codling wind park

Environmental Impact Assessment Report

Volume 4

Appendix 12.2 Representative Scenario and Limits of Deviation Assessment


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Table of contents

List of tables

APPENDIX 12.2 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 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 Commercial Fisheries 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 1: Loss or restricted access to established fishing grounds within the array site	Array site (including WTGs, inter-array cables (IACs), interconnectors and offshore substation structures (OSSs))	WTG Option A	WTG Option B		Questions to demonstrate assessment has considered all scenarios	Response
	Permanent infrastructure			The duration of the construction phase relates to the extent of fishing exclusion and hence the potential to restrict access to fishing grounds. As the duration is the same for both Options, the infrastructure (number of WTGs) would lead to a representative scenario under which fishing activities would be excluded from the offshore development area. WTG Option A forms the representative scenario as this represents the greatest level of temporary loss or restricted access to established fishing grounds, and therefore WTG Option A forms the basis of the assessment for Impact 1: in this chapter. WTG Option B, or any other scenario resulting in a lower level of loss or restricted access would not introduce new or different impacts and would not result in an effect of materially different significance. The construction footprint comprises the full permanent seabed area of structures, scour protection, cable crossings and cable protection plus the temporary footprint of preparatory works. The impact area also incorporates advisory safe passing zones around major activities. It is important to note that the temporal aspect of temporary works will not apply in full throughout the offshore construction phase, as activities will be completed sequentially.	*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. No, WTG Option B would not introduce any new impact receptor pathways that have not already been considered as part of the assessment. 2. No, WTG Option B is highly unlikely to give rise to a materially different magnitude of impact. 3. No, WTG Option B will not influence the sensitivity of the receptor that is being assessed. As set out in **Section 12.4** of the main EIAR chapter, sensitivity considers a combination of tolerance, adaptability, and recoverability of the receptor, which is not influenced by details or characteristics of the project. 4. No, the installation methods do not have the potential to introduce any new impact receptor pathways that have not already been considered as part of the assessment. 5. No, there are no additional installation methods that are likely to introduce a materially different magnitude. 6. No, the installation methods will not influence the sensitivity of the receptor that is being assessed. As set out in **Section 12.4** of the main EIAR chapter, sensitivity considers a combination of tolerance, adaptability, and recoverability of the receptor, which is not influenced by details or characteristics of the project.
	Progressive installation of WTGs	75	60			
	Progressive installation of OSSs	3				
	Array site total area (km^2)	125				
	Progressive installation of inter-array and interconnector cables across the array site for the duration of construction (i.e., fishing activities cannot be undertaken in the area of inter-array or interconnector cable installation)					
	Length of inter-array cabling on the seabed (km)	120 - 139	112 - 130			
	Length of interconnector cabling on the seabed (km)	7.4 - 8.6				
	Length of inter-array and interconnector cabling requiring cable protection (km)	29.8				
	Total area of seabed covered by cable protection (m2)	208,600				
	IACs and interconnectors minimum depth of cover (m)	1.0				
	Installation methods and effects					
	Total construction duration for the WTGs and the OSSs (months)	30				
Impact 2: Loss or restricted access to established fishing grounds within the OECC	Offshore export cable corridor (OECC)	WTG Option A	WTG Option B		Questions to demonstrate assessment has considered all scenarios	Response
	Permanent infrastructure			There are no differences between Option A and Option B in relation		
	Total length of offshore export cables (km)	126 - 146				

Impact	Relevant project details			Representative scenario(s) and notes / assumptions	Rationale for representative scenario(s)	
	Total area of seabed covered by export cable protection (m^2)	105,000		to the OECC, and therefore only a single assessment scenario exists. This scenario considers the highest potential length of offshore export cables and associated extent of cable protection.	*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).*	There are no differences between Option A and Option B in relation to the OECC, and therefore only a single assessment scenario exists.
	Offshore export cables minimum depth of cover (m)	1.4				
	Installation methods and effects					
	Total construction duration for the cable installation in the OECC (months)	12				
Impact 3: Displacement of fishing activity into other areas	Array site and OECC	WTG Option A	WTG Option B		Questions to demonstrate assessment has considered all scenarios	Response
	Construction activities resulting in the maximum level of displacement of fishing activity are a product of the areas of temporary exclusion as defined in Construction Impact 1 and 2.					
Impact 4: Interference with fishing activities	Array site (including WTGs, OSSs and offshore export cables within the array site) and Offshore export cable corridor	WTG Option A	WTG Option B		Questions to demonstrate assessment has considered all scenarios	Response
	Permanent infrastructure			The infrastructure (number of WTGs & OSSs) would lead to a scenario under which fishing activities would be excluded from the offshore project area. WTG Option A forms the representative scenario as this represents the greatest level of	*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.*	1. No, WTG Option B would not introduce any new impact receptor pathways that have not already been considered as part of the assessment. 2. No, WTG Option B is highly unlikely to give rise to a materially different magnitude of impact.
	Progressive installation of WTGs	75	60			
	Progressive installation of OSSs	3				
	Installation methods and effects					
	Peak vessels on site simultaneously	38				

