

Addendum to the  
Environmental Impact  
Assessment Report

**NISA**  
*North Irish Sea Array*

Volume 3 - Offshore Chapters

# Chapter 10

## Marine Geology, Oceanography and Physical Processes





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# 10. Marine Geology, Oceanography and Physical Processes

North Irish Sea Array Windfarm Ltd (NISA, hereafter referred to as ‘the Developer’) has been considering the Request for Further Information (RFI) issued by An Bord Pleanála (now An Coimisiún Pleanála) as well as the third-party submissions received following public consultation. At An Coimisiún Pleanála’s behest, the Developer has also continued to consult with stakeholders in respect of the 2024 planning application throughout 2024-2026. The Developer has refined elements of the design to respond to the third-party submissions, the continued public and stakeholder consultation and the RFI. Amendments are therefore required to Chapter 10 Marine Geology, Oceanography and Physical Processes of the 2024 Environmental Impact Assessment Report (EIAR). Full details of consultation undertaken can be found in Appendix A1.2.

For the purposes of clarity, this document shall be read in conjunction with the Chapter 10 submitted as part of the 2024 EIAR.

Any cross reference to a chapter, section, table, image, figure or appendix within this document is to another location within the Addendum to the EIAR unless explicitly stated otherwise. Any cross reference to anything included in the 2024 EIAR will be clearly labelled as such.

Text in bold is only used throughout this document to indicate where changes are required, and why they are required. Text in italics is text from a section of the 2024 EIAR which is deleted, or quotations from other documents (as explicitly stated). Replacement text is in normal font.

Only tables which have been updated from the 2024 EIAR, or entirely new tables, have been included in the Addendum to the EIAR. These tables can be identified by the “A” prefix in the table caption. Any changes within the updated table, in comparison to tables within the 2024 EIAR, are indicated by grey shading in the relevant cell, column or row, as necessary. The exception to this is when a table has changed in its entirety.

The sections relevant to Chapter 10 in the RFI are included below.

| RFI Section | RFI  | Relevance to Chapter   |
|-------------|--|--|
| 1 (b)       | The scientific information provided as part of the planning application documentation should be based on up-to-date survey reports and data. Accordingly, the applicant is requested to confirm/provide justification/verification that the information submitted in support of the planning application remains relevant and appropriate at the point of submitting further information or to update same as required.  | The timeframes associated with the RFI have necessitated a review of the datasets previously used in the 2024 EIAR to ensure any necessary updates to the baseline environment are captured. |
| 5           | The Board notes that cumulative assessment was addressed under each topic specific chapter in the EIAR and addressed within Chapter 38 Cumulative and Interrelated Effects Assessment (CEA) (and associated Appendices 38.1 and 38.2).<br><br>The Marine Institute in their observation raises concerns in relation to the methodology applied in the submitted cumulative effects assessment and the manner in which the information is presented, noting the lack of a standard Irish methodology in relation to CEA. The applicant is advised that guidance exists in the UK, namely Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment - GOV.UK, September 2024 (NSIP, 2024).<br><br>The applicant is requested to revise the submitted cumulative assessment in line with NSIP (2024) and submit a standalone document to clearly demonstrate the CEA conclusions. | The cumulative effects assessment has been revised in line with NSIP (2024) and relevant sections of this Chapter 10 Marine Oceanography and Physical Processes have been updated.           |

| RFI Section | RFI  | Relevance to Chapter   |
|-------------|--|--|
|             | <p>In the interests of consistency and transparency, the applicant is requested to complete the assessment in accordance with the templates provided in the NSIP (2024), namely “Appendix 1: Matrix 1 - Identification of ‘other development’ for CEA” and “Appendix 2: Matrix 1 - Assessment matrix” (see attached Appendix B). This assessment should include each of the Irish Sea Phase 1 ORE Projects, namely (Oriel WF (ABP-319799-24), Arklow WF (ABP-319864-24), Codling Wind Park (ABP-320768-24), and Dublin Array WF (ABP-321992-25), and all other relevant projects in the International Council for the Exploration of the Sea (ICES) Celtic Sea and Greater North Sea ecoregions, regardless of project type. It is further requested that the applicant confirm that the now published documentation pertaining to the Irish Sea Phase 1 ORE projects, which have all been submitted to the Board for planning consent since this application was submitted, have been fully incorporated into the cumulative effects assessment.</p> <p>In accordance with NSIP (2024) tiered approach, it is requested that the subject proposal and each of the Irish Sea Phase 1 ORE projects be classified under Tier 1 ( “Other existing and, or approved development submitted applications under the Planning Acts or other regimes but not yet determined” ).</p> <p>The applicant is requested to update the application documentation, where relevant.</p> <p>In the interests of comprehensiveness and for ease of reference, the applicant is strongly encouraged to liaise with the other Irish Sea Phase 1 ORE Project applicants in the preparation of the above assessment and drafting of the tables attached in Appendix B.</p> |  |
| 7 (a)       | <p>Chapter 10 of the EIAR addresses Marine Geology, Oceanography and Physical Processes and is supported by Appendix 10.2 Marine Process Modelling Report. The Board notes that statistical and timeseries calibration plots for the hydrodynamic modelling (water levels and currents) undertaken has been provided in the submitted EIAR, however, this has not been provided for wave modelling. The applicant is requested to provide statistical and timeseries calibration plots for the wave modelling, in addition to the submitted statistical (scatter) plots. The applicant is requested to specify the % variance between model and recorded current speeds for spring and neap tidal cycles.</p>  | Addressed in Appendix A10.2: Marine Physical Processes Numerical Modelling.  |
| 7 (b)       | <p>The labels on the directional plots on Figures 4.11 and 4.13 within Chapter 10 of the EIAR are incorrect. The applicant is requested to address this issue.</p>   | Addressed in Appendix A10.2.   |
| 7 (c)       | <p>The applicant is requested to submit time series plots comparing simulated wave events relative to recorded wave buoy data including direction, period and wave height or water surface elevation (WSE).</p>  | Addressed in Appendix A10.2.   |
| 7 (d)       | <p>The modelling undertaken in support of Chapter 10 of the EIAR does not demonstrate spatial variation of bed friction or bed shear stress values across the model domain. The applicant is requested to address this issue in a review of the modelling undertaken.</p>  | Addressed in Appendix A10.2.   |
| 7 (e)       | <p>The applicant is requested to characterise the existing environment in terms of the sediment transport regime in the form of coupled wave, wind, hydrodynamic and sediment transport modelling.</p> <p>As indicated in Appendix 10.2, the SWAN model was utilised for the assessment of waves and the MIKE21FM (Flexible Mesh) 2D modelling package was utilised for hydrodynamic modelling. The separation of the wave, hydrodynamics and wind influences does not allow for a comprehensive assessment of the impact of the proposed development on marine processes. The applicant is requested to submit a coupled model in order to demonstrate the interaction between waves, hydrodynamics and wind influences. The applicant is also requested to undertake a greater range of sensitivity runs to examine the coupled model performance.</p>   | Results of the modelling are detailed in Appendix A10.3 Marine Processes Modelling Sensitivity Testing Report However, the results of this modelling provides justification for assertions made within Chapter 10. |

| RFI Section | RFI  | Relevance to Chapter  |
|-------------|--|---|
|             | Model scenarios should include an assessment of extreme events e.g. 10%, 5%, 2%, 1%, 0.5%, 0.2% annual exceedance probability (AEP) events and joint probability occurrences of tidal, surge and wave conditions. The applicant is requested to assess these probabilities in modelling scenarios and provide for climate change.  |   |
| 7 (f)       | In Appendix 10.2, Marine Processes Review of Project Options, the applicant has selected a plume height release of 3m above seabed in the trenching simulation. The applicant is requested to justify the release height of 3m based on the dredging technique/equipment proposed.   | Addressed in Appendix A10.1: Marine Processes Review of Project Options.  |
| 7 (g)       | There are two extrusion pits proposed as part of the development. It is stated in Chapter 8 of the EIAR (construction strategy) that 'the drilling of both bores may be carried out simultaneously to accelerate the works programme'. Only one is modelled in terms of potential impacts. It is requested that the drilling of both extrusion pits be assessed and in a concurrent scenario.  | Assessing the drilling of both extrusion pits has been undertaken in Chapter 10, in accordance with RFI Section 7 (g).  |
| 7 (h)       | The location of the extrusion pits related to the export cables are indicated to be within the surf zone (section 6.2.1 of Appendix 10.2). The applicant is requested to include an assessment of the impact of the extrusion pits at this location within the surf zone on coastal processes and also include an assessment of the impact of the proposed temporary mounds at these locations on coastal processes.   | An assessment of the impact of the extrusion pits at this location within the surf zone on coastal processes, and an assessment of the impact of the proposed temporary mounds on coastal processes has been undertaken in Chapter 10, in accordance with RFI Section 7 (h).  |
| 7 (i)       | The modelling domain appears to be of insufficient extent to address potential impacts to the hydrodynamics of the Western Irish Sea Gyre and the cumulative impact with other projects, including Irish Sea Phase 1 ORE projects. The applicant is requested to extend the modelling domain to address this issue.  | The hydrodynamics of the Western Irish Sea Gyre have been addressed in Chapter 10, in accordance with RFI Section 7 (i).  |
| 7 (j)       | The applicant is requested to include the impact of wind blocking on coastal processes. It is requested that this be addressed through site specific wake and wind field modelling, considering the entire windfarm layout.  | Addressed in Appendix A10.3.  |
| 7 (k)       | The applicant is requested to use coupled modelling of the leeward environments between the proposed array and the coastal zone to assess the combined impact of tidal, wind and wave blockage.  | Addressed in Appendix A10.3.  |
| 7 (l)       | It is unclear if the particle tracking modelling accounted for the flocculation of finer particles. The applicant is requested to address this issue.  | Addressed in Appendix A10.2.  |
| 7 (m)       | The applicant is requested to expand upon the dredge modelling information submitted by providing for a range of modelled scenarios representing different timelines and configurations of dredging activity. The applicant is requested to include assessment of sediment disturbance for all activities proposed, including the pre lay grapnel runs proposed for the entire dredge campaign. This is requested to allow for a simulation of entire campaigns and not just select locations as submitted in the EIAR, and to enable an assessment of the cumulative impact on sediment transport, waves processes, and tidal currents. | As seabed levelling is no longer required at foundation locations then associated dredging and disposal is removed. Remaining sediment disturbance activities include seabed clearance (pre-lay grapnel runs), cable trenching (using MFE) and the option for drilling pin-piles for a single OSP.<br><br>The likely scale of pre-lay grapnel runs is identified in Appendix A10.1, Section 4.2.1. The impact of seabed clearance (Impact 1) is assessed in Chapter 10, Section 10.5.2.1.<br><br>The review and assessment of seabed clearance is based on a conceptual approach. rather than modelling.<br><br>Where the conceptual approach identifies that an activity is likely to create a large disturbance which could spread elsewhere then modelling is considered to help assess the impact on a receptor further away. |

| RFI Section | RFI  | Relevance to Chapter   |
|-------------|--|--|
|             |  | <p>This is the case for both MFE and drilling, but not pre-lay grapnel runs.</p> <p>Pre-lay grapnel runs scrap the surface of the seabed to help remove debris and in doing so some of the surface sediment may be displaced to the side, there is no direct force that deliberately brings large volumes of sediment into suspension which could be advected away.</p> <p>Therefore, there is no requirement to model this process. Notably, the same route is subject to MFE to develop a trench for cabling laying for inter-array cables (Chapter 10, Section 10.5.2.4 - Impact 4) and export cables (Chapter 10, Section 10.5.2.5 - Impact 5). The MFE activity deliberately excavates a high volume of sediment and raises fine sediments into suspension which can spread further afield. Consequently, MFE for cable laying is subject to modelling.</p> |
| 7 (n)       | The applicant is requested to assess the longer-term impact of the dredge dispersal modelling on the seabed morphology.  | As dredging is no longer proposed, RFI Section 7 (n) no longer applies.  |
| 7 (o)       | Appendix 10.3 provides an assessment of spoil mounds which are expected to develop when a trailer suction-hopper dredger (TSHD) discharges sediment at various locations across the array area. The impact of dredging with a backhoe and barge is not captured in the modelling. The applicant is requested to address this issue.  | <p>As seabed levelling at foundation locations is no longer required the associated dredging and disposal of spoil is removed and Appendix 10.3 of the 2024 EIAR is removed.</p> <p>The use of a backhoe and barge applies only to the option of excavation of two nearshore HDD exit pits, with MFE being an alternative excavation option. Appendix 10.1, Section 4.2.4 identifies that MFE would be the option that leads to the highest level of sediment disturbance (compared with backhoe) and has been modelled and the impact assessed (Chapter 10, Section 10.5.2.6 – Impact 6).</p>   |
| 7 (p)       | <p>In relation to all sediment disturbance modelled, the applicant is requested to provide the following:</p> <p>i. Statistical maximum for sediment deposition depths (cm) and suspended sediment concentration (mg/l) across the model domain for the entire construction campaign presented in the form of heatmaps. This should include heatmaps of predicted percentage change relative to the baseline across the relevant key temporal periods. The applicant should confirm that the modelling used reflects the baseline conditions in terms of the modelled particle size used, i.e. the modelling should be aligned to known baseline conditions. These heatmaps and other relevant model outputs should be used to inform any further ecosystem and cumulative assessments such as smothering or impaired foraging within the relevant sections of an updated EIAR.</p> <p>ii. Similar to (i) above, the sediment deposition depths and suspended sediment concentration across the model domain for the entire operational campaign should be presented as heat maps of the percentage change relative to baseline and used to inform relevant EIAR ecosystem and cumulative assessments.</p> | The outputs of the modelling have been presented in sediment deposition depths and suspended sediment concentrations on figures that accompany this chapter (presented in Volume 7A) and are referenced where appropriate in the assessment.   |

