



**NORTH FALLS**

*Offshore Wind Farm*

# **PRELIMINARY ENVIRONMENTAL INFORMATION REPORT**

Appendix 6.1 Grid Connection Optionality –  
Worst Case Assessment

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*May 2023*

<b>Project</b>	North Falls Offshore Wind Farm
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# Glossary of Acronyms

EIA	Environmental Impact Assessment
ES	Environmental Statement
GHG	Greenhouse Gas
LVIA	Landscape and Visual
NFOW	North Falls Offshore Wind Farm Limited
NRMM	Non-Road Mobile Machinery
OTNR	Offshore Transmission Network Review
PEIR	Preliminary Environmental Information Report
SLVIA	Seascape, Landscape and Visual

# Glossary of Terminology

The Project or North Falls	North Falls Offshore Wind Farm, including all onshore and offshore infrastructure.
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## 1 Introduction

1. This document provides a comparison of the grid connection options within the design envelope for North Falls in the context of the worst case scenario for each topic of the Environmental Impact Assessment (EIA).
2. The grid connection options being considered are:
  - Option 1: Onshore electrical connection at a National Grid connection point within Tendring, Essex, with a project alone onshore cable route and onshore substation infrastructure;
  - Option 2: Onshore electrical connection at a National Grid connection point within Tendring, Essex, sharing an onshore cable route with separate onshore export cables with another project (such as Five Estuaries) where practicable; or
  - Option 3: Offshore electrical connection supplied by a third-party electricity network provider. Such a connection will potentially be identified through the OTNR process.
3. Please refer to Chapter 5 Project Description (Volume I) for further details about each option. Note that Options 2 and 3 are currently under review and will be discussed further in the Environmental Statement (ES).
4. The Preliminary Environmental Information Report (PEIR) is based on Option 1 as the worst case scenario. Table 2-1 provides a comparison of the worst case scenario implications of Options 2 and 3, and how these relate to the worst case scenario of Option 1 assessed within the PEIR. In particular, where potential effects under Option 2 or 3 are predicted to deviate in their significance from that identified under Option 1 (e.g., 'minor adverse' rather than 'moderate adverse'), this is highlighted.

## 2 Worst case scenario assessment

**Table 2-1: Worst case scenario comparison** (*worst case highlighted in bold*)

EIA topics (Volume I)	Option 1: Onshore connection, North Falls alone	Option 2: Onshore connection, shared infrastructure with other projects	Option 3: Offshore electrical connection
Chapter 8 Marine Geology Oceanography and Physical Processes	<b>Worst case (all impacts)</b>	Effects are the same as those assessed for Option 1.	Effects relating to the array areas remain as per Option 1. Effects relating to export cables in the offshore cable corridor are removed. The additional infrastructure required under Option 3 (a dedicated offshore platform) is included within the design envelope for Option 1. Therefore, the overall impact of the Project would be less than Option 1. This has potential to result in effects of reduced significance.
Chapter 9 Marine Water and Sediment Quality	<b>Worst case (all impacts)</b>	Effects are the same as those assessed for Option 1.	Effects relating to the array areas remain as per Option 1. Effects relating to export cables in the offshore cable corridor are removed. The additional infrastructure required under Option 3 (a dedicated offshore platform) is included within the design envelope for Option 1. Therefore, the overall impact of the Project would be less than Option 1. This has potential to result in effects of reduced significance.
Chapter 10 Benthic and Intertidal Ecology	<b>Worst case (all impacts)</b>	Effects are the same as those assessed for Option 1.	Effects relating to the array areas remain as per Option 1. Effects relating to export cables in the offshore cable corridor are removed. The additional infrastructure required under Option 3 (a dedicated offshore platform) is included within the design envelope for Option 1. Therefore, the overall impact of the Project would be less than Option 1. This has potential to result in effects of reduced significance.
Chapter 11 Fish and Shellfish Ecology	<b>Worst case (all impacts)</b>	Effects are the same as those assessed for Option 1.	Effects relating to the array areas remain as per Option 1. Effects relating to export cables in the offshore cable corridor are removed. The additional infrastructure