Impact	Relevant project details			Representative scenario(s) and notes / assumptions	Rationale for representative scenario(s)	
				the maximum potential disruption to established steaming routes, and therefore WTG Option A forms the basis of the assessment for Impact 4: in this chapter. WTG Option B, or any other scenario resulting in a lower level of disruption to established steaming routes would not introduce new or different impacts and would not result in an effect of materially different significance.	*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).*	3. No, WTG Option B will not influence the sensitivity of the receptor that is being assessed. As set out in **Section 12.4** of the main EIAR chapter, sensitivity considers a combination of tolerance, adaptability, and recoverability of the receptor, which is not influenced by details or characteristics of the project. 4. No, the installation methods would not introduce any new impact receptor pathways that have not already been considered as part of the assessment. 5. No, there are no additional installation methods that are likely to introduce a materially different magnitude. 6. No, the installation methods will not influence the sensitivity of the receptor that is being assessed. As set out in **Section 12.4** of the main EIAR chapter, sensitivity considers a combination of tolerance, adaptability, and recoverability of the receptor, which is not influenced by details or characteristics of the project.
Impact 5: Potential for snagging of gear	Array site and OECC	WTG Option A	WTG Option B		Questions to demonstrate assessment has considered all scenarios	Response
	Installation methods and effects	Peak vessels / round trips		Offshore works, such as construction anchoring, jack up legs or cable trenching can produce seabed obstructions which can represent a potential fastening risk and damage to fishing gear. Potential for objects to be dropped on the seabed during construction-related activities. The maximum number of vessels transits and the maximum number of round trips would result in the greatest potential for conflict / interaction between construction vessels and fishing vessels and gear. WTG Option A forms the representative scenario as this represents the maximum number of vessels transits and the maximum number of round trips and, and therefore WTG Option A forms the basis of the assessment	*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?*	1. No, WTG Option B would not introduce any new impact receptor pathways that have not already been considered as part of the assessment. 2. No, WTG Option B is highly unlikely to give rise to a materially different magnitude of impact. 3. No, WTG Option B will not influence the sensitivity of the receptor that is being assessed. As set out in **Section 12.4** of the main EIAR chapter, sensitivity considers a combination of tolerance, adaptability, and recoverability of the receptor, which is not influenced by details or characteristics of the project. 4. No, the installation methods do not have the potential to introduce any new impact receptor pathways that have not already been considered as part of the assessment. 5. No, there are no additional installation methods that are likely to introduce a materially different magnitude of impact.
	Peak vessels on site simultaneously	38				
	Seabed preparation vessels (including surveys, unexploded ordnance (UXO) investigation and boulder clearance)	4 / 20				
	TP installation vessels	7 / 43	7 / 35			
	Scour protection installation vessels (including filter layer and seabed preparation)	7 / 107	7 / 86			
	WTG installation vessels (includes installation vessel, feeder vessel and anchor handlers)	4 / 50	4 / 65			
	OSS topside installation vessels	4 / 20	4 / 20			
	Seabed preparation vessels (including Trailing Suction Hopper Dredger (TSHD) for sand wave clearance and disposal off site, pre-lay grapnel run (PLGR), offshore substation structure (OSOS) removal,	7 / 548	7 / 548			