| RFI Section | RFI  | Relevance to Chapter                           |
|-------------|--|--|
|             | iii. Results should be illustrated on appropriately scaled drawings/maps and be provided in GIS format (see Appendix A, Technical Details).  |  |
| 7 (q)       | The longer term morphodynamic impact of the development including cable armouring, scour protections and wind turbine foundations is not assessed. This requires coupled wind, wave, hydrodynamic, and sediment transport modelling. The applicant is requested to submit modelling of the morphodynamic response of the coastline to the proposed development. Morphodynamic Modelling should be extended over a series of longer time horizons, operational plus decommissioning, i.e. 40+ years, and compared with the non-developed scenario for the same time period.   | Addressed in Appendix A10.3.                   |
| 7 (r)       | Any additional modelling in relation to physical processes, which increase the existing significance of effect in that chapter and in interrelated chapters, ‘Chapter 10 Marine Geology, Oceanography and Physical Processes’, and / or ‘Chapter 11 Marine Water & Sediment Quality’ to ‘Significant’ or greater, will also require revised consideration as part of any updates in assessments associated with ‘Chapter 12 Benthic Subtidal and intertidal Ecology’, ‘Chapter 13 Fish and Shellfish Ecology’, ‘Chapter 14 Marine Mammal Ecology’, ‘Chapter 15 Offshore Ornithology’, and also the NIS (chapters 14 and 15 should only be considered for any revised assessment in relation to “habitat supporting prey species” and “provision / maintenance of prey species”). | Addressed in relevant chapters, as applicable. |

## 10.1 Introduction

There are no changes to this section. Refer to Section 10.1 of Chapter 10 of the 2024 EIAR.

## 10.2 Methodology

### 10.2.1 Introduction

There are no changes to the section. Refer to Section 10.2.1 of Chapter 10 of the 2024 EIAR.

### 10.2.2 Source-Pathway-Receptor

There are no changes to the section. Refer to Section 10.2.2 of Chapter 10 of the 2024 EIAR.

### 10.2.3 Study Area

**Changes to this section are provided in response to RFI Section 7 (i) which requires addressing potential impacts to the hydrodynamics of the Western Irish Sea Gyre. Figure 10.1 of Chapter 10 of the 2024 EIAR has been updated to include the Western Irish Sea Gyre as a marine processes receptor. Therefore Figure 10.1 of Chapter 10 of the 2024 EIAR shall be deleted and replaced with Figure A10.1. Further comments related to model extent are in this regard provided in Appendix A10.2. Further information describing the Western Irish Sea Gyre are now included in the baseline in Section 10.3.9.**

**There are no further changes to the section. Refer to Section 10.2.3 of Chapter 10 of the 2024 EIAR.**

### 10.2.4 Relevant Guidance and Policy

There are no changes to the section. Refer to Section 10.2.4 of Chapter 10 of the 2024 EIAR.

### 10.2.5 Data Collection and Collation

There are no changes to the section. Refer to Section 10.2.5 of Chapter 10 of the 2024 EIAR.

#### *10.2.5.1 Metocean Data*

There are no changes to the section. Refer to Section 10.2.5.1 of Chapter 10 of the 2024 EIAR.

#### *10.2.5.2 Geophysical data*

**Since the 2024 EIAR, the Developer has acquired additional geophysical and geotechnical data and provided associated interpretations to produce ground models of the array area and the ECC. In accordance with RFI Section 1 (b), the following additional reports have therefore been considered:**

- Fugro (2024). The North Irish Sea Array Project – Interim Surveys. Investigation Results. Geotechnical Site Investigation. Irish Sea. F186480/01 | 05 | 01 March 2024. Final
- N-Sea (2024). North Irish Sea Array Windfarm Ltd. Geotechnical Site Investigation Survey. Factual Geotechnical Report. Doc No: PJ00326-NSEA-SUR-FR-22501
- SEP Hydrographic (2024). North Irish Sea Array (NISA). Nearshore and Intertidal Geophysical Survey. Operations & Results Report. Ref; 2023-031
- GDG (2024). NISA Integrated Ground Model (Iteration 2). 24041-REP-001-01
- Venterra (2025). NISA Array Geotechnical Interpretative Report. 23151-REP-000-01
- Venterra (2025). NISA Export Cable Corridor - Integrated Ground Model and Geotechnical Interpretative Report. 24203-REP-001-01

**There are no further changes to the section. Refer to Section 10.2.5.2 of Chapter 10 of the 2024 EIAR.**

#### *10.2.5.3 Particle Size Analysis (PSA)*

**Since the 2024 EIAR, there has been further survey of the proposed development including additional benthic grab samples of surficial sediment across the ECC and array area, on which particle size analysis have been carried out. In accordance with RFI Section 1 (b), the following additional report has therefore been considered:**

- Aquafact (2025). NISA, Benthic Ecology Survey Report 2025. Ref: P18906

**In addition, particle size information is also provided at specific depths below seabed for vibrocores taken across the ECC and array area.**

- N-Sea (2024). North Irish Sea Array Windfarm Ltd. Geotechnical Site Investigation Survey. Factual Geotechnical Report. Doc No: PJ00326-NSEA-SUR-FR-22501

**There are no further changes to the section. Refer to Section 10.2.5.3 of Chapter 10 of the 2024 EIAR.**

#### *10.2.6 Methodology for Assessment of Effects*

There are no changes to the section. Refer to Section 10.2.6 of Chapter 10 of the 2024 EIAR.

##### *10.2.6.1 Sensitivity Criteria*

There are no changes to the section. Refer to Section 10.2.6.1 of Chapter 10 of the 2024 EIAR.

##### *10.2.6.2 Magnitude of impact criteria*

There are no changes to the section. Refer to Section 10.2.6.2 of Chapter 10 of the 2024 EIAR.

##### *10.2.6.3 Defining the significance of effect*

There are no changes to the section. Refer to Section 10.2.6.3 of Chapter 10 of the 2024 EIAR.

## 10.3 Baseline Environment

### 10.3.1 Overview

There are no changes to the section. Refer to Section 10.3.1 of Chapter 10 of the 2024 EIAR.

### 10.3.2 Marine Geology

There are no changes to the section. Refer to Section 10.3.2 of Chapter 10 of the 2024 EIAR.

#### 10.3.2.1 Recent Geological Evolution

There are no changes to the section. Refer to Section 10.3.2.1 of Chapter 10 of the 2024 EIAR.

#### 10.3.2.2 Relevant Geological Coastal Features

There are no changes to the section. Refer to Section 10.3.2.2 of Chapter 10 of the 2024 EIAR.

### 10.3.3 Shallow Offshore Geology

**In accordance with RFI Section 1 (b) and incorporating new survey results and data, the interpretation of shallow offshore geology has recently benefited from geotechnical surveys providing borehole and Cone Penetrometer Testing (CPT) data at multiple sites across the array area (Fugro 2024).**

**In addition, Figure 10.3 of Chapter 10 of the 2024 EIAR shall be deleted and replaced with Figure A10.2.**

**For the purposes of clarity, the following text from Section 10.3.3 of Chapter 10 of the 2024 EIAR is deleted:**

*The shallow geology across the array area has been mapped by the geophysical survey (Fugro, 2022) and identifies the top of bedrock represented by two geological formations, a layer of Dinantian Limestone and a layer of Innishkeen Formation (sandstone). The depth below seabed to rockhead varies between 5m at the very southern limit of the array area to around 30 to 35m slightly further north (due to abrupt dipping which locally reaches up to 65m). This abrupt change is likely to be associated with the boundary between these two rock types. The majority of the array area has a depth below seabed of between 20 to 30m to the top of the Innishkeen Formation.*

*Figure 10.3 presents isopach contours of the depth below seabed to the top of the rockhead, interpreted from the geophysical survey for the array area (Fugro, 2022). The isopach contours are also presented against the regional-scale interpretation of pre-Quaternary lithology.*

#### **And replaced with:**

The shallow geology across the array area has been interpreted (Venterra, 2025) from the available geophysical and geotechnical data (Fugro 2022 and 2024). The bedrock layer (Geotechnical unit 4 or GU4) is described as Undifferentiated Carboniferous rock comprising of mudstone, siltstone and sandstone.

Figure A10.2 shows the depth below seafloor (BSF) which varies between 5m at the very southern limit of the array area to around 65m slightly further north in an area described as a bedrock incision. The majority of the array area to the north of the bedrock incision has a depth below seabed of between 15 to 30m. This information is presented against the regional-scale interpretation of pre-Quaternary lithology from EMODnet.

**There are no further changes to the section. Refer to Section 10.3.3 of Chapter 10 of the 2024 EIAR.**

### 10.3.4 Seabed

#### 10.3.4.1 Bathymetric Profile

**The change in this section is due to more recent data becoming available.**

**The new information has been reviewed and included to ensure the impact assessment is informed by the most current and up-to-date data, satisfying RFI Section 1 (b). The interpretation of the bathymetric profile across the study area has recently benefited from a nearshore and intertidal geophysical survey (SEP Hydrographic, 2024).**

**In addition, Figure 10.4 of Chapter 10 of the 2024 EIAR shall be deleted and replaced with Figure A10.3.**

**For the purposes of clarity, the following text from Section 10.3.4.1 of Chapter 10 of the 2024 EIAR is deleted:**

*“Site-specific geophysical surveys of the array area (Fugro, 2022) and ECC (N-Sea, 2023) provide the most detailed and up to date bathymetry data across the offshore development area. The vertical datum for these surveys is also LAT, established according to VORF.”*

**And replaced with:**

Site-specific geophysical surveys of the array area (Fugro, 2022) and ECC (N-Sea, 2023 and SEP Hydrographic (2024)) provide the most detailed and up to date bathymetry data across the offshore development area, including the nearshore and intertidal areas. The vertical datum for these surveys is also LAT, established according to VORF.

**There are no further changes to the section. Refer to Section 10.3.4.1 of Chapter 10 of the 2024 EIAR.**

#### **10.3.4.2 Surficial sediment distribution**

**The change in this section is due to more recent data becoming available. The new information has been reviewed and included to ensure the impact assessment is informed by the most current and up-to-date data, satisfying RFI Section 1 (b). The interpretation of the surficial (and near surficial) sediment distribution across the study area has recently benefited from a nearshore and intertidal geophysical survey (SEP Hydrographic, 2024) as well as additional benthic grab sampling (Aquafact, 2025) and vibrocore data from a geotechnical survey in 2024 (N-Sea, 2024). This has provided more detailed particle size distributions for the ECC, noting previous data for this area did not provide a full breakdown of fine sediments between silts and muds, which has been removed. Figure 10.6 of Chapter 10 of the 2024 EIAR shall be deleted and replaced with Figure A10.4.**

**For the purposes of clarity, the following text from Section 10.3.4.2 of Chapter 10 of the 2024 EIAR is deleted:**

*“The geophysical surveys of the array area (Fugro, 2022) and ECC (N-Sea, 2023) include a spatial description of surficial sediments across the offshore development area derived from an interpretation of MBES backscatter and side-scan sonar. The benthic surveys (Appendix 12.1: Array Area Benthic Survey Report; and Appendix 12.2: Cable Route Benthic Survey Report) also include particle size distributions developed from a spread of sediment samples. The classification of sediment types from these datasets has been moderated to Folk 7 to be compatible with both EMODnet Geology and INFOMAR.”*

**And replaced with:**

The geophysical surveys of the array area (Fugro, 2022) and ECC (N-Sea, 2023 and SEP Hydrographic, 2024) include a spatial description of surficial sediments across the offshore development area derived from an interpretation of MBES backscatter and side-scan sonar. The benthic surveys (Appendix 12.1: Array Area Benthic Survey Report) and Aquafact (2024) and vibrocore data from the shallow geotechnical survey (N-Sea, 2024) also include particle size distributions developed from a spread of sediment samples. The classification of sediment types from these datasets has been moderated to Folk 7 to be compatible with both EMODnet Geology and INFOMAR.

