



## Environmental Impact Assessment Report

### Volume 4

Appendix 15.2 Representative Scenario and Limits of Deviation Assessment





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# APPENDIX 15.2 REPRESENTATIVE SCENARIO AND LIMITS OF DEVIATION ASSESSMENT

### 1 Introduction

- 1. Complex, large-scale infrastructure projects with a terrestrial and marine interface such as the Codling Wind Park (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 carbon dioxide (CO<sub>2</sub>) 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 CWP Project, significant and rapid progression in wind farm technology development, potential changes in environmental conditions and in policy and legislation, Codling Wind Park Limited (CWPL) 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 (250m rotor diameter) or WTG Layout Option B (276m 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 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

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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) identified, described and assessed 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 were concise and readable, each chapter of the EIAR assessed 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 required several representative scenarios to be identified to ensure all impacts are identified, described and assessed.
- 10. For Seascape, Landscape and Visual Impact Assessment (SLVIA) this analysis for construction / decommissioning and operational 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 was identified, then further representative scenarios were assessed in full within **Chapter 15 SLVIA.**
- 12. This is distinct from the approach to assessing locational flexibility, where differences in impacts are assessed in this Appendix. The difference in approaches arose as there is a much higher degree of confidence in the locations and alignments assessed in **Chapter 15 SLVIA** than there was for the final options and dimensions.
- 13. Overall, this approach ensures that the EIAR identifies, describes and assesses:
  - 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 / decommissioning phase impacts (day and nighttime)