Impact	Relevant project details			Representative scenario(s) and notes / assumptions	Rationale for representative scenario(s)	
	boulder clearance, pre-crossing protection and survey vessel)			for Impact 5: in this chapter. WTG Option B, or any other scenario resulting in a lower number of vessels and duration of the construction programme would not introduce new or different impacts and would not result in an effect of materially different significance.	*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).*	6. No, the installation methods will not influence the sensitivity of the receptor that is being assessed. As set out in **Section 12.4** of the main EIAR chapter, sensitivity considers a combination of tolerance, adaptability, and recoverability of the receptor, which is not influenced by details or characteristics of the project.
	Array cable and interconnector installation vessels (includes support, cable protection and anchor handling vessels	6 / 39	6 / 39			
	Export cable installation vessels (including at landfall) (includes support, cable protection and anchor handling vessels)	5 / 43	5 / 43			
	Nearshore export cable installation vessels (including at landfall) (includes barges, tugs, and small work boats)	17 / 118	17 / 118			
	Commissioning vessels	2 / 48	2 / 48			
	General support vessels (including guard vessel, project Service Operation Vessel (SOV) and work boats)	4 / 506	4 / 506			
	Crew Transfer Vessels (CTVs)	2 / 824	2 / 824			
	Maximum total construction vessels	75 / 2,409	75 / 2,387			
Impact 6: Increased steaming times to fishing grounds	Array site and OECC	WTG Option A	WTG Option B		Questions to demonstrate assessment has considered all scenarios	Response
	Progressive installation of WTGs	75	60	The infrastructure (number of WTGs) would lead to a scenario under which fishing activities would be excluded from the offshore project area. WTG Option A forms the representative scenario as this represents the greatest level of potential disruption to established steaming routes, and therefore WTG Option A forms the basis of the assessment for Impact 6: in this chapter. WTG Option B, or any other scenario resulting in a lower level of disruption to established steaming routes would not introduce new or different impacts and would not result in an effect of materially different significance.	*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)?*	1. No, WTG Option B would not introduce any new impact receptor pathways that have not already been considered as part of the assessment. 2. No, WTG Option B is highly unlikely to give rise to a materially different magnitude of impact. 3. No, WTG Option B will not influence the sensitivity of the receptor that is being assessed. As set out in **Section 12.4** of the main EIAR chapter, sensitivity considers a combination of tolerance, adaptability, and recoverability of the receptor, which is not influenced by details or characteristics of the project. 4. No, the installation methods would not introduce any new impact receptor pathways that have not already been considered as part of the assessment.
	Progressive installation of OSSs	3				
	Installation methods and effects					
	Peak vessels on site simultaneously	38				

Impact	Relevant project details			Representative scenario(s) and notes / assumptions	Rationale for representative scenario(s)	
					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).*	5. No, there are no additional installation methods that are likely to introduce a materially different magnitude of impact. 6. No, the installation methods will not influence the sensitivity of the receptor that is being assessed. As set out in **Section 12.4** of the main EIAR chapter, sensitivity considers a combination of tolerance, adaptability, and recoverability of the receptor, which is not influenced by details or characteristics of the project.
Impact 7: Effects on commercially exploited species	Array site and OECC	WTG Option A	WTG Option B		Questions to demonstrate assessment has considered all scenarios	Response
	As described in **Appendix 9.2 for Fish, Shellfish and Turtle Ecology**					

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 & 2: Loss of grounds or restricted access to established fishing grounds	Array site and OECC	WTG Option A	WTG Option B		Questions to demonstrate assessment has considered all scenarios	Response
	Permanent infrastructure (resulting in area lost / restriction in access to fishing)			WTG Option A represents the maximum loss of fishing grounds and therefore forms the representative scenario for the assessment. WTG Option B would not introduce new or different impacts and would not result in an effect of materially different significance.	*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. No, WTG Option B would not introduce any new impact receptor pathways that have not already been considered as part of the assessment. 2. No, WTG Option B is highly unlikely to give rise to a materially different magnitude of impact. 3. No, WTG Option B will not influence the sensitivity of the receptor that is being assessed. As set out in **Section 12.4** of the main EIAR chapter, sensitivity considers a combination of tolerance, adaptability, and recoverability of the receptor, which is not influenced by details or characteristics of the project.
	Number of WTGs	75	60			
	Number of OSSs	2				
	Number of intertidal equipment storage platforms	1	1			
	Number of LiDAR	One fixed, two floating LiDAR	One fixed, two floating LiDAR			
	Length of inter-array cabling on the seabed (km)	120 - 139	112 - 130			
	Length of interconnector cabling (km)	7.4 -8.6				
	Total length of offshore export cables (km)	126 - 146				
	Total area of seabed covered by inter-array and interconnector cable protection (m^2)	208,600	194,600			
	Total area of seabed covered by export cable protection (m^2)	105,000				
	O&M vessels					
	Peak vessels on site simultaneously	14				
Impact 3: Displacement of fishing activity into other areas	Array site (including WTGs, OSSs and offshore export cables within the array site) and Offshore export cable corridor	WTG Option A	WTG Option B		Questions to demonstrate assessment has considered all scenarios	Response
	Operational activities resulting in the maximum level of displacement of fishing activity are a product of the areas of temporary exclusion as defined in O&M phase impacts 1 & 2.					
Impact 4: Interference with fishing activities	Array site and OECC	WTG Option A	WTG Option B		Questions to demonstrate assessment has considered all scenarios	Response
	O&M vessels					
	Peak vessels on site simultaneously	14		There are no differences between WTG Option A and		