**In addition, the following text from Section 10.3.4.2 of Chapter 10 of the 2024 EIAR is deleted:**

*“Figure 10.6 shows the local-scale variation of surficial sediment types within the offshore development area based on an interpretation of sediment types from the geophysical surveys (Fugro, 2022 and N-Sea, 2023) and interpreted particle size analysis obtained from the benthic surveys (Appendix 12.1: Array Area Benthic Survey Report; and Appendix 12.2: Cable Route Benthic Survey Report).*

*This interpretation overlays the INFOMAR data for the far-field part of the study area. The surficial sediments across the array area are almost entirely classified as sandy Mud, whereas the ECC is predominantly Sand (based on Folk 7). Particle size data indicates the sand content is mainly fine sand or very fine sand in both the array area and along the ECC. The gravel content in surficial sediments is typically very low throughout, with values between 0 to 1% across the array area, around 1 to 2% across the ECC, with slightly higher values within the intertidal area (up to 22%).”*

#### **And replaced with:**

Figure A10.4 shows the local-scale variation of surficial sediment types within the offshore development area based on an interpretation of sediment types from the geophysical surveys (Fugro, 2022 and N-Sea, 2023) and interpreted particle size analysis obtained from the benthic surveys (Appendix A12.1: Array Area Benthic Survey Report) and Aquafact (2024). This interpretation overlays the INFOMAR data for the far-field part of the study area. The surficial sediments across the array area are almost entirely classified as sandy Mud, whereas the ECC is predominantly muddy Sand (based on Folk 7). Particle size data indicates the sand content is mainly fine sand or very fine sand in both the array area and along the ECC. The gravel content in surficial sediments is typically very low throughout, with values < 1% across both the array area and along the ECC, with slightly higher values within the intertidal area (up to 22%).

**There are no further changes to the section. Refer to Section 10.3.4.2 of Chapter 10 of the 2024 EIAR.**

### **10.3.5 Coastline**

#### *10.3.5.1 Available evidence*

There are no changes to the section. Refer to Section 10.3.5.1 of Chapter 10 of the 2024 EIAR.

#### *10.3.5.2 Baseline review*

There are no changes to the section. Refer to Section 10.3.5.2 of Chapter 10 of the 2024 EIAR.

#### *10.3.5.3 Clogher Head to Boyne Estuary*

There are no changes to the section. Refer to Section 10.3.5.3 of Chapter 10 of the 2024 EIAR.

#### *10.3.5.4 Boyne Estuary to River Nanny*

There are no changes to the section. Refer to Section 10.3.5.4 of Chapter 10 of the 2024 EIAR.

#### *10.3.5.5 River Nanny to Braymore Point*

There are no changes to the section. Refer to Section 10.3.5.5 of Chapter 10 of the 2024 EIAR.

#### *10.3.5.6 Braymore Point to Red Island (Skerries)*

There are no changes to the section. Refer to Section 10.3.5.6 of Chapter 10 of the 2024 EIAR.

#### *10.3.5.7 Red Island (Skerries) to Nose of Howth*

There are no changes to the section. Refer to Section 10.3.5.7 of Chapter 10 of the 2024 EIAR.

#### *10.3.5.8 Coastline Summary*

There are no changes to the section. Refer to Section 10.3.5.8 of Chapter 10 of the 2024 EIAR.

### **10.3.6 Tidal Conditions**

#### *10.3.6.1 Available evidence*

**There is an erratum regarding reference to Figure 10.8 of Chapter 10 of the 2024 EIAR which should refer to Figure 10.7 of Chapter 10 of the 2024 EIAR. Accordingly, the following text from Section 10.3.6.1 of Chapter 10 of the 2024 EIAR is deleted:**

*“Available tidal data have been reviewed (MetOceanWorks, 2020) with a gap analysis of existing data underpinning the recommendations for project related metocean surveys which are now completed. Within the study area, this data comprises the following sites, which are also presented on Figure 10.8:”*

**And replaced with:**

Available tidal data have been reviewed (MetOceanWorks, 2020) with a gap analysis of existing data underpinning the recommendations for proposed development related metocean surveys which are now completed. Within the study area, this data comprises the following sites, which are also presented on Figure 10.7.

**There are no changes to the section. Refer to Section 10.3.6.1 of Chapter 10 of the 2024 EIAR.**

*10.3.6.2 Baseline Review*

There are no changes to the section. Refer to Section 10.3.6.2 of Chapter 10 of the 2024 EIAR.

*10.3.6.3 Tidal axis*

There are no changes to the section. Refer to Section 10.3.6.3 of Chapter 10 of the 2024 EIAR.

*10.3.6.4 Peak flows*

There are no changes to the section. Refer to Section 10.3.6.4 of Chapter 10 of the 2024 EIAR.

*10.3.6.5 Tidal excursion*

There are no changes to the section. Refer to Section 10.3.6.5 of Chapter 10 of the 2024 EIAR.

*10.3.6.6 Tidal asymmetry*

There are no changes to the section. Refer to Section 10.3.5.6 of Chapter 10 of the 2024 EIAR.

*10.3.6.7 Non-tidal influences*

There are no changes to the section. Refer to Section 10.3.5.8 of Chapter 10 of the 2024 EIAR.

*10.3.7 Waves*

*10.3.7.1 Available evidence*

There are no changes to the section. Refer to Section 10.3.7.1 of Chapter 10 of the 2024 EIAR.

*10.3.7.2 Baseline review*

There are no changes to the section. Refer to Section 10.3.7.2 of Chapter 10 of the 2024 EIAR.

*10.3.8 Sediment Transport*

There are no changes to the section. Refer to Section 10.3.8 of Chapter 10 of the 2024 EIAR.

*10.3.8.1 Wave influences*

**There are no changes to the section. Refer to Section 10.3.8.1 of Chapter 10 of the 2024 EIAR.**

**However, while no changes are made to this section, there is a notable association with RFI Section 7 (e) which requested coupled modelling in order to demonstrate the interaction between waves, hydrodynamics and wind influences, set within a greater range of sensitivities.**

**The full response to RFI Section 7 (e) is provided in Appendix A10.3 which also serves to justify assertions made here.**

*10.3.8.2 Tidal influences*

There are no changes to the section. Refer to Section 10.3.8.2 of Chapter 10 of the 2024 EIAR.

### 10.3.8.3 Suspended sediments

There are no changes to the section. Refer to Section 10.3.8.3 of Chapter 10 of the 2024 EIAR.

### 10.3.8.4 Summary of sediment regime

There are no changes to the section. Refer to Section 10.3.8.4 of Chapter 10 of the 2024 EIAR.

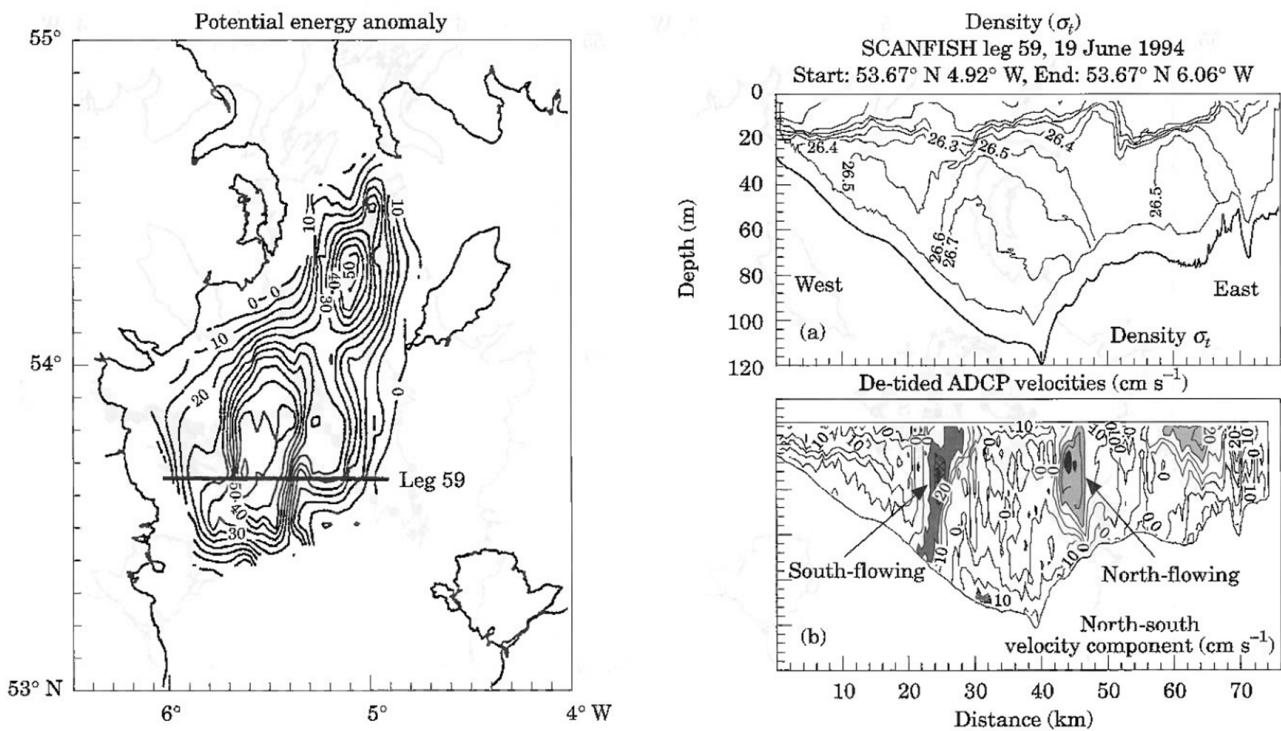
### 10.3.9 Stratification and Fronts

**The change in this section is to provide additional detail to Section 10.3.9 to provide a baseline description of the Western Irish Sea Gyre (WISG) to respond, in part, to RFI Section 7 (i). Therefore, the following text shall be added to Section 10.3.9 of Chapter 10 of the 2024 EIAR:**

The Western Irish Sea Gyre (WISG) was first identified in July 1990 from a set of nine free-drifting Argos-Decca buoys, with further drifters deployed in the summer period of 1993. In 1994, a simultaneous survey was undertaken comprising drifters, a CTD (conductivity-temperature-depth) profiler mounted in an undulating Scanfish, and a vessel-mounted ADCP (acoustic current doppler profiler) (Hill *et al.*, 1996). Additional drogue releases were also made in 1995 and 1996 along with further CTD and ADCP observations (Horsburgh *et al.*, 2000). Drifter b17804 made a complete circuit in 55 days, including a period of 13 days with negligible movement. Subsequent descriptions and modelling to represent the WISG have all been based on this set of observations.

During the summer, stratification develops in the deeper water (>100 m) of the Western Trough forming a stable cold-water pool. Baroclinic density-driven currents develop around the cold-water pool forming a cyclonic gyre known as the WISG. The position of the WISG is therefore intrinsically linked to the deeper water east of the array area.

A west-east transect (Leg 59) through the CTD Scanfish and vessel mounted ADCP data is provided in Hill *et al.*, (1997). The western extent of this transect bisects the array area (Figure A10.1). Density and geostrophic flow (de-tided ADCP) data along the transect are reproduced in Graph A10.1 and provides a basis for determining the proximity of the array area to WISG. The potential energy anomaly (i.e. the amount of energy required to develop well-mixed conditions) derived from the CTD data is also shown.



**Graph A10.1 Observations through the Western Irish Sea Gyre (Hill *et al.*, 1997)**

The boundary of the cold-water pool, and surrounding cyclonic gyre, is limited to depths of around 80m (and not shallower), established by observed density gradients, and de-tided southerly and northerly geostrophic flows. The typical strength of geostrophic flows is less than 20cm/s (0.20m/s) and typically around 10cm/s (0.1m/s). The influence of semi-diurnal tidal flows is additional to the baroclinic density driven flows.

**There are no further changes to the section. Refer to Section 10.3.9 of Chapter 10 of the 2024 EIAR.**

### 10.3.10 Marine Processes Receptors

**The change in this section is due to the incorporation of the Western Irish Sea Gyre, which has been added to the list of marine processes receptors, to partly respond to RFI Section 7 (i).**

**The following text is deleted:**

- “Marine water body, including stratification and fronts”

**And replaced with:**

- Marine water body, including stratification, fronts, and the WISG

**There are no further changes to the section. Refer to Section 10.3.10 of Chapter 10 of the 2024 EIAR.**

## 10.4 Characteristics of the Proposed Development

**The change required in this section is in response to the refinement of the foundation types for Project Option 1 and Project Option 2 (refer to Appendix A5.1 Design Refinements and Appendix A10.1). Of the 2024 EIAR, WTG monopile foundations and Offshore Substation Platform (OSP) monopile and jacket foundations with pin piles were considered. Following design refinement in response to the RFI, monopiles have been removed and WTG foundations will now be installed with suction bucket jackets (SBJ), and OSP jacket foundations installed with either drilled pin piles or suction buckets, as indicated by the grey shading in Table A10.1 below.**

**For the purposes of clarity, Table 10.5 from Chapter 10 of the 2024 EIAR shall be deleted and replaced with Table A10.1.**

**Table A10.1 Key characteristics of Project Option 1 and Project Option 2 (replaces Table 10.5 of Chapter 10 of the 2024 EIAR)**

| Key Offshore Characteristics                                | Project Option 1  | Project Option 2   |
|---|---|--|
| Array area  | 88.5km <sup>2</sup>   | 88.5km <sup>2</sup>  |
| ECC   | 36.45km <sup>2</sup>  | 36.45km <sup>2</sup>   |
| Landfall  | One landfall site, immediately south of Bremore Point, which includes two subtidal exit pits within the ECC           | One landfall site, immediately south of Bremore Point, which includes two subtidal exit pits within the ECC          |
| Wind Turbine Generator (WTG)                                | 49 WTGs with 250m rotor diameter  | 35 WTGs with 276m rotor diameter   |
| WTG Foundations   | 49 three- or four-legged jacket structures secured into the seabed with suction buckets                               | 35 three- or four-legged jacket structures secured into the seabed with suction buckets                              |
| Offshore Substation Platform (OSP) Foundations (array area) | One OSP, with a four -legged jacket foundation secured into the seabed with either pin piles or suction buckets       | One OSP, with a four -legged jacket foundation secured into the seabed with either pin piles or suction buckets      |
| Cables  | Installation of 111km of array cables within the array area and installation of two 18km export cables within the ECC | Installation of 91km of array cables within the array area and installation of two 18km export cables within the ECC |

### 10.4.1 Parameters for Assessment

**There are no changes to the section. Refer to Section 10.4.1 of Chapter 10 of the 2024 EIAR.**

#### 10.4.2 Embedded Mitigation Measures

There are no changes to the section. Refer to Section 10.4.2 of Chapter 10 of the 2024 EIAR.