Relevant project details			Representative scenario(s) and notes / assumptions	Rationale for representative so	cenario(s)
Generating station (including WTGs, inter-array cables (IACs) and interconnectors)	WTG Option A	WTG Option B		Questions to demonstrate assessment has considered all scenarios	Response
Permanent infrastructure (emerg	ing)	2	Construction /	1. Are there infrastructure	<ol> <li>No, there are no altern assessed in full as part of construction / decommiss been assessed to demon based on layouts, suppor studies and visualisation A and B were compared options.</li> <li>No, there are no altern assessed in full as part of construction / decommiss been assessed to demon based on layouts, suppor subtle variations in the m Option layouts which we seascape, landscape / to landscapes and visual re Seascape Character Assessment; Appendix 15.8 Sequent 15.9 National Designate</li> </ol>
Number of WTG monopile foundations	75	60	decommissioning activities would not occur at the same time and from a seascape,	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)	
Number of WTG transition pieces (TP)	75	60	landscape / townscape, national designated landscape and visual perspective, the most visible parts of the offshore development area would be the above sea-		
Height of WTG monopile above lowest astronomical tide (LAT) prior to TP installation (m)	6.	.5			
Height of transition piece above LAT (m)	31	.1	the WTGs, offshore substation		
Number of WTGs comprising tower structure, nacelle, and rotor with associated access arrangements.	75	60	lighting to aid installation and ter navigation. Layout Options A and B would have a similar horizontal extent when viewed		
WTG lighting and marking	See Lighting an	d Marking Plan			
No. IACs and interconnector cable strings per OSS	e	6	between layout options would be subtle at distances of 11 – 50 km from the array site. WTG Option A has a blade tip height		
OfTI	WTG Option A	WTG Option B			
Permanent infrastructure (emerg	ing)				assessed in full as part
Number of offshore substation structures (OSS) (including monopile foundations and topsides)	3	3	314 m. The overall extent of the layouts directly north-south would be 15.87 km (Option A WTG A layout) and 15.88 km Option B WTG layout) refer to Figure 15.2a Option A WTG layout and Figure 15.2b	<ul> <li>installation methods which may introduce new impacts?</li> <li>5. Are there alternative installation methods which may introduce a materially different magnitude of impact?</li> <li>6. Are there alternative installation methods which may</li> </ul>	Option A and B, both lay seascape, landscape / to and visual receptors. The through a combination o be influenced by both W movements. 4. No, there are no altern not been assessed in ful seascape, landscape / to landscapes and visual re installation would be ass impact and duration of e
Height of OSS topside above LAT (m)	5	5			
Number of offshore export cables	3	3	Option B WTG layout, Appendix 15.10 SLVIA Figures		
Total length of offshore export cables (km)	126.0-	-146.0	The difference in WTG numbers would be difficult to		
Installation methods and effects (Generating station and OfTI)			perceive during construction		<ul> <li>f methods proposed wou</li> <li>5. No, the magnitude of</li> </ul>
export cable corridor (OECC), inc Positioning vessels supporting ur construction surveys, unexploded clearance, pre-lay grapnel run (P	cluding Jack Up an inderwater activitie d ordnance (UXO) LGR), scour prote	nd / or Dynamic s such as pre- and boulder ection and	due to the layout being set in a grid pattern, resulting in WTG stacking. The only perceivable difference between the two layouts would be WTG spacing, although this would vary depending on the angle of	(greater or lesser).	<ul> <li>would not materially chaves of vessels over a short due</li> <li>No, the installation m of seascape, landscapes and visual r</li> </ul>
	Generating station (including WTGs, inter-array cables (IACs) and interconnectors)Permanent infrastructure (emergNumber of WTG monopile foundationsNumber of WTG transition pieces (TP)Height of WTG monopile above lowest astronomical tide (LAT) prior to TP installation (m)Height of transition piece above LAT (m)Number of WTGs comprising tower structure, nacelle, and rotor with associated access arrangements.WTG lighting and markingNo. IACs and interconnector cable strings per OSSOfTIPermanent infrastructure (emerg Number of offshore substation structures (OSS) (including monopile foundations and topsides)Height of OSS topside above LAT (m)Number of offshore export cables (km)Installation methods and effects of vessel movements within the arr export cable corridor (OECC), in Positioning vessels supporting ur construction surveys, unexploded clearance, pre-lay grapnel run (P	Generating station (including WTGs, inter-array cables (IACs) and interconnectors)WTG Option APermanent infrastructure (emerging)Number of WTG monopile foundations75Number of WTG transition pieces (TP)75Height of WTG monopile above lowest astronomical tide (LAT) prior to TP installation (m)6Height of transition piece above LAT (m)31Number of WTGs comprising tower structure, nacelle, and rotor with associated access arrangements.75WTG lighting and markingSee Lighting arNo. IACs and interconnector cable strings per OSS6OfTIWTG Option APermanent infrastructure (emerging)Number of offshore substation structures (OSS) (including monopile foundations and topsides)5Height of OSS topside above LAT (m)5Number of offshore export cables (km)5Installation methods and effects (Generating station export cable corridor (OECC), including Jack Up a Positioning vessels supporting underwater activitie construction surveys, unexploded ordnance (UXO) clearance, pre-lay grapnel run (PLGR), scour protect	Generating station (including WTGs, inter-array cables (IACs) and interconnectors)WTG Option AWTG Option BPermanent infrastructure (emerging)Number of WTG monopile foundations7560Number of WTG transition pieces (TP)7560Height of WTG monopile above lowest astronomical tide (LAT) prior to TP installation (m)6.560Height of transition piece above LAT (m)31.160Number of WTGs comprising totor with associated access arrangements.7560WTG lighting and markingSee Lighting aMarking PlanNo. IACs and interconnector cable strings per OSSSee Lighting aWTG Option BOTIWTG Option AWTG Option BPermanent infrastructure (emerging)Number of offshore substation structures (OSS) (including monopile foundations and topsides)3Height of OSS topside above LAT (m)555Number of offshore export cables (km)3	Generating station (including WTGs, inter-array cables (IACs) and interconnectors)       WTG Option A       WTG Option B         Permanent infrastructure (emerging)       Construction / decommissioning activities would not occur at the same time and from a seascape, national designated landscape and visual perspective, the most visible parts of the offshore development area would be the above sea- surface infrastructure including bave LAT (m)       Construction / decommissioning activities would not occur at the same time and from a seascape, national designated landscape and visual perspective, the most visible parts of the offshore development area would be the above sea- surface infrastructure including tower structure, nacelle, and rotor with associated access arrangements.       See Lighting and Marking Plan         No. IACs and interconnector cable strings per OSS       6       See Lighting and Marking Plan         Off1       WTG Option A       WTG Option B         Permanent infrastructure (emerging)       3       Statuces of 11 – So Km from the array site. WTG Option A has a blade tip height topsides)         Number of offshore substation structures (OSS) (including monopile foundations and opsides)       3       314 m. The overall extent of the layout and Figure 15.2b Option A Mark Blayout and 15.88 km Option B WTG layout) refer to the layout and Figure 15.2b Option B WTG layout) and 15.88 km Option B WTG layout beigt as in a grid pattern, resulting in WTG numbers would be difficult to perceive during construction to the layout beigt as in a grid pattern, resulting in WTG staking. The only perceivable difference between the two layouts would be WTG spacing, althooy the WTG spacing, althooy the MTG	Generating station (including WTGs, inter-array cables (IACs) and interconnectors)     WTG Option A WTG Option B     WTG Option B     Construction / decommissioning activities would not occur at the same time and from a seascape, national designated landscape and visual perspective, the most visual perspective including tructure (OSS opersisting tructure (OSS) and temporspile visual access arrangements.     Intervisual visual visual visual visual visual visual perspective, visual visual visual visual visual visual visual visual tructure (OSS) (including monopile foundations and topsicles)) (including monopile foun

