codling wind park

Environmental Impact Assessment Report

Volume 4

Appendix 11.2 Representative Scenario and Limits of Deviation Assessment


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Table of contents

List of tables

APPENDIX 11.2 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 Layout 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 a limit of deviation (LoD) from a specific point of 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 marine mammals 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: Auditory injury (PTS) from pre-construction surveys **Impact 2**: Disturbance from pre-construction surveys	Array site and offshore export cable corridor (OECC)	WTG Option A	WTG Option B		Questions to demonstrate assessment has considered all scenarios	Response
	Array site and OECC geophysical survey equipment	• Multi-Beam Echo Sounder (MBES) • Sub-Bottom Imager (SBI) • Side Scan Sonar (SSS) • Sub Bottom Profiler (SBP) – pinger • Ultra-High resolution seismic (UHRS) – sparker • Ultra-Short Base Line (USBL) system • Magnetometer		Survey equipment to be used will be the same regardless of the WTG option selected. Therefore, there is only one scenario for this potential impact.	*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).*	N/A - survey equipment to be used will be the same regardless of the WTG option selected. Therefore, there is only one assessment scenario for this potential impact.
Impact 3: Auditory injury (PTS) from UXO clearance **Impact 4**: Disturbance from UXO clearance	Array site and OECC	WTG Option A	WTG Option B		Questions to demonstrate assessment has considered all scenarios	Response
	Array site and OECC UXO clearance	Up to ten UXO have been identified as requiring clearance, with a maximum charge weight of up to 525 kg Net Explosive		UXO clearance requirements will be the same regardless of the WTG option selected. Therefore, there is only one	*1. Are there infrastructure layout options (permanent or temporary) which may introduce new impacts?*	N/A - UXO clearance requirements will be the same regardless of the WTG option selected. Therefore, there is only one assessment scenario for this potential impact.

		Quantity (NEQ) for 2,000 lb (907.2 kg) UXO. The UXO items considered most likely to be encountered within the offshore development area are listed below: • Mines Allied • Mines German • Large Bombs (500 lb or larger) • Small Bombs (250 lb or smaller) • Large Projectiles (6-inch – 16-inch) • Small Projectiles and Rockets (smaller than 6-inch) • Chemical Munitions • Depth Charges and Torpedoes • Land Service Ammunition • Small Arms Ammunition		scenario for this potential impact.	*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).*	

Impact 5: Auditory injury (PTS) from piling – WTGs and OSSs **Impact 6**: Disturbance from piling – WTGs and OSSs	Array site	WTG Option A	WTG Option B		Questions to demonstrate assessment has considered all scenarios	Response
	Installation methods and effects (WTG monopile piling **within** the array site)			WTG Option A is the representative scenario for this potential impact because it has a greater number of WTGs to be installed and a greater potential for noise emission into the water column. WTG Option B, or any other scenario resulting in potential for lesser noise emission into the water column, does not introduce a new or materially different impacts – and therefore does not result in	*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*	1. No, there are no alternate infrastructure layouts that would introduce new impacts. Additionally for pile driving, WTG Option B would not introduce any new impact receptor pathways that have not already been considered as part of the assessment. 2. WTG Option A consists of 75 days of piling when compared to 60 days for WTG Option B. As WTG Option A will be of longer duration, it forms the basis of the assessment. There is no other layout option that may introduce a materially different magnitude of impact. 3. No, sensitivity of the receptor is not altered by changes in WTG layout option.
	Number of WTG monopile foundations	75	60			
	Hammer energy (kJ)	440 – 4400				
	Total hours of piling per monopile	3.5				
	Total no. of monopiles installed in 24 hrs	1 - 2				
	Total no. of piling days	75	60			
	Total piling hours	263	210			

	Number of piles being installed simultaneously at any one time	1	potential for materially different effects than WTG Option A.	*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).*	4. No, the installation method of drilling is unlikely to introduce any new impact receptor pathways in regards of noise / vibration that have not already been considered as part of the assessment. 5. No, pile driving represents the greatest magnitude of impact and drilling would not introduce any materially different level of magnitude that have not already been considered as part of the assessment. 6. No, the two methods proposed will not influence the sensitivity of the receptor that is being assessed.
	Installation methods and effects (offshore substation structure (OSS) piling with the array site)				
	Number of OSS monopile foundations	3			
	Hammer energy (kJ)	440 – 4400			
	Total no. of monopiles installed in 24 hrs	1-2			
Impact 7: Auditory injury (PTS) from piling – onshore substation **Impact 8**: Disturbance from piling – onshore substation	Onshore substation			Questions to demonstrate assessment has considered all scenarios	Response
	Cofferdam installation	NA	There is only one assessment scenario for this potential impact.	*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)?*	N/A - There is only one assessment scenario for this potential impact.
	Method of installation	Impact pile driving			
	Maximum hammer energy (kJ)	400 kJ			
	Maximum hours piling per pile	8			
	Concurrent piling	Yes			
	Maximum duration	20 weeks			