#### 10.4.3 Potential Impacts

**The change required in this section is in response to the refinement of the foundation installation types for Project Option 1 and Project Option 2 (refer to Appendix A5.1 and Appendix A10.1) with WTG jacket foundations being installed with suction buckets and OSP jacket foundations being installed with either drilled pin piles or suction buckets, as indicated by the grey shading in Table A10.2 below.**

**For the purposes of clarity, Table 10.6 from Chapter 10 of the 2024 EIAR shall be deleted and replaced with Table A10.2 which also draws from Appendix A10.1: Marine Processes Review of Project Options.**

**Table A10.2 Potential impacts and magnitude of impact per project option. The project option that has the greatest magnitude of impact is identified in blue (replaces Table 10.6 of Chapter 10 of the 2024 EIAR)**

| Potential impact  | Project Option 1 (49 WTG)   | Project Option 2 (35 WTG)   | Rationale for the project option with the greatest magnitude of impact   | Relevant modelled scenario reference within Appendix A10.1 – A10.2 |
|---|---|---|--|--|
| <b>Construction</b>   |   |   |  |  |
| Impact 1 – Physical changes due to seabed clearance activities at WTG locations and along cable routes to remove boulders and debris                | WTG number: 49<br>Inter-array cable length: 111km<br>ECC length: 18km (with two cables)   | WTG number: 35<br>Inter-array cable length: 91km<br>ECC length: 18km (with two cables)  | Project Option 1 presents the option with the greatest magnitude for impact on marine processes receptors as it is likely to require the greatest area of seabed clearance due to the larger number of WTGs and greater length of inter-array cables   | Not applicable   |
| Impact 3 – Physical changes due to increased suspended sediment concentration and settlement from drilling pin-piles at OSP foundation installation | OSP total volume of arisings: 10,179m <sup>3</sup> for OSP pin pile foundation  | OSP total volume of arisings: 10,179m <sup>3</sup> for OSP pin pile foundation  | Project Option 1 and 2 for drilling a single OSP are equivalent  | C-02 Drilling for OSP foundation installation                      |
| Impact 4 – Physical changes from increased suspended sediment concentration from cable installation in the array area                               | Inter-array cable length: 111km   | Inter-array cable length: 91km  | Project Option 1 will have a slightly longer set of inter-array cables due to more WTG connections<br>The modelling considers an array area cable trenching section of 1.5km coincident with highest proportion of fine sediment which can be applied to either Project Option 1 or Project Option 2 | C-03 Cable installation – array area                               |
| Impact 5 – Physical changes from increased suspended sediment concentration from cable installation along the ECC                                   | ECC length: 18km (with two cables)<br>Trench depth: 3m<br>Trench width: 1m  | ECC length: 18km (with two cables)<br>Trench depth: 3m<br>Trench width: 1m  | Project Option 1 and Project Option 2 will have an equal magnitude of impact as the proposed export cable lengths are the same   | C-04 Cable Installation - ECC                                      |
| Impact 6 – Nearshore changes due to the excavation of the Horizontal Directional Drilling (HDD) exit pits   | Number of nearshore HDD exit pits: 2<br>Width: 20m<br>Length: 30m<br>Depth: 1.5 – 2.5m<br>Transition zone: 6m wide by 50m long<br>Volume of excavation: 3,960m <sup>3</sup> | Number of nearshore HDD exit pits: 2<br>Width: 20m<br>Length: 30m<br>Depth: 1.5 – 2.5m<br>Transition zone: 6m wide by 50m long<br>Volume of excavation: 3,960m <sup>3</sup> | Project Option 1 and Project Option 2 will have an equal magnitude of impact as the proposed HDD exit pit locations and the same construction approach to excavation applies to both project options   | C-05 HDD at exit pits  |

| Potential impact  | Project Option 1 (49 WTG)  | Project Option 2 (35 WTG)  | Rationale for the project option with the greatest magnitude of impact  | Relevant modelled scenario reference within Appendix A10.1 – A10.2 |
|---|--|--|---|--|
| Impact 7 – Nearshore changes from the release of bentonite at the HDD exit pits                                 | Bentonite release from nearshore HDD exit pits<br>Quantity of drilling muds released: 30 tonnes  | Bentonite release from nearshore HDD exit pits<br>Quantity of drilling muds released: 30 tonnes  | Project Option 1 and Project Option 2 will have equal magnitude of impact as the proposed HDD exit pit locations and bentonite release volumes applies to both project options  | C-06 Bentonite release   |
| Impact 8 – Physical changes to seabed from the use of construction vessels                                      | WTG number: 49<br>OSP number: 1  | WTG number: 35<br>OPS number: 1  | Jack-up vessels deployed to WTG and OSP locations have the potential to leave spud-can depressions on a consolidated muddy seabed. Project Option 1 has more WTG locations than Project Option 2, therefore a slightly greater potential for more seabed depressions. Once scour protection is installed this mitigates this potential impact | Not applicable   |
| <b>Operation and Maintenance</b>  |  |  |   |  |
| Impact 9 – Physical changes from cable crossings within the array area  | Number of cable crossings: 5<br>Area of seabed covered by each cable crossing: 550m <sup>2</sup><br>Area of seabed covered by all five cables: 2,750m <sup>2</sup><br>Cable crossing height: 2.5m<br>Total volume of rock armour at cable crossings: 5,188m <sup>3</sup> | Number of cable crossings: 5<br>Area of seabed covered by each cable crossing: 550m <sup>2</sup><br>Area of seabed covered by all five cables: 2,750m <sup>2</sup><br>Cable crossing height: 2.5m<br>Total volume of rock armour at cable crossings: 5,188m <sup>3</sup> | Project Option 1 and Project Option 2 will have an equal magnitude of impact as the proposed number of cable crossings in the array area is the same for both project options   | Not applicable   |
| Impact 10 - Physical changes from increased suspended sediment concentration from cable repairs and/or reburial | 111km inter-array cables and 36km export cables<br>Length of cable repair (per activity): 200m<br>De-burial method: Mass Flow Excavator (MFE) or jetting tools   | 91km inter-array cables and 36km export cables<br>Length of cable repair (per activity): 200m<br>De-burial method: MFE or jetting tools  | Project Option 1 has a greater length of inter-array cables than Project Option 2   | Not applicable   |
| Impact 11 - Physical changes from cable protection  | 111km inter-array cables and 36km export cables requiring 20% cable protection.<br>Inter-array cables:   | 91km inter-array cables and 36km export cables requiring 20% cable protection.<br>Inter-array cables:  | Project Option 1 has a greater length of inter-array cables than Project Option 2   | Not applicable   |

| Potential impact  | Project Option 1 (49 WTG)   | Project Option 2 (35 WTG)  | Rationale for the project option with the greatest magnitude of impact   | Relevant modelled scenario reference within Appendix A10.1 – A10.2 |
|---|---|--|--|--|
|   | Cable length requiring protection: 22.2km<br>Area of seabed covered by cable protection: 111,000m <sup>2</sup><br>Total volume of rock armour: 133,200m <sup>3</sup><br>Export cables:<br>Cable length requiring protection: 7.2km<br>Area of seabed covered by cable protection: 36,000m <sup>2</sup><br>Total volume of rock armour: 43,200m <sup>3</sup> | Cable length requiring protection: 18.2km<br>Area of seabed covered by cable protection: 91,000m <sup>2</sup><br>Total volume of rock armour: 109,200m <sup>3</sup><br>Export cables:<br>Cable length requiring protection: 7.2km<br>Area of seabed covered by cable protection: 36,000m <sup>2</sup><br>Total volume of rock armour: 43,200m <sup>3</sup> |  |  |
| Impact 12 – Physical changes to the coastline from a modification in storm waves due to array-scale blockage          | Number of suction bucket jacket foundations: 49 WTG (4-legged) and 1 OSP (4-legged)   | Number of suction bucket jacket foundations: 35 WTG (4-legged) and 1 OSP (4-legged)  | Project Option 1 will have the greatest magnitude of impact due to the larger number of WTG causing the potential blockage effect on passing waves   | O-01   |
| Impact 13 - Physical changes to marine processes receptors from modification of the tides due to array-scale blockage | Number of suction bucket jacket foundations: 49 WTG (4-legged) and 1 OSP (4-legged)   | Number of suction bucket jacket foundations: 49 WTG (4-legged) and 1 OSP (4-legged)  | Project Option 1 has the greatest magnitude of impact due to the larger number of WTG causing the potential blockage effect on passing flows   | O-02   |
| <b>Decommissioning</b>  |   |  |  |  |
| Impact 14 – Physical changes to marine processes receptors from decommissioning activities                            | WTG number: 49<br>OSP number: 1<br>Inter-array cable length: 111km<br>ECC length: 18km (2 cables)   | WTG number: 35<br>OSP number: 1<br>Inter-array cable length: 91km<br>ECC length: 18km (2 cables)   | Project Option 1 presents the option with the greatest potential magnitude for impact on marine processes receptors due to the larger number of sites where decommissioning activities might occur | Not applicable   |

## 10.5 Potential Effects

There are no changes to the introductory text in this section. Refer to Section 10.5 of Chapter 10 of the 2024 EIAR.

### 10.5.1 Do-Nothing Scenario

There are no changes to the section. Refer to Section 10.5.1 of Chapter 10 of the 2024 EIAR.

#### 10.5.1.1 Future baseline tidal conditions

**There are no major changes to the section apart from noting that the Climate Change Sectoral Adaption Plan for Flood Risk Management has recently been updated in draft for consultation (OPW, 2025) but with no change to sea level rise allowances. Refer to Section 10.5.1 of Chapter 10 of the 2024 EIAR.**

#### 10.5.1.2 Future baseline wave conditions

There are no changes to the section. Refer to Section 10.5.1.2 of Chapter 10 of the 2024 EIAR.

### 10.5.2 Construction Phase

There are no changes to the section. Refer to Section 10.5.2 of Chapter 10 of the 2024 EIAR.

#### 10.5.2.1 Impact 1 – Physical changes from seabed clearance activities

There are no changes to the section. Refer to Section 10.5.2.1 of Chapter 10 of the 2024 EIAR. For clarity, the significance of the effect on the seabed remains unchanged and there are no likely significant effects likely to occur.

#### 10.5.2.2 Impact 2 – Physical changes from seabed levelling (Project Option 2 only)

**Seabed levelling with dredging is no longer a requirement for Project Option 2; therefore Impact 2 is removed from the EIAR. Accordingly, Section 10.5.2.2 of Chapter 10 and Figure 10.11 and Figure 10.12 of the 2024 EIAR no longer apply and shall be deleted.**

#### 10.5.2.3 Impact 3 – Physical changes to marine processes receptors from increased suspended sediment concentration and settlement from drilling out of piles for foundation installation

**The change in this section is driven by the design refinements; the option for drilling is now limited to the single OSP location with four-legged pin piles. Drilling is no longer required for any WTG foundation option.**

**Accordingly, Section 10.5.2.3 is deleted and replaced with text herein. In addition, Figure 10.13 and Figure 10.14 are also updated; Figure 10.13 and Figure 10.14 of Chapter 10 of the 2024 EIAR shall be replaced with Figure A10.5 and Figure A10.6 respectively.**

Drilling is planned for the four-legged OSP pin pile option, with anticipated pile depths up to 60m below seabed. The WTG and OSP layouts for Project Option 1 and Project Option 2 each show the OSP at a similar location (around 285m apart) adjacent to the seaward end of the ECC in water depths of around 41m below LAT. Comparable seabed conditions are interpreted at these adjacent locations (Venterra, 2025) with the depth to bedrock estimated to be around 23m below seabed.

Up to four pin piles can be drilled out at the same time, each starting two hours after the former, with each pile expected to take around 51 hours to complete. The amount of drill arisings produced in this process is 10,179m<sup>3</sup>. The full drilling period is estimated to take around 106 hours.

Drill arisings will initially be returned to the drilling platform to be discharged back to the sea via a fall pipe. The fate of the discharge thereafter depends on the size and density of drill cuttings particles (i.e. determining how quickly material falls to the seabed), as well as horizontal tidal flows that can advect and disperse the material further away.

Since the precise size of drill cuttings is not known at this time, a conservative assumption is made that the majority of particles comprise a range of fine particle sizes that will settle slowly to the seabed and have a greater potential to form a sediment plume than coarser sized cuttings. Any coarser particles would expect to fall directly to the seabed without the opportunity for wider advection, with the potential to form a small cuttings pile.