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ernative options which have not been rt of the assessment. For Impact 1, the nissioning of WTG Option A and B have nonstrate subtle differences between them, oporting zone of theoretical visibility (ZTV) ions. The differences between WTG Option ed as part of the assessment of both

ternative options which have not been rt of the assessment. For Impact 1, the nissioning of WTG Option A and B have nonstrate subtle differences between them, oporting ZTVs and visualisations. There are e magnitude of change between the WTG were identified based on an assessment of / townscape, national designated I receptors refer to Appendix 15.4 Assessment; Appendix 15.5 Landscape ent; Appendix 15.6 Viewpoint dix 15.7 Settlement Assessment; ential Route Assessment and Appendix nated Landscapes.

ernative options which have not been rt of the assessment. For Impact 1, WTG layouts would not influence the sensitivity of / townscape, national designated landscape The sensitivity of the receptor is identified n of value and susceptibility which would not WTG layout options and vessel

ernative installation methods which have full as part of this assessment. From a / townscape, national designated I receptor perspective, impacts from associated with views of vessels. The visual f effect between the various installation build not alter the assessment.

of change between the installation methods hange and would be limited to views of luration.

methods would not influence the sensitivity cape / townscape, national designated l receptors.



	and interconnector cables using topside alongside the use of vest offshore infrastructure. This is als landscape / townscape and nation receptors the Mid Support Platfo	sel cranes for the so included for sea onally designated	construction of ascape,	view from the coastline and the difference would be small between layout options. During the construction / decommissioning phase, visual impacts would arise due to a concentration of vessels within the array site and along the OECC. This would involve a higher than usual number of vessels on the sea surface, compared to the baseline, including Jack-up and / or Dynamic Positioning Vessels		
Impact 2 (Construction): Direct / indirect	Generating station (including WTGs, inter-array cables (IACs) and interconnectors)	WTG Option A	WTG Option B		Questions to demonstrate assessment has considered all scenarios	Response
temporary nighttime impacts	Permanent infrastructure (emerg	ing)		From a seascape, landscape /	1. Are there infrastructure	1.No, there are no alt
on seascape / landscape /	Number of WTG monopile foundations	75	60	townscape, national designated landscape and visual perspective, the most visible parts of the offshore development area would be the temporary lighting to aid	temporary) which may introduce new impacts associated with nighttime lighting?	assessed in full as par construction / decommis assessed to demonstra
townscape and national designated	Number of transition pieces (TP)	75	60			nighttime based on layo The differences between part of the assessment o
landscapes and visual receptors <b>Impact 6</b>	Height of WTG monopile above 6.5 lowest astronomical tide (LAT) prior to TP installation (m)			installation and navigation. During the construction / decommissioning phase,	Note - this could be a new impact entirely or the introduction of an existing impact pathway to a new	2. No, there are no altern assessed in full as part of
(Decommissionin g): Direct / indirect temporary	Height of transition piece above LAT (m)	31.1		nighttime impacts would arise due to a concentration of vessels within the array site	receptor.	construction / decommiss assessed to demonstrate on layouts, supporting. Z
nighttime impacts on seascape / landscape / townscape /	Number of WTGs comprising tower structure, nacelle, and rotor with associated access arrangements.	75	60	and along the OECC. This would involve a higher than usual number of vessels on the sea surface, compared to the	introduce a materially different	There are subtle variation the WTG Option layouts assessment of seascape designated landscapes a
national designated landscapes and	WTG lighting and marking	See Lighting and Marking Plan		baseline, including Jack-up Vessels / Dynamic Positioning Vessels	magnitude of impact associated with nighttime lighting?	15.4 Seascape Charact Landscape Character A Assessment; Appendix
visual receptors	OfTI	WTG Option A	WTG Option B			Appendix 15.8 Sequent
	Permanent infrastructure (emerging)			1	3. Are there infrastructure layout options (permanent or	15.9 National Designate
	Number of OSSs (including monopile foundations and topsides)	3			temporary) which may introduce a material change in the sensitivity of the receptor(s)	3. No. For Impact 2, W influence the sensitivity national designated lands
	Height of OSS topside above LAT (m)	5	5		(greater or lesser) at night?	4. No, from a seasc
	Number of offshore export cables	:	3	]	4. Are there alternative installation methods which may introduce new impacts at	
	Total length of offshore export cables (km)	126.0	-146.0	]	nighttime?	designated landscapes from installation would