EIA topics (Volume I)	Option 1: Onshore connection, North Falls alone	Option 2: Onshore connection, shared infrastructure with other projects	Option 3: Offshore electrical connection
			<p>required under Option 3 (a dedicated offshore platform) is included within the design envelope for Option 1.</p> <p>Therefore, the overall impact of the Project would be less than Option 1. This has potential to result in effects of reduced significance.</p>
Chapter 12 Marine Mammals	<b>Worst case (all impacts)</b>	Effects are the same as those assessed for Option 1.	<p>Effects relating to the array areas remain as per Option 1. This has potential to result in effects of reduced significance.</p> <p>Effects relating to export cables in the offshore cable corridor are removed. The additional infrastructure required under Option 3 (a dedicated offshore platform) is included within the design envelope for Option 1.</p> <p>Therefore, the overall impact of the Project would be less than Option 1. This has potential to result in effects of reduced significance.</p>
Chapter 13 Offshore Ornithology	<b>Worst case (all impacts)</b>	Effects are the same as those assessed for Option 1.	<p>Effects relating to the array areas remain as per Option 1.</p> <p>Effects relating to export cables in the offshore cable corridor are removed. The additional infrastructure required under Option 3 (a dedicated offshore platform) is included within the design envelope for Option 1.</p> <p>Therefore, the overall impact of the Project would be less than Option 1. This has potential to result in effects of reduced significance.</p>
Chapter 14 Commercial Fisheries	<b>Worst case (all impacts)</b>	Effects are the same as those assessed for Option 1.	<p>Effects relating to the array areas remain as per Option 1.</p> <p>Effects relating to export cables in the offshore cable corridor are removed. The additional infrastructure required under Option 3 (a dedicated offshore platform) is included within the design envelope for Option 1.</p> <p>Therefore, the overall impact of the Project would be less than Option 1. This has potential to result in effects of reduced significance.</p>



EIA topics (Volume I)	Option 1: Onshore connection, North Falls alone	Option 2: Onshore connection, shared infrastructure with other projects	Option 3: Offshore electrical connection
Chapter 15 Shipping and Navigation	<b>Worst case (all impacts)</b>	Effects are the same as those assessed for Option 1.	Effects relating to the array areas remain as per Option 1. Effects relating to export cables in the offshore cable corridor are removed. The additional infrastructure required under Option 3 (a dedicated offshore platform) is included within the design envelope for Option 1. Therefore, the overall impact of the Project would be less than Option 1. This has potential to result in effects of reduced significance.
Chapter 16 Offshore Archaeology and Cultural Heritage	<b>Worst case (all impacts)</b>	Effects are the same as those assessed for Option 1.	Effects relating to the array areas remain as per Option 1. Effects relating to export cables in the offshore cable corridor are removed. The additional infrastructure required under Option 3 (a dedicated offshore platform) is included within the design envelope for Option 1. Therefore, the overall impact of the Project would be less than Option 1. This has potential to result in effects of reduced significance.
Chapter 17 Aviation and Radar	<b>Worst case (all impacts)</b>	Effects are the same as those assessed for Option 1.	Effects relating to the array areas remain as per Option 1. Effects relating to export cables in the offshore cable corridor are removed. The additional infrastructure required under Option 3 (a dedicated offshore platform) is included within the design envelope for Option 1. Therefore, the overall impact of the Project would be less than Option 1. This has potential to result in effects of reduced significance.
Chapter 18 Infrastructure and Other Users	<b>Worst case (all impacts)</b>	Effects are the same as those assessed for Option 1.	Effects relating to the array areas remain as per Option 1. Effects relating to export cables in the offshore cable corridor are removed. The additional infrastructure required under Option 3 (a dedicated offshore platform) is included within the design envelope for Option 1. Therefore, the overall impact of the Project would be less than Option 1. This has potential to result in effects of reduced significance.

EIA topics (Volume I)	Option 1: Onshore connection, North Falls alone	Option 2: Onshore connection, shared infrastructure with other projects	Option 3: Offshore electrical connection
Chapter 19 Onshore Ground Conditions and Contamination	<b>Worst case (all impacts)</b> – however note the caveat regarding effects on human health, ground and surface water quality under Option 2.	<p><b>Potential to be worst case for impacts on human health (construction)</b> – potential increase in duration that workforce, landowners, land users and neighbouring land users could be exposed to contaminated soils and groundwater. The change in duration is predicted to extend effects in certain locations, but not generate any new effects. As such any resultant effects are likely to be of comparable significance to that concluded for Option 1.</p> <p><b>Potential to be worst case for impacts on groundwater and surface quality and resources (construction)</b> – potential increase in duration of construction works resulting in increased time that infiltration of rainwater and surface run-off to the subsurface in areas where surface layers have been excavated. The change in duration is predicted to extend effects in certain locations, but not generate any new effects. As such any resultant effects are likely to be of comparable significance to that concluded for Option 1.</p>	No onshore works under Option 3, therefore no impacts are predicted.
Chapter 20 Air Quality	<b>Worst case (all impacts)</b> – however note the caveat regarding effects arising from Construction Phase Non-Road Mobile Machinery (NRMM) emissions under Option 2.	<b>Potential to be worst case for Construction Phase Non-Road Mobile Machinery (NRMM) emissions</b> – there is a potential increase in duration that ecological and human receptors are exposed to NRMM emissions under Option 2. However, optimisation of equipment usage is likely to offset the effect of this increased duration, which would result in Option 1 being the worst case for NRMM emissions. This change is small in scale, and as such any resultant effects are likely to be of comparable significance to that concluded for Option 1.	Construction road vehicle exhaust emissions - Terrestrial traffic movements relating to the installation of the onshore infrastructure for North Falls and Five Estuaries would be removed by Option 3. Terrestrial traffic movements (to a base port) related to offshore construction would be expected to be of similar order of magnitude to Option 1 or 2. Effects relating to export cables in the onshore cable corridor(s) are removed. Therefore, the overall impact of the Project would be less than Option 1. This has potential to result in effects of reduced significance.