The advection and dispersion of the sediment plume has been assessed with suitable modelling tools (see Appendix A10.2) as scenario C-02. Given that the precise timing of this activity is not known at this point, an envelope of representative tidal conditions is considered. Release of drill arisings during neap tides provides a period of lower flow conditions leading to a reduced spread of the sediment plume but with higher concentrations compared to a release during spring tides which provides a period of higher flows leading to comparatively lower concentrations due to a greater spread of the plume. When material falls out of suspension then the areas of deposition are formed.

### ***Sensitivity of the receptor***

The marine processes receptors exposed to the discharge of drill cuttings are isolated parts of the water column which experience a short-term increase in suspended sediment concentration in the form of sediment plumes developed by discharge of fine sized cuttings particles from the drill rig fall pipe and small areas of the corresponding seabed due to settlement of cuttings.

According to the results of modelling scenario C-02 the impact pathways of suspended sediment or settlement do not reach any part of the adjacent coastline, any estuary, rocky islands in the nearshore, adjacent offshore windfarm, or any marine designated areas. The water column and seabed are considered to have a low sensitivity to this activity due to their high capacity to accommodate variations in suspended sediment concentrations (SSC) which effect turbidity and settlement in the short-term (Table 10.2 of Chapter 10 of the 2024 EIAR).

Where relevant, impacts to the water column and seabed are also considered in relation to sensitivity of biological receptors in associated chapters (e.g. risk of smothering of benthic receptors).

### ***Magnitude of impact***

The time-aggregated marine impact pathway of sediment plumes produced by drill cuttings is presented in Figure A10.5 for the two representative tidal scenarios (neap and spring), combined. The model output shows the maximum suspended sediment concentration that occurs at any time from the initial release and over a successive period of 144 hours (equivalent to around 12 phases of ebb and flood tides), noting the actual outcome would follow a single tidal pathway within this footprint and according to the tidal conditions at the time of release. Notably, the sediment plume is expected to be fully dispersed after this period.

From commencement of the release, the initial ebb and flood tidal excursions remain within the tidal excursion buffer with subsequent excursions with a steadily reduced concentration eventually spreading further afield. The spring release shows a distinctive net excursion to the north (total excursion around 40km from the point of release) with the flood dominant flows which has the potential to cross into UK territorial waters but only with very low concentrations (<1mg/l, trace). In contrast, the neap release has a reduced net northerly excursion and remains fully within Irish territorial waters.

All occasions with an increased concentration of suspended sediment above background > 10mg/l remain within the tidal excursion buffer. Highest concentrations above 500mg/l remain close to the point of discharge. Outside the tidal excursion buffer, suspended sediment concentrations are typically <10mg/l and equivalent to background levels, or less.

While the total duration of the discharge of drill cuttings for the pin-pile OSP foundation option is expected to last around 106 hours, the longevity of the sediment plume fully expires at around 144 hours when all material is expected to have settled out onto the seabed.

The distribution of settled drill cuttings (fines particles) from the OSP location is presented in Figure A10.6 for the combined spring and neap scenarios. The spatial distribution of settled cuttings particles mimics the impact pathway of elevated concentration of suspended sediments and with reduced levels of deposition over distance from the release location.

Maximum initial deposition depths of settled cuttings in the range 20 to 50mm remain close to the drilling location which reduces to between 5 to 10mm up to the adjacent WTG location. Only trace levels (<1mm) exceed the northern boundary of the tidal excursion buffer. Over time, deposition levels are expected to reduce as the material begins to consolidate.

Overall, the magnitude of impact on both the water column and seabed receptors is assessed to be low due to the generally temporary, localised and low levels of change for both Project Option 1 or Project Option 2.

### ***Significance of the effect***

As the sensitivity of the water column and seabed is low and the magnitude of impact to the seabed is assessed as low, the significance of the effect on the water column and seabed marine processes receptors due to the discharge of drill cuttings is determined to be slight for both Project Option 1 or Project Option 2, which is not significant in EIA terms.

#### ***10.5.2.4 Impact 4 – Physical changes to marine processes receptors from increased suspended sediment concentration and settlement from cable installation in the array area***

**The change in this section is driven by the design refinements and the indicative inter-array layouts for Project Option 1 and Project Option 2, which have been revised. In addition, new geotechnical interpretations (Venterra, 2025) and further benthic grab samples (Aquafact, 2025) have improved the characterisation of near-surface sediments across the array area. All other details related to Impact 4 remain the same. Accordingly, Section 10.5.2.4 shall be deleted and replaced with text herein. In addition, Figure 10.15 and Figure 10.16 of Chapter 10 of the 2024 EIAR shall be deleted and replaced with Figure A10.7 and Figure A10.8 respectively.**

The construction of the proposed development includes trenching to install inter-array cables within the array area which has the potential to temporarily increase SSC and lead to local settlement of the disturbed sediment.

The Chapter 8 identifies a single cable laying vessel will be operating in the array area meaning the activity will be sequential between WTG and to the OSP. Project Option 1 requires a slightly longer total length of array cable than Project Option 2 due to the greater number of WTG (111km for 49 WTG versus 91km for 35 WTG) which leads to a slightly longer period of cable trenching and a marginally greater volume of sediment disturbance from the trench. The method of installation considered to develop the largest amount of seabed disturbance is the jetting tool which fluidises the seabed sediments from the trench to enable the placement of the cable. Where the seabed is composed mainly of fine sediments, this process will initially develop a near-bed suspension of sediments which is then susceptible to wider spreading across the far-field by tidal advection in the form of a sediment plume. The impact pathway of sediment plumes is investigated using modelling tools as scenario C-03 for a representative 1.5km section of inter-array cable between WTGs in the eastern part of the array area for Project Option 1, a location coincident with the highest content of fine sediments. The estimated release period for this section is around five hours, trenching at a rate of 300m/hr. Four release scenarios consider the variation in impact pathways between flood and ebb releases and periods of high (spring) and low (neap) flow conditions.

### ***Sensitivity of the receptor***

The marine processes receptors exposed to short-term sediment disturbance from cable trenching in the array area are isolated parts of the water column (which experience a short-term increase in suspended sediment concentration in the form of sediment plumes) and small areas of the corresponding seabed due to settlement of fine sediments. The impact pathway does not reach any part of the adjacent coastline, any estuary, or rocky islands in the nearshore, or any marine designated areas. The water column and seabed are considered to have a low sensitivity to this activity due to its high capacity to accommodate the increased SSC, impacting turbidity but not waves and tides.

### ***Magnitude of impact***

The time-aggregated marine impact pathway of sediment plumes from cable trenching in the array area is presented in Figure A10.7 for the four representative tidal scenarios combined.

The model output represents the maximum suspended sediment concentration that occurs at any time from the initial release and for a successive period of 48 hours (equivalent to around four phases of ebb and flood tides), noting the actual outcome would only follow a single tidal pathway within the overall aggregated output. Notably, the sediment plume for this section of inter-array cable is expected to be fully dispersed and settled out on the seabed after this period.

Results indicate that the highest suspended sediment concentrations in the range 100 to 500mg/l are limited along the trenching line (i.e., toward the near-field source) and only occur during the period of jetting, rapidly reducing thereafter. Only low concentrations below 2mg/l (equivalent to normal variations in turbidity) are predicted to exceed the tidal excursion buffer which for all release scenarios tends to favour a northerly distribution due to the flood dominant tide. For the northerly high flow scenario (flood spring tide release), tidal advection has the potential to extend the plume to just reach UK territorial waters for a short period, but with a very low concentration equivalent to around 1mg/l (trace level). This pattern is only likely to be repeated for trenching activities occurring in the north-eastern part of the array area under a similar set of spring tide conditions.

The pattern of settlement from sediment plumes is presented in Figure A10.8 which represents the combined footprint from all four release scenarios, noting the outcome of an individual release would follow a single tidal pathway within the overall footprint of deposition. The spatial distribution for areas of settled sediment mimic the impact pathway of elevated suspended sediments with reduced levels of deposition over distance from the release location. Highest levels of initial settlement between 20 to 100mm occur along the trenching line (i.e., material falling back into the trench in the near-field). Levels above 10mm spread up to 500m around the trenching line in the direction of the general north-south tidal axis. Levels above 5mm spread further by around 2km in the direction of the tidal axis. Only trace levels (<1mm) exceed the northern boundary of the tidal excursion buffer with a small amount of settlement potentially reaching UK territorial Waters for a flood release on a spring tide.

Given that tidal flows across the array area are generally similar, then comparable levels of suspended sediment and deposition would be expected for all other locations where trenching for cables is required, phased according to the progress of the trenching activity moving along remaining alignments of inter-array cables. Notably, since the relative proportion of fines is also lower elsewhere in the array area then associated suspended sediment concentrations and settlement would also be expected to be proportionally lower. Where there is an adjacent cable line upstream or downstream on the tidal axis, then there is a potential for subsequent overlapping deposition (i.e., the extent of settlement from one cable line has the chance of reaching the adjacent trench line in the direction of the tidal axis). In such cases, the net level of overall deposition across the array area is expected to vary from around 10 to 50mm between trenching lines and 50 to 100mm closer to each trenching line. Over time, deposition levels are expected to reduce as the material begins to consolidate.

The magnitude of impact on both the water column and seabed receptors is assessed to be low for both Project Option 1 and Project Option 2 due to the generally temporary, localised and low levels of change. This magnitude of impact is likely to be slightly higher for Project Option 1 compared against Project Option 2 (due to the slightly longer inter-array cables, higher volume of sediment disturbance which would also take slightly longer to complete) but the magnitude level for both remains low.

If an alternative method of trenching is employed other than jetting, then the associated impacts due to seabed disturbance would be expected to be lower because, of all the methods considered, jetting develops the largest amount of seabed disturbance.

### ***Significance of the effect***

As the sensitivity of the water column and seabed is low and the magnitude of impact to the seabed is assessed as low, the significance of the effect on the water column and seabed marine processes receptors due to cable trenching in the array area from either Project Option 1 or Project Option 2 is determined to be slight, which is not significant in EIA terms.

### *10.5.2.5 Impact 5 – Physical changes to marine processes receptors from increased suspended sediment concentration and settlement from cable installation along the ECC*

**In response to RFI 1 (b), the change in this section is due to incorporating new geotechnical interpretations (Venterra, 2025) and further benthic grab samples (Aquafact, 2025) which have improved the characterisation of near-surface sediments along the ECC.**

**Accordingly, Section 10.5.2.5 of Chapter 10 of the 2024 EIAR is deleted and replaced with text herein. In addition, Figure 10.17 and Figure 10.18 of Chapter 10 of the 2024 EIAR shall be deleted and replaced with Figure A10.9 and Figure A10.10, respectively.**

The construction of the proposed development includes trenching to install two export cables within the ECC which has the potential to temporarily increase SSC and lead to local settlement.

Both Project Option 1 and Project Option 2 utilise the same ECC and require the same length of export cable (two cables of 18km length), therefore the potential impacts from either project will be the same. The method of installation considered to develop the largest level of seabed disturbance is the jetting tool which fluidises the seabed sediments from the trench to enable the placement of the cable. Where the seabed is composed mainly of fine sediments, this process will initially develop a near-bed suspension of sediments which is then susceptible to wider spreading across the far-field by tidal advection in the form of a sediment plume.

A central section of the ECC is considered where the content of fine sediments is considered highest. This section also covers a comparable distance to the example section for trenching considered for the array area and is aligned with the ebb tide advective pathway toward Rockabill to Dalkey Island SAC. The estimated release period for this section is around five hours, trenching at a rate of 300m/hr.

The impact pathway of sediment plumes is established using modelling tools as scenario C-04 for a mid-section along the ECC where there is the highest content of fine sediment. Four release scenarios consider the variation in impact pathways between flood and ebb releases and periods of high (spring) and low (neap) flow conditions.

#### ***Sensitivity of the receptor***

The marine processes receptors exposed to short-term sediment disturbance from cable trenching along the ECC are isolated parts of the water column (which experience a short-term increase in suspended sediment concentration in the form of sediment plumes) and small areas of the corresponding seabed due to settlement of fine sediments. The local seabed includes the northern part of Rockabill to Dalkey Island SAC where the sensitive receptor of interest is Reefs [1170] which surround rocky features such as Rockabill. The impact pathway does not reach any part of the adjacent coastline, any estuary, or other proposed offshore windfarm area.

The water column and seabed are considered to have a low sensitivity to this activity due to their high capacity to accommodate the increased SSC.

The SAC where the reef receptor has a medium level of sensitivity i.e., the receptor is considered to have a moderate to low capacity to accommodate the proposed form of change, and due to its designation status.

#### ***Magnitude of impact***

The time-aggregated marine impact pathway of sediment plumes from cable trenching along the ECC is presented in Figure A10.9 for the four representative tidal scenarios. The model output represents the maximum suspended sediment concentration that occurs at any time from the initial release and for a successive period of 48 hours (equivalent to around four phases of ebb and flood tides), noting the actual outcome would only follow a single tidal pathway within this footprint. Notably, the sediment plume for this section of the ECC is expected to be fully dispersed and settled out on the seabed after this period.

Model results indicate that the highest suspended sediment concentrations in the range 200 to 1,800mg/l are limited to the trenching line (i.e., around the near-field source) and last only for the period of trenching, advecting away thereafter. Only southerly ebb flows on spring tides have the capacity to carry the sediment plume as far as the northern limit of the Rockabill to Dalkey Island SAC with concentrations generally in the range 2 to 10mg/l, but as high as 20mg/l in a limited area but only for a short period. These concentrations are regarded as equivalent to ambient concentrations.