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alternative options which have not been bart of the assessment. For Impact 2, the nissioning of WTG Option A and B has been strate subtle differences between them at ayouts, supporting ZTVs and visualisations. een WTG Option A and B were compared as at of both options.

ernative options which have not been rt of the assessment. For Impact 2, the nissioning of WTG Option A and B has been rate subtle differences between them based p. ZTVs and visualisations at nighttime. tions in the magnitude of change between uts which were identified based on an ape, landscape / townscape, national is and visual receptors. refer to **Appendix acter Assessment; Appendix 15.5** or **Assessment; Appendix 15.6** Viewpoint dix 15.7 Settlement Assessment; ential Route Assessment and Appendix lated Landscapes.

WTG Option A and B layouts would not vity of seascape, landscape / townscape, ndscape and visual receptors. The sensitivity ntified through a combination of value and build not be influenced by lighting associated options and vessel movements.

scape, landscape / townscape, national es and visual receptor perspective, impacts Id be associated with nighttime views of



Installation methods and effects (Generating station and OfTI) Presence of nighttime marine / navigational lighting as well as temporary lighting associated with vessel movements within the array site and along the OECC, including vessels supporting	5. Are there alternative installation methods which may introduce a materially different magnitude of impact at nighttime?	vessels. The visual im various installation m assessment. 5. No, the magnitude of
underwater activities such as pre-construction surveys, UXO and boulder clearance, PLGR, scour protection and installation of monopile, foundations, transmission piece, inter array and interconnector cables using vessels to tow WTGs and OSSs topside alongside the use of vessel cranes for the construction of offshore infrastructure and heli hoist lighting. This also included for seascape, landscape / townscape and nationally designated landscape receptors the Mid Support Platform.	6. Are there alternative installation methods which may materially alter the sensitivity of the relevant receptor(s) (greater or lesser) at nighttime?	<ul> <li>6. No, the installation lighting would not influe / townscape, national de</li> </ul>

Note: Conclusions reached regarding Impact 1 and 2 would be relevant to Decommissioning Impacts 5 and 6.

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impact and duration of effect between the methods proposed would not alter the

e of change between the nighttime installation materially change and would be limited to essels over a short duration.

on methods which would include nighttime luence the sensitivity of seascape, landscape I designated landscapes and visual receptors.



Table 2 Representative scenario assessment - operational phase impacts (day and nighttime)