EIA topics (Volume I)	Option 1: Onshore connection, North Falls alone	Option 2: Onshore connection, shared infrastructure with other projects	Option 3: Offshore electrical connection
Chapter 21 Water Resources and Flood Risk	<b>Worst case (all impacts)</b> , however note the caveat regarding effects of direct disturbance on surface water bodies.	<b>Potential to be worst case for direct disturbance of surface water bodies</b> – temporary watercourse crossings that would allow the haul road to continue (e.g., culverts) would be in place for a longer duration. The change in duration is predicted to extend effects in certain locations, but not generate any new effects. As such any resultant effects are likely to be of comparable significance to that concluded for Option 1.	No onshore works under Option 3, therefore no impacts are predicted.
Chapter 22 Land Use and Agriculture	<b>Worst case (all impacts)</b> , as Option 1 will result in the largest overall onshore project area, and all impacts are reduced where the onshore project area within sensitive areas is reduced.	Effects are the same as those assessed for Option 1.	No onshore works under Option 3, therefore no impacts are predicted.
Chapter 23 Onshore Ecology	<b>Worst case (all impacts)</b> , however note the caveat regarding effects of arising from disturbance due to dust, light and noise on surface water bodies.	<b>Potential to be worst case across all construction impacts in relation to disturbance from dust, light and noise</b> – the extended duration will increase the magnitude of these indirect effects across all receptors, but the degree of change is small and changes in any resultant effects are likely to be of comparable significance to that concluded for Option 1.	No onshore works under Option 3, therefore no impacts are predicted.
Chapter 24 Onshore Ornithology	<b>Worst case (all impacts)</b> , however note the caveat regarding effects of arising from disturbance due to dust, light and noise disturbance on surface water bodies.	<b>Potential to be worst case across construction impacts in relation to disturbance</b> – the extended duration will increase the magnitude of these indirect effects across all receptors, but the degree of change is small and changes in any resultant effects are likely to be of comparable significance to that concluded for Option 1.	No onshore works under Option 3, therefore no impacts are predicted.
Chapter 25 Onshore Archaeology and Cultural Heritage	<b>Worst case (all impacts)</b> , as Option 1 will result in the largest overall onshore project area, and all impacts are reduced where the onshore project area within sensitive areas	<b>Potential to be worst case temporary setting effects during construction</b> - temporary effects on the settings of designated heritage assets may be extended in duration if there is a longer work duration	No onshore works under Option 3, therefore no impacts are predicted.