The pattern of settlement from sediment plumes is presented in Figure A10.10 which shows the combined footprint from all four release scenarios, noting the outcome of an individual release would follow a single tidal pathway within the overall footprint of deposition. The spatial distribution for areas of settled sediment mimic the impact pathway of elevated suspended sediments with reduced levels of deposition over distance from the release location. Highest levels of deposition between 10 to 50mm occur along the trenching line (i.e., material falling back into the trench). All levels above 1mm remain within the ECC boundary with only trace levels (<1mm) spreading further afield. For high flow conditions, the ebb distribution of the plume has the potential to develop some settlement in the northern part of the Rockabill to Dalkey Island SAC, however, the magnitude of deposition is considered to be insignificant in the range 0.01 to 0.1mm, but typically around 0.02mm.

Given that tidal flows along the ECC are generally similar, then comparable suspended sediment and settlement results would be expected for all other locations where trenching for cables is required, noting that sites closer to the shore tend to have a slightly higher contribution of coarser grade sediments which fall out of suspension quicker and therefore advect over a shorter distance, with proportionally less fine sediment available to form sediment plumes.

The magnitude of impact on both the water column and seabed receptors, including Rockabill to Dalkey Island SAC, is assessed to be low due to the generally temporary, localised and low levels of change. This magnitude of impact is the same for both Project Option 1 and Project Option 2.

### ***Significance of the effect***

As the sensitivity of the water column and seabed is low, and the magnitude of impact to the seabed is assessed as low, the significance of the effect on the water column and seabed marine processes receptors due to the cable trenching along the ECC is determined to be slight.

For the area of seabed within Rockabill to Dalkey Island SAC, the sensitivity of the receptor is medium, and the magnitude of impact is low, the significance of the effect from Project Option and Project Option 2 on the seabed is also considered to be slight.

Overall, this impact is not significant in EIA terms. This outcome is the same for both Project Option 1 and Project Option 2.

#### ***10.5.2.6 Impact 6 – Nearshore changes due to the excavation of the HDD exit pits***

**In response to RFI 1 (b), the change in this section is due to incorporating new geotechnical interpretations (Venterra, 2025) and further benthic grab samples (Aquafact, 2025) which have improved the characterisation of near-surface sediments at the location of the HDD exit pits. Accordingly, Figure 10.19 and Figure 10.20 of Chapter 10 of the 2024 EIAR shall be deleted and replaced with Figure A10.11 and Figure A10.12 respectively. Additional changes to this section provide for a response to RFI Section 7 (h) which requested an assessment of the impact of the extrusion pits at this location within the surf zone on coastal processes and also include an assessment of the impact of the proposed temporary mounds at these locations on coastal processes. Comment is also made to respond to RFI Section 7 (o) with regards to the relevance of the backhoe dredging option.**

**Accordingly, Section 10.5.2.6 of Chapter 10 of the 2024 EIAR is deleted and replaced with text herein:**

Project Option 1 and Project Option 2 both require two HDD exit pits, one for each of the export cables, to be excavated side-by-side in the subtidal part of the nearshore. These exit pits (which constitute the “extrusion pits” referred to above) will each be 20m wide, 30m long and excavated to a depth from 1.5 to 2.5m below seabed. The likely water depth at each exit pit is expected to be between 2 to 4m below LAT, depending on the final choice of location.

Based on standard wave breaking criteria (i.e., wave breaking initiates when wave steepness exceeds 1/7, or when the water depth is less than approximately 1.3 times the wave height), waves in a water depth of 2m would need to be greater than 1.56m to initiate wave breaking and greater than 3.12m for a water depth of 4m. Information from available wave modelling suggests this criteria is only met at times of extreme low water for the shallower 2m location which are coincident with infrequent periods of extreme waves with return periods of greater than 1 in 1 years.

Apart from the limited occurrence of these set of conditions, the shallower HDD exit pit option in 2m water depth can be considered seaward of the surf zone for the majority of the time (i.e., no wave breaking), and options greater than 2m can be considered fully outside the surf zone. Since the HDD exit pits are expected to be excavated and infilled within a calendar year, and not during winter periods with anticipated stronger waves, then the chance for breaking waves at these locations is considered minimal.

When excavated, the HDD exit pits will potentially remain open for several months until the export cable is pulled ashore. Thereafter, the exit pits will be infilled, and the seabed is expected to quickly recover to pre-excavation conditions. During the short period when the exit pits remain open there may be some temporary, very localised, and minor modifications to nearshore waves, flows and sediment transport in the subtidal due to presence of the open exit pits and adjacent spoil mound(s). These modifications are not expected to develop any changes along the adjacent rocky coastline and intertidal areas.

The primary potential impact due to the proposed excavation activity is local seabed disturbance with the potential to generate a sediment plume in the nearshore, depending on the method of excavation and the relative content of fine sediments. The method of excavation considered to develop the most seabed disturbance into the local water column is the Mass Flow Excavator (MFE) option rather than the option of backhoe and barge (Appendix A10.1, Section 4.2.4). The impact pathway of sediment plumes developed by the excavation of exit pits is established using modelling tools as scenario C-06 for a representative nearshore location. Coarse sediments would fall directly back to the seabed adjacent to the exit pits and not contribute to any sediment plumes.

### ***Sensitivity of the receptor***

The marine processes receptors exposed to excavation of two nearshore HDD exit pits are isolated parts of the water column which experience a short-term increase in suspended sediment in the form of sediment plumes developed by MFE and small areas of the corresponding seabed due the temporary presence of the exit pits and localised settlement of fines from sediment plumes. The adjacent coastline and the local bathing waters (Balbriggan, Front Strand) are also considered here as potential receptors, due to their close proximity to the nearshore exit pits, >400m and 1.5km, respectively.

The sensitivity of the nearshore water column and seabed to this activity is considered low due to a high capacity to accommodate the short-term form of change.

The sensitivity of the local bathing waters (Balbriggan, Front Strand Beach) to this activity is considered to be medium due to the moderate socioeconomic importance of this receptor.

The sensitivity of the coastline is considered negligible due to a high capacity to accommodate the form of change.

The impact pathway does not reach any estuary, or rocky islands in the nearshore, or any marine designated areas.

### ***Magnitude of impact***

Figure A10.11 presents the time-aggregated marine impact pathway of sediment plumes of fine sediment developed from excavation of the two adjacent HDD exit pits and for the four representative tidal scenarios (peak ebb and flood releases for both spring and neap tides). The actual outcome would only follow a single tidal pathway within the overall footprint of increased levels of suspended sediment concentration. Spring tide releases indicate a maximum excursion distance of the sediment plume along the coast of around 9km to the north-west (flood) and to the south-east (ebb) for concentrations <1mg/l above background levels, equivalent to (undetectable) trace levels. Neap releases travel a shorter distance along the coast of around 1.3km on flood and ebb. All releases cross in front of Balbriggan Bay (around 1.5km south of the exit pits) but with concentrations that remain low at all times (<10mg/l) and for a short duration (<4 hours). The highest elevated concentrations remain close to the exit pits with levels up to 1,120mg/l.

The areas with settled fine sediment from all four release scenarios mimic the impact pathway of sediment plumes (Figure A10.12). The maximum potential spread of settlement on the seabed is around 4.5km to the north-north-west and 5.4km to the south-south-east of the exit pit trench with greatest depths of deposition remaining closest to the exit pits with levels between 68 to 193mm.

Any exit pit option located closer to the coast is likely to experience slightly weaker tidal flows and slightly coarser sediments, leading to a reduced excursion of suspended sediment and higher deposition rates closer to each pit. In all cases, exit pits remain in the sub-tidal zone and avoid inter-tidal areas.

The magnitude of impact on the water column and seabed to this activity is considered low due to the temporary changes which are likely to be barely discernible above background levels and also limited in spatial coverage.

The magnitude of impact on the bathing waters (Balbriggan, Front Strand Beach) and coastline is considered negligible since the impact pathways are short-term and are unlikely to reach these receptors despite their close proximity.

These magnitudes of impact on nearshore receptors are the same for both Project Option 1 and Project Option 2.

### ***Significance of the effect***

The sensitivity of the water column and seabed is low, and the assessed magnitude of impact is low, as such the significance of the effect on the water column and seabed marine processes receptors due to the excavation of nearshore exit pits is determined to be slight, which is not significant in EIA terms.

As the sensitivity of the bathing waters is medium and the magnitude of impact is assessed as negligible, significance of the effect on bathing waters (Balbriggan, Front Strand Beach) is determined to be not significant, which is not significant in EIA terms.

As the sensitivity of the rocky coastline is negligible, and the magnitude of impact is assessed as negligible, the significance of the effect on the adjacent coastline due to the temporary period the exit pits remain open is determined to be imperceptible, which is not significant in EIA terms.

Each of these assessment outcomes are the same for both Project Option 1 and Project Option 2.

#### ***10.5.2.7 Impact 7 – Nearshore changes from the release of bentonite at the HDD exit pits***

**RFI Section 7 (g) requests that the drilling of both extrusion pits be assessed and in a concurrent scenario. As the drilling of the extrusion pits for the proposed development will only occur consecutively, a concurrent scenario is not relevant, and as such no further change is required to Section 10.5.2.7. Refer to Section 10.5.2.7 of Chapter 10 of the 2024 EIAR.**

**For clarity, the significance of the effect on the water column and seabed marine processes receptors, bathing waters and the coastline due to the release of bentonite remains unchanged, which is not significant in EIA terms.**

#### ***10.5.2.8 Impact 8 – Physical changes to the seabed from the use of construction vessels***

There are no changes to the section. Refer to Section 10.5.2.8 of Chapter 10 of the 2024 EIAR. For clarity, the significance of the effect remains unchanged, it could result in a negative slight effect, which is not significant in EIA terms.

### ***10.5.3 Operational Phase***

There are no changes to the section. Refer to Section 10.5.3 of Chapter 10 of the 2024 EIAR. For clarity, the significance of the effect remains unchanged, it could result in a slight, which is not significant in EIA terms.

#### ***10.5.3.1 Impact 9 – Physical changes to marine processes receptors from cable crossings within the array area***

There are no changes to the section. Refer to Section 10.5.3.1 of Chapter 10 of the 2024 EIAR. For clarity, the significance of the effect remains unchanged, it could result in a slight effect, which is not significant in EIA terms.

### **10.5.3.2 Impact 10 – Physical changes from increased suspended sediment concentration from cable repairs and reburial**

There are no changes to the section. Refer to Section 10.5.3.2 of Chapter 10 of the 2024 EIAR. For clarity, the significance of the effect remains unchanged, it could result in a slight effect, which is not significant in EIA terms.

### **10.5.3.3 Impact 11 – Physical changes from cable protection**

There are no changes to the section. Refer to Section 10.5.3.3 of Chapter 10 of the 2024 EIAR. For clarity, the significance of the effect remains unchanged, it could result in a slight effect, which is not significant in EIA terms.

### **10.5.3.4 Impact 12 – Physical changes to the coastline from a modification in storm waves due to array-scale blockage**

**The change in this section is due to the indicative inter-array layouts for Project Option 1 and Project Option 2 have been revised (refer Appendix A5.1). In addition, the foundation option applied in the assessment is now based on the 4-legged suction bucket jacket. Figure 10.23 and Figure 10.24 of Chapter 10 of the 2024 EIAR shall be deleted and replaced with Figure A10.13 and Figure A10.14 respectively.**

**The following paragraph in Section 10.5.3.4 of Chapter 10 of the 2024 EIAR shall be deleted;**

*“Appendix 10.1 compares the contributing elements of Project Option 1 and Option 2 (foundation type and number) which establish array-scale blockage. This assessment identifies the 49 WTG monopile foundations and one OSP planned for Project Option 1 has the largest overall blockage area when compared with Project Option 2 (monopiles or jacket foundations). Accordingly, the wave modelling adopts the configuration of Project Option 1 alongside the baseline case (defined with no foundation structures). The quantification of array-scale wave blockage is then determined for a set of representative conditions by comparing the results from Project Option 1 versus the baseline case. These differences are considered for wave height, period, and direction.”*

**And replaced with:**

Appendix A10.1 compares the contributing elements of Project Option 1 and Project Option 2 (foundation types and number) which establish array-scale blockage. This assessment identifies the 49 WTG 4-legged suction bucket jacket (SBJ) and one 4-legged SBJ OSP planned for Project Option 1 as having a larger overall effective blockage when compared with Project Option 2. Accordingly, the wave modelling adopts the configuration of Project Option 1 alongside the baseline case (defined with no foundation structures). Notably, conservatism is provided in the configuration of the 4-legged SBJ which assumes the orientation of the foundation is presented corner-on to passing waves, to provide the widest profile to incident conditions. The quantification of array-scale wave blockage is then determined for a set of representative conditions by comparing the results from Project Option 1 versus the baseline case. These differences are considered for wave height, period, and direction.