Impact	Relevant project details			Representative scenario(s) and notes / assumptions	Rationale for representative	e scenario(s)
Impact 1 (Operation / Maintenance): Direct / indirect	Generating station (including WTGs, inter-array cables (IACs) and interconnectors)	WTG Option A	WTG Option B		Questions to demonstrate assessment has considered all scenarios	Response
long term though	Permanent infrastructure			From a seascape,	1. Are there infrastructure	1. No, there are no alternative option
reversible	Number of WTGs	75	60	landscape / townscape, national designated landscapes and visual receptor perspective, the most visible parts of the CWP Project's offshore infrastructure would be the	layout options (permanent or temporary) which may	assessed in full as part of the asse WTG Option A and B have been as
impacts on seascape,	WTG rotor diameter (m)	250	276		introduce new impacts?	subtle differences between them supporting ZTVs and visualisation
landscape / townscape and	Hub height above LAT (m)	163	176		Note - this could be a new	between WTG Option A and B were of
national	Tip height above LAT (m)	288	314		impact entirely or the introduction of an existing	assessment of both options.
designated landscapes	Blade tip clearance above LAT (m)	37	.72	above sea-surface	impact pathway to a new	2. No, there are no alternative option
and visual	WTG tower diameter (m)	8	9	infrastructure including the WTGs, OSS, aviation and	<ul> <li>2. Are there infrastructure layout options (permanent or temporary) which may introduce a materially different magnitude of impact?</li> <li>3. Are there infrastructure layout options (permanent or temporary) which may</li> </ul>	<ul> <li>supporting ZTVs and visualisation variations in the magnitude of char Option layouts which were ider assessment of seascape, landscape designated landscapes and visual reasessed in full as part of the assessed in the receptor was identified through and susceptibility which would not WTG layout options and vessel move 4. Not applicable.</li> <li>6. Not applicable.</li> </ul>
receptors.	Rotor swept area of per turbine (m <sup>2</sup> )	49,087	59,829	<ul> <li>navigation lighting.</li> <li>Layout Options A and B would have a similar horizontal extent when viewed from the coastline and the overall tip height difference between layout options would be subtle at distances of 11 – 50 km from the array site.</li> <li>The difference in WTG numbers would be difficult to perceive during operation due to the layout being set in a grid pattern resulting in WTG stacking. WTG spacing and foreshortening would be discernible and would vary depending on the elevation, angle of view from the coastline and the difference would be small between layout options. The Comparative Zone of Theoretical Visibility (ZTV) mapping indicates that WTG Option B would have a slightly greater visual envelope in comparison to WTG Option A refer to</li> </ul>		
	Total rotor swept area of project (m <sup>2</sup> )	3,681,554	3,589,710			
	Area of array site (km <sup>2</sup> )	1:	25			
	OfTI	WTG Option A	WTG Option B			
	Permanent infrastructure					
	Number of OSSs (including monopile foundations and topsides)		3		in the sensitivity of the receptor(s) (greater or lesser)?	
	Height of OSS topside above LAT (m)	5	55		installation methods which	
	Length of OSS topside (m)	4	15			
	Width of OSS topside (m)	3	35		<ul> <li>5. Are there alternative installation methods which may introduce a materially different magnitude of impact?</li> <li>6. Are there alternative installation methods which may materially alter the sensitivity of the relevant</li> </ul>	

ons which have not been sessment. For Impact 3, assessed to demonstrate em based on layouts, tions. The differences e compared as part of the

ons which have not been sessment. For Impact 3, assessed to demonstrate em based on layouts, ions. There are subtle ange between the WTG lentified based on an pe / townscape, national receptors.

ons which have not been sessment. For Impact 3, s would not influence the e / townscape, national receptors. The sensitivity gh a combination of value ot be influenced by both povements.