Impact	Relevant project details			Representative scenario(s) and notes / assumptions	Rationale for representative scenario(s)	
	Number of annual vessel round trips	7,027		WTG in relation to the O&M vessel activities, and therefore only a single assessment scenario exists. The vessel numbers represent the maximum potential number of vessel transits during O&M and as such the greatest potential for conflict between operation and maintenance vessels and fishing operations.	*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)?*	There are no differences between WTG Option A and WTG in relation to the O&M vessel activities, and therefore only a single assessment scenario exists.
Impact 5: Potential for snagging	Array site and OECC	WTG Option A	WTG Option B		Questions to demonstrate assessment has considered all scenarios	Response
	Permanent infrastructure			WTG Option A represents the greatest presence of obstacles on the seabed that may represent a fastening/safety risk to fishing vessels and therefore forms the representative scenario for the assessment.	*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. No, WTG Option B would not introduce any new impact receptor pathways that have not already been considered as part of the assessment. 2. No, WTG Option B is highly unlikely to give rise to a materially different magnitude of impact. 3. No, WTG Option B will not influence the sensitivity of the receptor that is being assessed. As set out in Section 12.4 of the main EIAR chapter, sensitivity considers a combination of tolerance, adaptability, and recoverability of the receptor, which is not influenced by details or characteristics of the project.
	Length of inter-array cabling on the seabed (km)	120 - 139	112 - 130			
	Length of interconnector cabling (km)	7.4 -8.6				
	Total length of offshore export cables (km)	208,600	194,600			
	Total area of seabed covered by inter-array and interconnector cable protection (m^2)	105,000				
	Total area of seabed covered by export cable protection (m^2)	105,000				
	IACs and interconnectors minimum depth of cover (m)	1.0				
	Offshore export cables minimum depth of cover (m)	1.4				
Impact 6: Increased steaming times to fishing grounds	Array site and OECC	WTG Option A	WTG Option B		Questions to demonstrate assessment has considered all scenarios	Response
	Operational activities resulting in the maximum level of displacement of fishing activity are a product of the areas of temporary exclusion as defined in O&M phase impacts 1 & 2.					
Impact 7: Effects on commercially exploited species	Array site and OECC	WTG Option A	WTG Option B		Questions to demonstrate assessment has considered all scenarios	Response
	As described in **Appendix 9.2 Fish, Shellfish and Turtle Ecology**					

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 boundary.

16. For the purposes of the EIAR, the main chapter for Commercial Fisheries 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 Commercial Fisheries 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: Loss of grounds or restricted access to fishing grounds within the array site	Offshore Project Components		*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 does not introduce any new impact receptor pathways that have not already been considered as part of the assessment. 2. No, the implementation of the LoD does not introduce a materially different impact magnitude as the loss or restricted access to established fishing grounds has been calculated based on the upper limit for vessel activity, turbine infrastructure, and IAC, interconnector and inter-array cable lengths, which factors in the proposed LoD for these project elements.
	WTGs	100 m from the centre point of each WTG location		
	WTG monopile locations	100 m from the centre point of each WTG location		
	OSSs	100 m from the centre point of each OSS location		
	OSS monopile locations	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		
Impact 2: Loss of grounds or restricted access to fishing grounds within the OECC	Offshore Project Components		*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 does not introduce any new impact receptor pathways that have not already been considered as part of the assessment. 2. No, the implementation of the LoD does not introduce a materially different impact magnitude as the loss or restricted access to established fishing grounds has been calculated based on the upper limit for export cable lengths, which factors in the proposed LoD for these project elements.
	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		
Impact 3: Displacement of fishing activity into other areas	See Impacts 1 & 2		*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 does not introduce any new impact receptor pathways that have not already been considered as part of the assessment. 2. No, the implementation of the LoD does not introduce a materially different impact magnitude as the displacement of fishing activity into other areas has been calculated based on the upper limit for vessel activity, turbine infrastructure, and, interconnector, inter-array cable lengths, which factors in the proposed LoD for these project and OECC elements.