### ***Sensitivity of the receptor***

**Graph 10.5 and Graph 10.6 of Chapter 10 of the 2024 EIAR have been updated based on the revised modelling (Appendix A10.2). Therefore, Graph 10.5 and Graph 10.6 of Chapter 10 of the 2024 EIAR shall be removed and replaced with Graph A10.2 and Graph A10.3 respectively. “Sensitivity of the receptor” in Section 10.5.3.4 of Chapter 10 of the 2024 EIAR has been removed and replaced with the following text;**

The main marine processes receptors sensitive to this type of change are the sandy beaches along the leeward coastline which respond to wave-driven coastal processes. This type of coastline is typically characterised by long, open sandy beaches, i.e., sand beach fronting upland (> 1km long), Figure A10.15. The sensitivity of this type of receptor to changes in nearshore waves and wave-driven processes (i.e. littoral transport, erosion and accretion) is considered medium given the limited opportunity for this type of receptor to accommodate this type of change.

The Boyne Coast and Estuary SAC covers a section of the sandy beach north and south of the estuary, with a qualifying intertidal feature of 1140 - Mudflats and sandflats not covered by seawater at low tide. This feature is further described as a marine community type; fine sand dominated by bivalves.

Other types of coastline morphology such as erosion-resistant rock and/or cliff (e.g., Braymore Point) or gravel beaches (e.g., Ballagan Point) are considered to have negligible or low sensitivity, respectively.

Some wave height reductions also extend (as an impact pathway) into the northern part of the Rockabill to Dalkey Island SAC for east-north-easterly storm waves, reaching Rockabill (in the range -0.20 to -0.25m for the 1 in 50 year return period storm but nil for the more typical P50 wave condition (representing the 50% probability of non-exceedance per year, equivalent to a typical annual wave condition)). The SAC is designated for Annex 1 Reefs (intertidal and subtidal) around rocky islands, including Rockabill. Although this is essentially a rocky shoreline, the level of sensitivity of this receptor to changes in wave conditions is considered medium.

### ***Magnitude of impact***

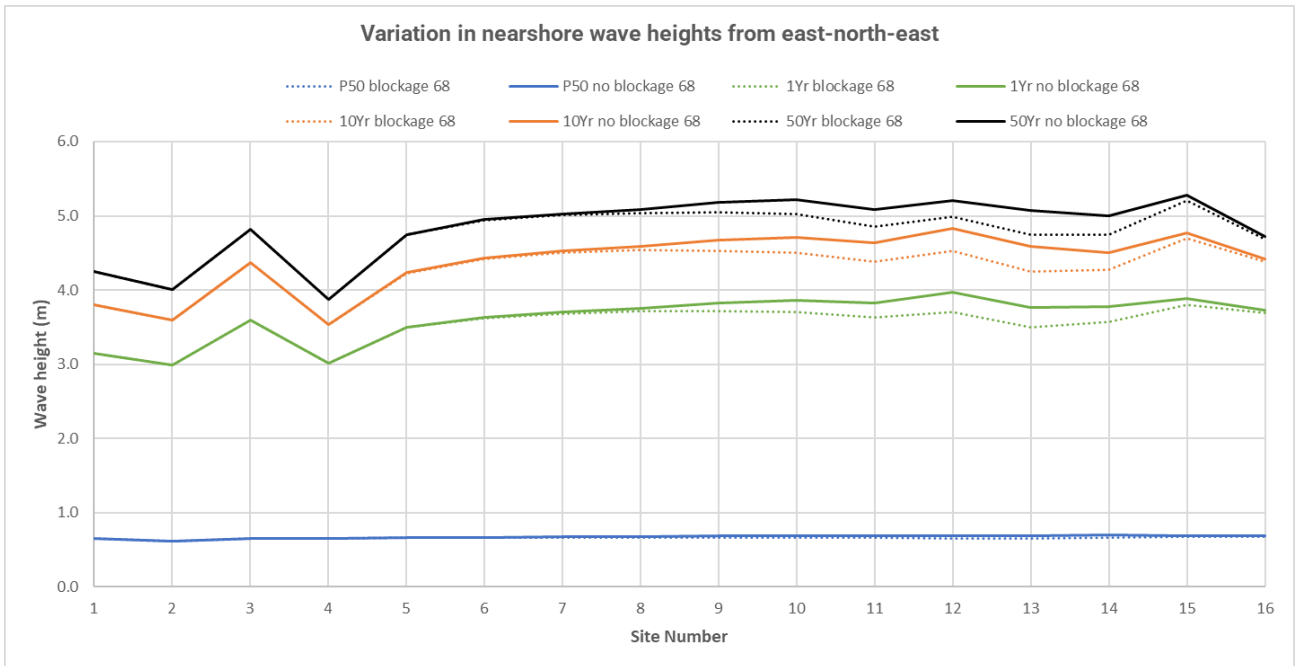
**“Magnitude of Impact” in Section 10.5.3.4 of Chapter 10 of the 2024 EIAR has been removed and replaced with the following text;**

Figure A10.13 and Figure A10.14 present the predicted reduction (project minus baseline) in wave heights for the 1 in 50-year return period wave conditions approaching from the east-north-east and south-south-east (prevailing wave direction), respectively. The 1 in 50-year return period is an infrequent event which is used to demonstrate the largest overall likely effect of array-scale wave blockage over the proposed development’s lifetime, noting all other more frequent return periods demonstrate a proportionally lower scale of wave blockage effects. The most prominent wave modifications are associated with shallower northern and western parts of the array area with local reductions in wave height in the range –1.40 to -1.80m in the lee of individual foundations. These structure-scale effects aggregate to develop a lower magnitude array-scale reduction in wave height across the leeward far-field that dissipates with increasing distance from the array and towards the adjacent coast. For waves from the east-northeast, the leeward reduction in wave heights extends between Clogher Head south to The Skerries, including Rockabill, and towards Lambay Island. For waves from the south-south-east (prevailing wave direction), the reduction in wave height across the leeward far-field extend between Boyne Estuary and north, crossing the Oriel OWF, towards Ballagan Point and across to UK Waters, albeit at low levels (-0.05 to -0.10m). Once waves move into shallower depths of around 10m, and less, the dominant process modifying waves is shoaling, with wave reductions from interactions with WTG across the array already dissipated to the range -0.10 to -0.05m (N.B. all wave reductions inshore of around 10m depth are effectively the same for both proposed development and baseline conditions, due to shallow water dissipation of wave energy).

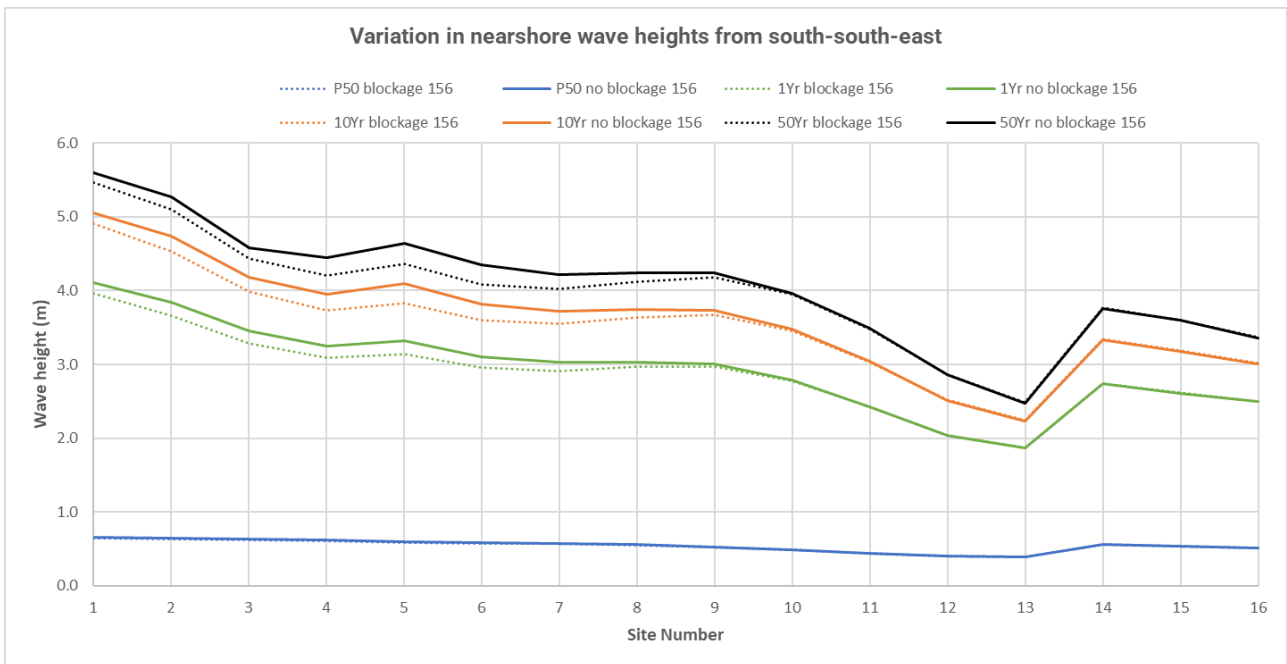
Modification of wave heights for all return periods and directions along the 10m depth contour are considered for 16 nearshore sites located along the 10m isobath (see Figure A10.13 and Figure A10.14 for locations) (Graph A10.2 - Part 1 for east-north-east and Part 2 for south-south-east).

Graph A10.2 – Part 1 presents changes in nearshore waves from east-north-east. The P50 wave condition shows very little change in wave heights in the nearshore with the largest local reduction of up to 0.03m (Site 13 – south of the ECC) relative to a baseline of 0.69m (or 5.0% reduction). In comparison, the 1 in 1 year return period shows a reduction up to 0.27m relative to a baseline of 3.76m (or a 7.2% reduction) for the same site. The 1 in 10-year event shows a reduction of up to 0.34m relative to a baseline of 4.59m (or a 7.4% reduction), and the 1 in 50-year event shows a reduction of up to 0.32m relative to a baseline of 5.07m (or a 6.4% reduction).

Graph A10.2 – Part 2 presents changes in nearshore waves from the prevailing south-south-east direction. The P50 wave condition also shows very little change in wave heights in the nearshore with the largest local reduction of up to 0.01m (Site 5 – off Clougher Head) relative to a baseline of 0.60m (or 1.8% reduction). In comparison, the 1 in 1 year return period shows a reduction up to 0.18m relative to a baseline of 3.32m (or a 5.3% reduction) for the same site. The 1 in 10-year event shows a reduction of up to 0.26m relative to a baseline of 4.10m (or a 6.5% reduction), and the 1 in 50-year event shows a reduction of up to 0.29m relative to a baseline of 4.64m (or a 6.2% reduction).



**Part 1 – east-north-east wave direction**



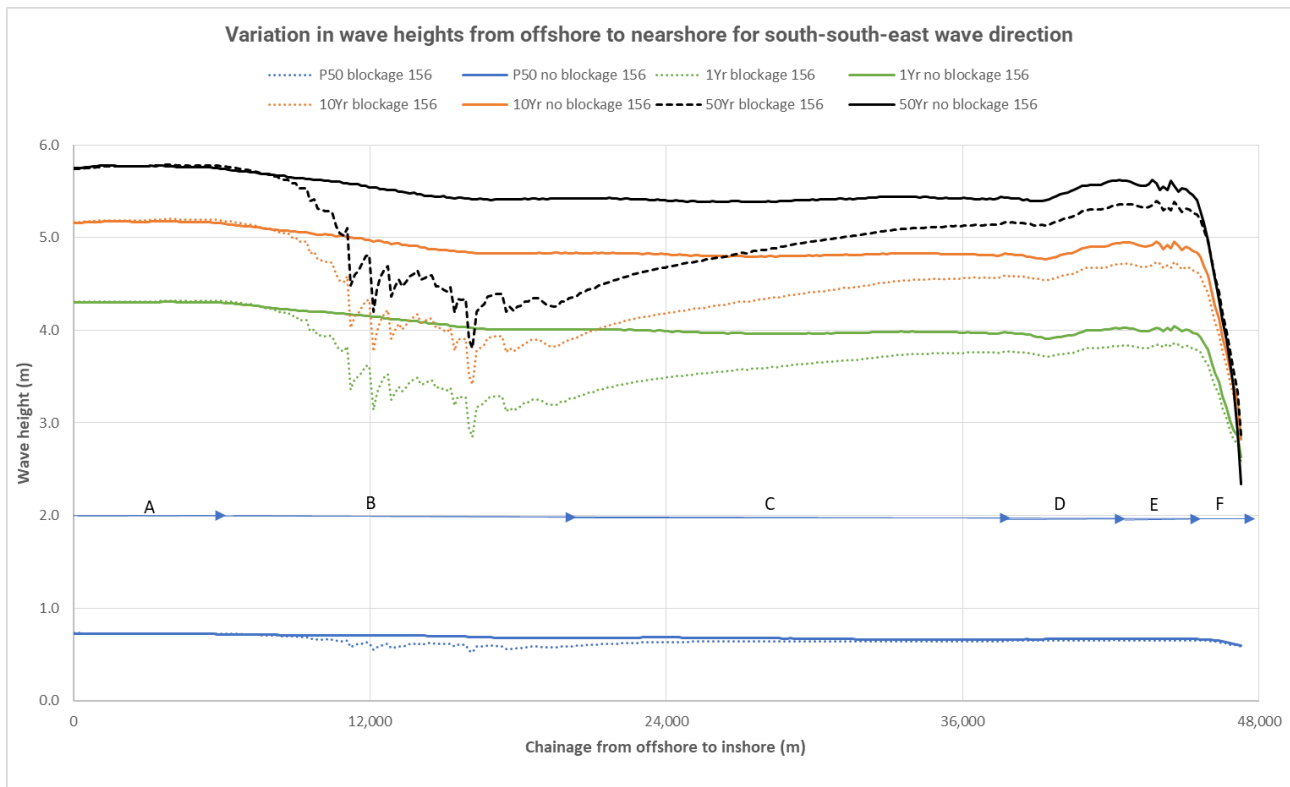
**Part 2 – south-south-east wave direction**

**Graph A10.2 Variations in near-shore wave heights (replaces Graph 10.5 of Chapter 10 of the 2024 EIAR)**

Graph A10.2 offers a further presentation of predicted reductions in wave heights for the prevailing south-south-east wave direction for all wave return periods and for a transect from offshore (upwind of the array area) to the coastline near Ballagan Point. Six zones are identified:

- A – upwind location of the array area where baseline conditions (no blockage) and wave array (blockage) conditions are the same.
- B – wave blockage zone creating near-field wave height reductions across the array area.
- C – wave height reductions begin to spread and dissipate across the far-field, inshore of the array area and wind-wave growth begins to rebuild wave conditions.
- D – waves passing through the Oriel OWF array area.