					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).*	
Impact 9: Auditory injury (PTS) from other	Array site and OECC	WTG Option A	WTG Option B		Questions to demonstrate assessment has considered all scenarios	Response

construction activities **Impact 10**: Disturbance from other construction activities	• Boulder clearance (plough or sub-sea grab); • Pre-lay grapnel run; • Sandwave clearance (dredger or mass flow excavation); • IAC and interconnector cable installation and burial (jetting, trenching or ploughing); and • Offshore export cable installation and burial (jetting, trenching or ploughing).			Offshore, WTG Option A forms the representative scenario as this represents the greatest level of disturbance, and therefore WTG Option A forms the presentational basis of the assessment for Impact 9 and 10. WTG Option B would result in a lower level of disturbance and would not introduce new impacts, or an impact of materially different magnitude.	*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, there are no alternative infrastructure layouts that would introduce new impacts. 2. No, there is no alternative infrastructure layout that would introduce a materially different magnitude of impact. 3. No, for Impact 9 and Impact 10, receptor sensitivity is unaffected by alternative layout options. 4. No, WTG Option A forms the representative scenario as this represents the greatest level of disturbance however the other construction activities will be the same regardless of the WTG option selected and will not introduce any new impact receptor pathways that have not already been considered as part of the assessment. Furthermore, the variation in methods proposed will not introduce any new impact receptor pathways that have not already been considered. 5. No, WTG Option A forms the representative scenario as this represents the greatest level of disturbance however the other construction activities will be the same regardless of the WTG option selected and will not lead to a materially different magnitude of impact. Furthermore, the variation in methods proposed will not lead to a materially different magnitude of impact. 6. No, the variation in methods proposed will not influence the sensitivity of the receptor that is being assessed.
Impact 11: Vessel collision **Impact 12**: Disturbance from vessels	Array site and OECC	WTG Option A	WTG Option B		Questions to demonstrate assessment has considered all scenarios	Response
	Seabed preparation vessels (including surveys, UXO investigation and boulder clearance)	Peak (round trips) 4 (20)	Peak (round trips) 4 (20)	WTG Option A forms the representative scenario as this represents the greatest level of disturbance as overall more vessel round trips will be required, and therefore WTG Option A forms the presentational basis of the assessment for Impact 4.	*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, there are no alternate infrastructure layouts that would introduce new impacts. 2. There is no other layout option that may introduce a materially different magnitude of impact. 3. No, sensitivity of the receptor is not altered by changes in layout option.
	WTG and OSS monopile installation vessels (includes installation vessel, feeder vessel and anchor handlers)	6 (43)	6 (35)			
	TP installation vessels	7 (43)	7 (35)			

	Scour protection installation vessels (including filter layer and seabed preparation)	7 (107)	7 (86)	WTG Option B would result in a lower level of disturbance and would not introduce new impacts, or an impact of materially different magnitude.	*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).*	4. No, changes in installation method is unlikely to introduce any new impact receptor pathways that have not already been considered as part of the assessment. 5. No, changes in installation method is unlikely to lead to a materially different magnitude of impact. 6. No, the variation in methods proposed will not influence the sensitivity of the receptor that is being assessed.
	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 TSHD for sand wave clearance and disposal off site, PLGR, OOS removal, boulder clearance, pre-crossing protection and survey vessel)	7 (548)	7 (548)			
	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	2 (824)	2 (824)			
	Total construction vessels					
	Peak vessels on site simultaneously	75	75			
	Round trips	2,409	2,387			
Impact 13: Indirect impacts to prey	Array site and OECC	WTG Option A	WTG Option B		Questions to demonstrate assessment has considered all scenarios	Response
	Potential indirect impacts to marine mammals are driven by the results of the assessment to fish species (see **Volume 3 Chapter 9 Fish, Shellfish and Turtles Ecology).** Please refer to **Appendix 9.2 Table 1** for the Representative scenario assessment for fish species.					