			height ZTV (bare earth), Figure 15.12f Comparative hub height ZTV (bare earth), Figure 15.13c Comparative blade tip height ZTV (obstructed) and Figure 15.13.f Comparative hub height ZTV (obstructed) (Appendix 15.10 SLVIA Figures).		
Generating station (including WTGs, inter-array cables (IACs) and interconnectors)	WTG Option A	WTG Option B		Questions to demonstrate assessment has considered all scenarios	Response
Permanent infrastructure			From a seascape,	1. Are there infrastructure	1.No, there are no alternative option assessed in full as part of the asses
Number of navigational / maritime and aviation lighting associated with WTGs and WTG identifier markings	75	60	landscapes and visual perspective, the most visible parts of the offshore infrastructure at nighttime would be the navigational / maritime and aviation lighting. Layout Options A and B	al or temporary) which may introduce new impacts associated with nighttime lighting? e at Note - this could be a new impact entirely or the introduction of an existing impact pathway to a new receptor. WTG Option subtle differences as part of the assessed in WTG Option	WTG Option A and B have been as subtle differences between them a layouts, supporting ZTVs and differences between WTG Option A as part of the assessment of both op 2. No, there are no alternative option assessed in full as part of the asse WTG Option A and B have been as subtle differences between them a
OfTI	WTG Option A	WTG Option B	horizontal extent when	2. Are there infrastructure layout options (permanent	layouts, supporting. ZTVs and vis subtle variations in the magnitude of WTG Option layouts which were it
Permanent infrastructure			and the overall tip height	introduce a materially	assessment of seascape / landsca designated landscapes and visual
OSS identifier markings		3	<ul> <li>difference between layout options would be subtle at distances of 11 – 50 km from the array site.</li> <li>The difference in WTG numbers would be difficult to perceive during operation due to the layout being set in a grid pattern resulting in WTG stacking.</li> <li>WTG spacing and foreshortening would be discernible and would vary depending on the elevation and angle of view from the coastline. The Comparative Zone of Theoretical Visibility (ZTV) mapping indicates that</li> </ul>	<ul> <li>different magnitude of impact associated with nighttime lighting?</li> <li>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) at night?</li> <li>4. Are there alternative installation methods which may introduce new impacts at nighttime?</li> </ul>	<ol> <li>No. For Impact 4, WTG Option <i>A</i> not influence the sensitivity of set townscape, national designated I receptors. The sensitivity of the rethrough a combination of value ar would not be influenced by lighting WTG layout options and vessel moved. Not applicable.</li> <li>Not applicable.</li> <li>Not applicable.</li> <li>Not applicable.</li> </ol>
	WTGs, inter-array cables (IACs) and interconnectors)         Permanent infrastructure         Number of navigational / maritime and aviation lighting associated with WTGs and WTG identifier markings         OfTI         Permanent infrastructure	WTGs, inter-array cables (IACs) and interconnectors)       A         Permanent infrastructure       75         Number of navigational / maritime and aviation lighting associated with WTGs and WTG identifier markings       75         OfTI       WTG Option A         Permanent infrastructure       0	WTGs, inter-array cables (IACs) and interconnectors)ABPermanent infrastructureNumber of navigational / maritime and aviation lighting associated with WTGs and WTG identifier markings7560OfTIWTG Option AWTG Option BPermanent infrastructure	Figure 15.12i       Comparative hub height ZTV (bare earth), Figure 15.13c Comparative blade tip height ZTV (obstructed) and Figure 15.13 f Comparative hub height ZTV (obstructed) (Appendix 15.10 SLVIA Figures).         Generating station (including WTGs, inter-array cables (IACs) and interconnectors)       WTG Option A       WTG Option B         Permanent infrastructure       75       60       From a seascape, landscape / lownscape, and ional designated landscapes and visual perspective, the most visible parts of the offshore infrastructure and aviation lighting.         OFTI       WTG Option A       WTG Option B       From a seascape, landscape / lownscape, and the coastline visual parts of the offshore infrastructure and the verall tip height difference between layout options would be subite at distances of 11 – 50 km from the array site.         OCTI       WTG Option A       3       The difference in WTG numbers would be difficult to perceive during operation due to the layout being set in a grid pattern resulting in WTG stacking.	Figure 15.12/ Comparative hub height ZTV (bare earth), Figure 15.13.f Comparative hub height ZTV (bare earth), Figure 15.13.f Comparative hub height ZTV (bastructed) (Appendix 15.10 SLVIA Figures).Questions to demonstrate assessment has considered all scenariosGenerating station (including WTGs, inter-array cables (IACs) and interconnectors)WTG Option AWTG Option BQuestions to demonstrate assessment has considered all scenariosPermanent infrastructureFrom a seascape, I and aviation lighting associated with WTGs and WTG identifier markings7560I. Are there infrastructure lighting associated with WTG scene wimpacts associated with nightlime would have a similar horizontal extent when visible parts of the respective, the most visible parts of the solution of an existing impact attrive) to the impact attrive to the impact attrive to a new impact att

ions which have not been sessment. For Impact 4, assessed to demonstrate n at nighttime based on nd visualisations. The A and B were compared options.

tions which have not been assessment. For Impact 4, assessed to demonstrate in at nighttime based on visualisations. There are e of change between the e identified based on an ape / townscape, national I receptors.

on A and B layouts would seascape, landscape / landscape and visual e receptor was identified and susceptibility which ing associated with both lovements.



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### 4 Limit of deviation assessment

- 14. As described in **Section 2** 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 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	
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	

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- 16. For the purposes of the EIAR, the main chapter for the SLVIA assessed 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. The SLVIA determined that the potential for a LoD to cause a new or materially different impact or material different magnitude would not arise as presented in the suite of supporting **Appendices 15.4 to 15.10**. This is because the scale of potential variation defined by the relevant LoD to the SLVIA are small in comparison to the context and scale of the infrastructure within which it is assessed, thus a variation in the effects on landscape, seascape, visual receptors and designated landscapes would not be discernible.

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