacts? (i.e., the introduction of an existing impact pathway to a new receptor).* *2. Does the proposed LoD (locational flexibility) introduce a materially different magnitude of impact?*	1. No, the implementation of the LoD do not introduce any new impact receptor pathways that have not already been considered as part of the assessment. 2. No, the proposed LoD do not introduce a materially different magnitude of impact. The location of these aspects within the LoD would be immaterial to consideration of impacts on the tourism economy.
	WTGs	100m from the centre point of each WTG location.		
	WTG monopile locations	Same as WTGs.		
	WTG monopile scour protection	Same as WTGs.		
	OSSs	100 m from the centre point of each OSS location.		
	OSS monopile locations	Same as OSSs.		
	OSS monopile scour protection	Same as OSSs.		
	IACs and interconnector cables	100m either side of the preferred alignment of each IAC and interconnector cable 200m from the centre point of each WTG location.		
	Offshore export cables	250 m either side of the preferred alignment within the array site. The OECC outside of the array site.		
	The CWP Project			

Impact 3: Economic effects associated with construction of CWP Project	Refer to parameters for **Impact 1** for OTI & Landfall Offshore Infrastructure Refer to parameters for **Impact 2** for Offshore Infrastructure.	*1. Does the proposed LoD (locational flexibility) introduce new impacts? (i.e., the introduction of an existing impact pathway to a new receptor).* *2. Does the proposed LoD (locational flexibility) introduce a materially different magnitude of impact?* .	1. No, the implementation of the LoD do not introduce any new impact receptor pathways that have not already been considered as part of the assessment. 2. No, the consideration of economic and employment benefits are immaterial of the infrastructure locations within the LOD. The implementation of the LoD do not introduce a materially different magnitude of impact.

Table 5 Limit of deviation assessment - operational phase impacts

Impact	Relevant project element	Limit of deviation	Questions to demonstrate assessment has considered all scenarios	Response
Impact 1: Impacts on recreational receptors associated with the O&M phase of the offshore infrastructure.	**Offshore Infrastructure**		*1. Does the proposed LoD (locational flexibility) introduce new impacts? (i.e. the introduction of an existing impact pathway to a new receptor).* *2. Does the proposed LoD (locational flexibility) introduce a materially different magnitude of impact?*	1. No, the implementation of the LoD do not introduce any new impact receptor pathways that have not already been considered as part of the assessment. 2. No, the proposed LoD do not introduce a materially different magnitude of impact
	WTGs	100m from the centre point of each WTG location		
	WTG monopile locations	Same as WTGs.		
	WTG monopile scour protection	Same as WTGs.		
	OSSs	100 m from the centre point of each OSS location		
	OSS monopile locations	Same as OSSs		
	OSS monopile scour protection	Same as OSSs		
	IACs and interconnector cables	100m either side of the preferred alignment of each IAC and interconnector cable 200m from the centre point of each WTG location		
	Offshore export cables	250 m either side of the preferred alignment within the array site. The OECC outside of the array site		
Impact 2: Impacts on the tourism economy associated with the O&M phase of the offshore infrastructure	**Offshore Infrastructure** Refer to parameter details for **Impact 1**		*1. Does the proposed LoD (locational flexibility) introduce new impacts? (i.e. the introduction of an existing impact pathway to a new receptor).* *2. Does the proposed LoD (locational flexibility) introduce a materially different magnitude of impact?*	1. No, the implementation of the LoD do not introduce any new impact receptor pathways that have not already been considered as part of the assessment. 2. No, the proposed LoD do not introduce a materially different magnitude of impact. The location of these aspects within the LoD would be immaterial to consideration of impacts on the tourism economy.
	Offshore Infrastructure		Questions to demonstrate assessment has considered all scenarios	Response

Impact	Relevant project element	Limit of deviation	Questions to demonstrate assessment has considered all scenarios	Response
Impact 3: Economic effects associated with the O&M of the CWP Project.	Refer to parameter details for **Impact 1**		*1. Does the proposed LoD (locational flexibility) introduce new impacts? (i.e. the introduction of an existing impact pathway to a new receptor).*	1. No, the implementation of the LoD do not introduce any new impact receptor pathways that have not already been considered as part of the assessment.
	OTI & Landfall			
	Refer to parameter details for **Impact 2**		*2. Does the proposed LoD (locational flexibility) introduce a materially different magnitude of impact?*	2. No, the consideration of economic and employment benefits are immaterial of the infrastructure locations within the LOD. The implementation of the LoD do not introduce a materially different magnitude of impact.