Table 2 Representative scenario assessment – O&M phase impacts

Impact	Relevant project details			Representative scenario(s) and notes / assumptions	Rationale for representative scenario(s)	
Impact 1: Auditory injury (PTS) from operational noise **Impact 2**: Disturbance from operational noise	Generating station (including WTGs)	WTG Option A	WTG Option B		Questions to demonstrate assessment has considered all scenarios	Response
	Permanent infrastructure			Both WTG options have been assessed.	*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).*	N/A - both WTG options have been assessed.
	WTG rotor diameter (m)	250	276			
Impact 3: Vessel collision **Impact 4**: Disturbance from vessels	O&M vessels (Generating Station and OfTI)	WTG Option A	WTG Option B		Questions to demonstrate assessment has considered all scenarios	Response
	Peak Vessel Numbers	14		There is only one assessment scenario for this potential impact.	*1. Are there infrastructure layout options (permanent or temporary) which may introduce new impacts?*	N/A - There is only one assessment scenario for this potential impact.
	Number of Vessel Round Trips	1,209				

					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).*	
Impact 5: Indirect impacts to prey	O&M vessels (Generating Station and OfTI)	WTG Option A	WTG Option B		Questions to demonstrate assessment has considered all scenarios	Response
	Potential indirect impacts to marine mammals are driven by the results of the assessment to fish species (see **Chapter 9 Fish, Shellfish and Turtles Ecology**). Please refer to **Appendix 9.2 Table 1** for the Representative scenario assessment for fish species.					

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**.

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	250m buffer either side of the preferred alignment of each export cable 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 marine mammals 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 marine mammals this analysis for construction and O&M phase impacts is presented in **Table 1** and **Table 6**, 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: Auditory injury (PTS) from pre-construction surveys Impact 2: Disturbance from pre-construction surveys	n/a	n/a	*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?*	n/a
Impact 3: Auditory injury (PTS) from UXO clearance **Impact 4**: Disturbance from UXO clearance	n/a	n/a	*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?*	n/a
Impact 5: Auditory injury (PTS) from piling – WTGs **Impact 6**: Disturbance from piling – WTGs	WTGs	100 m from the centre point of each WTG location	*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 proposed LoD (locational flexibility) does not introduce new impacts. 2. No, the proposed LoD (locational flexibility) does not introduce a materially different magnitude of impact.
	OSSs	100 m from the centre point of each OSS location		
Impact 7: Auditory injury (PTS) from piling – onshore substation **Impact 8**: Disturbance from piling – onshore substation	Onshore substation	Defined LoD for sheet piling at toe of the revetement with 0.5 – 1.0 m horizontal width	*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 proposed LoD (locational flexibility) does not introduce new impacts. 2. No, the proposed LoD (locational flexibility) does not introduce a materially different magnitude of impact.
Impact 9: Auditory injury (PTS) from other construction activities **Impact 10**: Disturbance from other construction activities	WTGs	100 m from the centre point of each WTG location	*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 proposed LoD (locational flexibility) does not introduce new impacts. 2. No, the proposed LoD (locational flexibility) does not introduce a materially different magnitude of impact.
	OSSs	100 m from the centre point of each OSS location		
	IACs and interconnector cables (including cable protection)	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 (including cable protection)	Defined LoD boundary within the array site. The OECC outside of the array site.		

Impact 11: Vessel collision **Impact 12**: Disturbance from vessels	n/a		*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?*	n/a
Impact 13: Indirect impacts to prey	WTGs	100 m from the centre point of each WTG location	*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 proposed LoD (locational flexibility) does not introduce new impacts. 2. No, the proposed LoD (locational flexibility) does not introduce a materially different magnitude of impact.
	OSSs	100 m from the centre point of each OSS location		
	IACs and interconnector cables (including cable protection)	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 (including cable protection)	Defined LoD boundary within the array site. The OECC outside of the array site.		

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: Auditory injury (PTS) from operational noise **Impact 2**: Disturbance from operational noise	n/a	n/a	*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?*	n/a
Impact 3: Vessel collision **Impact 4**: Disturbance from vessels	n/a	n/a	*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?*	n/a
Impact 5: Indirect impacts to prey	WTGs	100 m from the centre point of each WTG location	*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 proposed LoD (locational flexibility) does not introduce new impacts. 2. No, the proposed LoD (locational flexibility) does not introduce a materially *different* magnitude of impact.
	OSSs	100 m from the centre point of each OSS location		
	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	Defined LoD boundary within the array site. The offshore export cable corridor (OECC) outside of the array site.		