Impact	Relevant project element	Limit of deviation	Questions to demonstrate assessment has considered all scenarios	Response
Impact 4: Interference with fishing activities	See Impacts 1 & 2		*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 does not introduce any new impact receptor pathways that have not already been considered as part of the assessment. 2. No, the implementation of the LoD does not introduce a materially different impact magnitude as the interference with fishing activities has been calculated based on the upper limit for vessel activity, turbine infrastructure, and, interconnector, inter-array cable lengths, which factors in the proposed LoD for these project and OECC elements.
Impact 5: Potential for snagging of gear	See Impacts 1 & 2		*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 does not introduce any new impact receptor pathways that have not already been considered as part of the assessment. 2. No, the implementation of the LoD does not introduce a materially different impact magnitude as the potential for snagging of gear has been calculated based on the upper limit for vessel activity, turbine infrastructure, and, interconnector, inter-array cable lengths, which factors in the proposed LoD for these project and OECC elements.
Impact 6: Increased steaming times to fishing grounds	See Impacts 1 & 2		*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 does not introduce any new impact receptor pathways that have not already been considered as part of the assessment. 2. No, the implementation of the LoD does not introduce a materially different impact magnitude as the increased steaming times to fishing grounds has been calculated based on the upper limit for vessel activity, turbine infrastructure, and, interconnector, inter-array cable lengths, which factors in the proposed LoD for these project and OECC elements.
Impact 7: Effects on commercially exploited species	See Impacts 1 & 2		*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 does not introduce any new impact receptor pathways that have not already been considered as part of the assessment. 2. No, the implementation of the LoD does not introduce a materially different impact magnitude as the effects on commercially exploited species has been calculated based on the upper limit for vessel activity, turbine infrastructure, and, interconnector, inter-array cable lengths, which factors in the proposed LoD for these project and OECC elements.

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: Loss of grounds or restricted access to fishing grounds within the array site	Offshore Project Components		*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 does not introduce any new impact receptor pathways that have not already been considered as part of the assessment. 2. No, the implementation of the LoD does not introduce a materially different impact magnitude as the loss or restricted access to established fishing grounds has been calculated based on the upper limit for vessel activity, turbine infrastructure, and interconnector and inter-array cable lengths which factors in the proposed LoD for these project elements.
	WTGs	100 m from the centre point of each WTG location		
	WTG monopile locations	100 m from the centre point of each WTG location		
	OSSs	100 m from the centre point of each OSS location		
	OSS monopile locations	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		
Impact 2: Loss of grounds or restricted access to fishing grounds within the OECC	Offshore Project Components		*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 does not introduce any new impact receptor pathways that have not already been considered as part of the assessment. 2. No, the implementation of the LoD does not introduce a materially different impact magnitude as the loss or restricted access to established fishing grounds has been calculated based on the upper limit for export cable lengths, which factors in the proposed LoD for these project elements.
	Offshore export cables	250 m either side of the preferred alignment within the array site The OECC outside of the array site.		
Impact 3: Displacement of fishing activity into other areas	See Impacts 1 & 2		*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 does not introduce any new impact receptor pathways that have not already been considered as part of the assessment. 2. No, the implementation of the LoD does not introduce a materially different impact magnitude as the displacement of fishing activity into other areas has been calculated based on the upper limit for vessel activity, turbine infrastructure, and interconnector and inter-array cable lengths, which factors in the proposed LoD for these project elements.

Impact	Relevant project element	Limit of deviation	Questions to demonstrate assessment has considered all scenarios	Response
Impact 4: Interference with fishing activities	See Impacts 1 & 2		*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 does not introduce any new impact receptor pathways that have not already been considered as part of the assessment. 2. No, the implementation of the LoD does not introduce a materially different impact magnitude as the interference with fishing activities has been calculated based on the upper limit for vessel activity, turbine infrastructure, and interconnector and inter-array cable lengths, which factors in the proposed LoD for these project elements.
Impact 5: Potential for snagging of gear	See Impacts 1 & 2		*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 does not introduce any new impact receptor pathways that have not already been considered as part of the assessment. 2. No, the implementation of the LoD does not introduce a materially different impact magnitude as the potential for snagging of gear has been calculated based on the upper limit for vessel activity, turbine infrastructure, and interconnector and inter-array cable lengths which factors in the proposed LoD for these project elements.
Impact 6: Increased steaming times to fishing grounds	See Impacts 1 & 2		*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 does not introduce any new impact receptor pathways that have not already been considered as part of the assessment. 2. No, the implementation of the LoD does not introduce a materially different impact magnitude as the increased steaming times to fishing grounds has been calculated based on the upper limit for vessel activity, turbine infrastructure, and interconnector and inter-array cable lengths, which factors in the proposed LoD for these project elements.
Impact 7: Effects on commercially exploited species	See Impacts 1 & 2		*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 does not introduce any new impact receptor pathways that have not already been considered as part of the assessment. 2. No, the implementation of the LoD does not introduce a materially different impact magnitude as the effects on commercially exploited species has been calculated based on the upper limit for vessel activity, turbine infrastructure, and interconnector and inter-array cable lengths, which factors in the proposed LoD for these project elements.