EIA topics (Volume I)	Option 1: Onshore connection, North Falls alone	Option 2: Onshore connection, shared infrastructure with other projects	Option 3: Offshore electrical connection
	is reduced. However note the caveat regarding temporary settings effects during construction.	under Option 2. The change in duration is predicted to extend effects in certain locations, but not generate any new effects. As such any resultant effects are likely to be of comparable significance to that concluded for Option 1.	
Chapter 26 Noise and Vibration	<b>Worst case (all impacts)</b> , as Option 1 will result in the peak intensity and therefore peak noise effects onshore.	Effects are the same as those assessed for Option 1.	No onshore works under Option 3, therefore no impacts are predicted.
Chapter 27 Traffic and Transport	<b>Worst case (all impacts)</b> , as Option 1 will result in the peak intensity and therefore peak vehicle movements onshore.	Effects are the same as those assessed for Option 1.	Terrestrial traffic movements relating to the installation of the onshore infrastructure for North Falls and Five Estuaries would be removed by Option 3, whilst terrestrial traffic movements (to a base port) related to offshore construction would be expected to be of similar order of magnitude to Option 1 or 2 and therefore result in effects of the same significance.
Chapter 28 Human Health	<b>Worst case (impacts relating to noise, journey times)</b> , as effects are based on those assessed for the relevant technical chapters (see above).	<b>Potential to be worst case (impacts relating to air quality, surface and groundwater quality)</b> , as effects are based on those assessed for the relevant technical chapters (see above). As noted above, any such resultant effects are likely to be of comparable significance to that concluded for Option 1.	<b>Worst case (employment benefits)</b> , as effects are based on those assessed for the socio-economics assessment (see below). As noted below, overall socio-economic benefits effects are likely to be of comparable significance to that concluded for Option 1.
Chapter 29 Seascape, Landscape and Visual (SLVIA)	<b>Worst case (operational effects)</b> , as Option 1 will result in the maximum offshore infrastructure extent.	<b>Worst case (construction effects)</b> – The change in duration is predicted to extend effects in certain locations, but not generate any new effects. As such any resultant effects are likely to be of comparable significance to that concluded for Option 1.	Effects relating to the array areas remain as per Option 1. Effects relating to export cables in the offshore cable corridor are removed. The additional infrastructure required under Option 3 (an dedicated offshore platform) is included within the design envelope for Option 1. Therefore, the overall impact of the Project would be less than Option 1. This has potential to result in effects of reduced significance.
Chapter 30 Landscape and Visual (LVIA)	<b>Worst case (operational effects)</b> , as Option 1 will result in the maximum onshore infrastructure extent.	<b>Worst case (construction effects)</b> – The change in duration is predicted to extend effects in certain locations, but not generate any new effects. As such	No onshore works under Option 3, therefore no impacts are predicted.

EIA topics (Volume I)	Option 1: Onshore connection, North Falls alone	Option 2: Onshore connection, shared infrastructure with other projects	Option 3: Offshore electrical connection
		any resultant effects are likely to be of comparable significance to that concluded for Option 1.	
Chapter 31 Socio-economics	<b>Worst case (socio-economic disbenefits (impacts 5-10)).</b> Option 1 is the worst case for potential socio-economic dis-benefits. This is because this option results in the greater extent of infrastructure and intensity of onshore workforce of the three options.	Effects are the same as those assessed for Option 1.	<b>Worst case (Socio-economic benefits (impacts 1-4))</b> Effects relating to the array areas (impact 2: direct economic benefit (supply chain) offshore and impact 4: employment offshore) remain as per Option 1. Effects relating to export cables in the offshore cable corridor (impact 1: direct economic benefit (supply chain) onshore and impact 3: employment onshore) are removed. Therefore, the overall socio-economic benefits (impacts 1 to 4) of the Project would be less than Option 1. However due to the remaining beneficial effects generated under impacts 1 and 3, any resultant effects on socio-economic benefits across these four impacts are likely to be of comparable significance to that concluded for Option 1.
Chapter 32 Tourism and Recreation	<b>Worst case (all impacts),</b> however note the caveat regarding effects arising from disturbance to recreational receptors during construction.	<b>Potential to be worst case for disturbance to onshore tourism during construction</b> – the extended duration may lead to a longer extent of disruption to onshore recreational receptors. The change in duration is predicted to extend effects in certain locations, but not generate any new effects. As such any resultant effects are likely to be of comparable significance to that concluded for Option 1.	Effects relating to the array areas remain as per Option 1. Effects relating to export cables in the offshore cable corridor are removed. Therefore, the overall impact of the Project would be less than Option 1. This has potential to result in effects of reduced significance.
Chapter 33 Climate Change	<b>Worst case (all impacts),</b> as Option 1 is likely to require largest amount of material quantities and construction activities.	Impacts likely to be less than Option 1, as resources (i.e., construction compounds) and materials used could be optimised and shared between the two projects.	Option 3 would remove the onshore infrastructure for the Project and therefore embodied carbon in onshore infrastructure materials, and greenhouse gas (GHG) emissions from some road traffic movements (see the Traffic and Transport, above) and onshore plant and equipment would not take place. Option 3 would also remove export cables in the offshore cable corridor, therefore resulting in a reduction in emissions from embodied carbon in materials, and from the installation

EIA topics (Volume I)	Option 1: Onshore connection, North Falls alone	Option 2: Onshore connection, shared infrastructure with other projects	Option 3: Offshore electrical connection
			<p>process. It is therefore anticipated that the overall impact of the Project would be less than Option 1. The effect significance is likely to remain the same as Option 1 however, as this this is based on the overall beneficial effect of displacing GHG-intensive power generation, which does not significantly change between the options.</p>