- E – waves travel onwards towards the nearshore after passing through Oriel OWF, no additional wave blockage effects are accounted for from array-scale blockage effects due to Oriel OWF.
- F – shallow depths up to the coastline, leading to rapid wave shoaling with comparable outcomes between baseline and array-scale blockage conditions, demonstrating shallow water effects are the dominant influence on waves at this location.



**Graph A10.3 Variation in wave heights from offshore to near-shore for south-south-east wave direction (replaces Graph 10.6 of Chapter 10 of the 2024 EIAR)**

In summary, array-scale blockage has the capacity to reduce local wave heights in the near-field but thereafter these reductions dissipate and spread out across the far-field. When waves approach the nearshore (Zone F) then shallow water interactions become dominant and any further changes in wave height bring parity to baseline conditions. Waves from the prevailing south-south-east direction which pass through the array area are not involved in coastal processes south of Boyne Estuary. Waves from east-north-east occur less frequently than the prevailing south-south-east direction (around 7% compared to around 27%, determined by long-term hindcasts (MetOceanWorks (2020)) but approach the closest leeward coastline between the Boyne Estuary and Skerries after passing through the array area. Overall, there is minimal detectable reduction in wave heights against the coastline due to array-scale wave blockage.

The magnitude of impact from changes in waves (height, period and direction) which reach the leeward coastline (sandy beaches) or Rockabill is determined to be low for the infrequent (temporary) periods of large storms (e.g. 1 in 1, 1 in 10 or 1 in 50 year return period events) but negligible for more frequent typical conditions (e.g. P50 wave condition), especially because shallow water interactions on waves become the dominant influence across this part of the far-field. Furthermore, for storm periods, this magnitude of change could also be considered as low (beneficial) in regard to (slightly) reducing wave energy reaching the coast at these times.

The magnitude of impact to the leeward coastline which has the form of erosion resistant cliff/rock and gravel beaches is considered to be negligible since these areas are unresponsive to the predicted level of change in waves.

### ***Significance of the effect***

The sensitivity of the Annex 1 Reef features within the Rockabill to Dalkey Island SAC is medium and the magnitude of impact is assessed as low (adverse); overall the potential effects are considered slight adverse).

The sensitivity of the leeward sandy sections of coastline is medium, and the magnitude of impact is assessed as low (beneficial); overall the potential effects are considered slight (adverse) to slight (beneficial).

The sensitivity of the leeward gravelly or rocky sections of coastline is negligible or low, and the magnitude of impact is assessed as negligible; overall the potential effects are considered imperceptible.

These outcomes are determined for Project Option 1 which was assessed to have a slightly larger array-scale blockage potential, noting Project Option 2 would expect to lead to a proportionally lower magnitude of impact due to a comparatively lower array-scale blockage potential.

**There are no further changes to the section. Refer to Section 10.5.3.4 of Chapter 10 of the 2024 EIAR.**

#### *10.5.3.5 Impact 13 – Physical changes to marine processes receptors from modification of tides due to array-scale blockage*

**The change in this section is due to the indicative inter-array layouts for Project Option 1 and Project Option 2 being revised (Appendix A5.1). In addition, the foundation option applied in the assessment is now based on the 4-legged suction bucket jacket. Figure 10.25, Figure 10.26 and Figure 10.27 are also updated and replaced with Figure A10.16, Figure A10.17, and Figure A10.18.**

**The following paragraph shall be deleted from Section 10.5.3.5 of Chapter 10 of the 2024 EIAR;**

*“Appendix 10.1 compares the contributing elements of Project Option 1 and Option 2 (foundation type and number) which establish array-scale blockage. This assessment identifies the 49 WTG monopile foundations and one OSP planned for Project Option 1 has the largest overall blockage area when compared with Project Option 2 (monopiles or jacket foundations). Accordingly, the hydrodynamic modelling adopts the configuration of Project Option 1 alongside the baseline case (defined with no foundation structures). The quantification of array-scale tidal flow blockage is then determined for a set of representative conditions by comparing the results from Project Option 1 versus the baseline case. These differences are considered for flow speed, direction, and water levels.”*

**And replaced with:**

Appendix A10.1 compares the contributing elements of Project Option 1 and Project Option 2 (foundation type and number) which establish array-scale blockage. This assessment identifies the 49 WTG 4-legged SBJ option and one 4-legged SBJ jacket OSP planned for Project Option 1 has the largest effective blockage when compared with Project Option 2. Accordingly, the hydrodynamic modelling adopts the configuration of Project Option 1 alongside the baseline case (defined with no foundation structures). Notably, conservatism is provided in the configuration of the 4-legged SBJ which assumes the orientation of the foundation is presented corner-on to flows, providing the widest profile to incident conditions (compared to directly face-on profile). The quantification of array-scale tidal flow blockage is then determined for a set of representative conditions by comparing the results from Project Option 1 versus the baseline case. These differences are considered for flow speed, direction, and water levels.

#### ***Sensitivity of the receptor***

There are no changes to this section. Refer to Section 10.5.3.2 of Chapter 10 of the 2024 EIAR.

#### ***Magnitude of impact***

**The changes to this section are based on the revised modelling (Appendix A10.2). The “Magnitude of Impact” in Section 10.5.3.5 of Chapter 10 of the 2024 EIAR shall be deleted and replaced with the following;**

Figure A10.16 presents the predicted change in tidal flows at the time of peak flood flows on a spring tide, the condition with the strongest period of tidal flows. The lowest limit for determining a change in tidal flows between the development case and baseline case is set at 0.002m/s, noting this is considered well-below the limit of conventional and reliable flow measurement. Any changes below 0.002m/s are considered as nil, or no discernible change.

The most notable change in flows is due to local-scale (near-field) drag effects caused by the foundation structure which create flow accelerations (red) around and between each foundation and individual wakes in their lee (flow reductions (blue) with increased turbulence). Flow accelerations around the foundations can also lead to local scouring of the seabed which is mitigated with the placement of scour protection. All changes in tidal flows remain at a very small scale (generally less than 0.01m/s relative to a baseline condition) and are most evident during times of peak flows on spring tides. The majority of changes in flow speed remain within the array area as small-scale near-field changes around individual foundations, without any notable array-scale changes extending into the far-field to reach any marine process receptors. Accordingly, there is no overlap with comparable flow changes expected across Oriel to the north or interference with the WISG to the east.

Seasonal thermal stratification (in the vertical water column demonstrated as a thermocline) is a notable feature of the baseline environment which develops during warmer summer periods. The development of turbulent flow wakes (mainly acting in the horizontal) has the potential to increase mixing processes but this is not considered sufficient to be of significant magnitude or extent to lead to any breakdown of thermal stratification either locally or at the array-scale.

Figure A10.17 presents the predicted change in tidal flow direction at the time of peak flood flows on a spring tide, complementing the prediction of changes in tidal flow speed. A cut-off limit of  $0.1^\circ$  is used as a valid change in flow direction, noting this is considered the limit of conventional and reliable measurement. The most notable change in direction across the array area is due to local flows deviating around each foundation, there is also some additional flow deviation at the array-scale at the northerly corners of the array boundary, although these are only at a very low level ( $0.1$  to  $0.2^\circ$ ). The majority of changes in flow direction remain within the array area and as small-scale changes ( $<0.9^\circ$ ) around individual foundations without any wider array-scale changes extending into the far-field to reach any marine process receptors.

Figure A10.18 presents the predicted change in tidal levels (i.e. sea surface elevation) at the time of peak flood flows on a spring tide. A cut-off limit of 0.002m is used as a valid change in surface elevation, noting this is considered well below the limit of conventional and reliable measurement. The most notable changes in surface elevations are at the upstream and downstream of the array area (first and last rows of WTG to incident flow direction) where there is a very small change at the scale of 0.002 to 0.004m (positive change upstream due to flows being held up by the aggregate effect of WTG across the array area and negative change downstream to balance out the upstream changes). These changes reverse on the ebb tide and in proportion to the magnitude of flows. On the flood tide, the decrease in surface elevation at the scale of 0.002 to 0.003m extends to the adjacent coastline and centred on Clogher Head (N.B. this scale of change is not a measurable effect).

The magnitude of impact from changes in tidal conditions on the local water column (including stratification) and seabed is considered low (noticeable changes largely restricted to near-field and limited to times of peak flow).

Scour protection around foundations also mitigates the potential for any changes in tidal flows leading to local scouring of the seabed which reduces the magnitude of impact on this receptor to negligible.

### ***Significance of the effect***

As the sensitivity of the water column is low and the magnitude of impact is assessed as low, the significance of the effect on the water column (including stratification) is considered to be slight which is not significant in EIA terms.

As the sensitivity of the seabed is low and the magnitude of impact is assessed as low, the significance of the effect on the seabed (with scour protection) is considered to be imperceptible which is not significant in EIA terms.

As the sensitivity of the coastline is low and the magnitude of impact is assessed as low, the significance of the effect on the coastline is considered to be imperceptible which is not significant in EIA terms.

These outcomes are determined for Project Option 1 which was assessed to have a slightly larger array-scale blockage potential, noting Project Option 2 would expect to lead to a proportionally lower magnitude of impact due to a comparatively lower array-scale blockage potential.

## 10.5.4 Decommissioning

### 10.5.4.1 Impact 14 – Physical changes to marine processes receptors from decommissioning activities

There are no changes to the section. Refer to Section 10.5.4.1 of Chapter 10 of the 2024 EIAR. For clarity, the significance of the effect remains unchanged, and no likely significant effect on physical changes to marine processes receptors from decommissioning activities are predicted.

## 10.6 Mitigation and Monitoring Measures

There are no changes to the section. Refer to Section 10.6 of Chapter 10 of the 2024 EIAR.

## 10.7 Residual Effects

**The change to this section is due to the removal of seabed levelling from the Project Option 1 and Project Option 2 as part of the design refinements (Appendix A5.1). Table 10.9 of Chapter 10 of the 2024 EIAR is deleted and replaced with Table A10.3 which reflects the removal of Impact 2.**

**Table A10.3 Residual effects relating to marine processes**

| Potential impact  | Potential likely significant effect – Project Option 1   | Potential likely significant effect – Project Option 2   | Residual effect – Project Option 1   |
|---|--|--|--|
| <b>Construction</b>   |  |  |  |
| Impact 1 – Physical changes to marine processes receptors from seabed clearance activities  | Seabed - Not significant   | Not significant  | Not significant  |
| Impact 3 – Physical changes to marine processes receptors from increased suspended sediment concentration from drilling for foundation installation | Water column and seabed marine processes - Slight  | Water column and seabed marine processes - slight  | Water column and seabed marine processes - Slight  |
| Impact 4 – Physical changes to marine processes receptors from increased suspended sediment concentration from cable installation in the array area | Water column and seabed marine processes - Slight  | Water column and seabed marine processes - Slight  | Water column and seabed marine processes - Slight  |
| Impact 5 – Physical changes to marine processes receptors from increased suspended sediment concentration from cable installation in the ECC        | Water column, seabed marine processes, seabed within Rockabill to Dalkey Island SAC - Slight                       | Water column, seabed marine processes, seabed within Rockabill to Dalkey Island SAC - Slight                       | Water column, seabed marine processes, seabed within Rockabill to Dalkey Island SAC - Slight                       |
| Impact 6 – Nearshore changes due to the excavation of the Horizontal Directional Drilling (HDD) exit pits   | Water column and seabed marine processes - Slight<br>Bathing waters – Not significant<br>Coastline - Imperceptible | Water column and seabed marine processes - Slight<br>Bathing waters – Not significant<br>Coastline - Imperceptible | Water column and seabed marine processes - Slight<br>Bathing waters – Not significant<br>Coastline - Imperceptible |
| Impact 7 – Nearshore changes from the release of bentonite at the HDD exit pits   | Water column and seabed marine processes - Slight<br>Bathing waters – Not significant<br>Coastline - Imperceptible | Water column and seabed marine processes - Slight<br>Bathing waters – Not significant<br>Coastline - Imperceptible | Water column and seabed marine processes - Slight<br>Bathing waters – Not significant<br>Coastline - Imperceptible |
| Impact 8 – Physical changes to seabed from the use of construction vessels  | Seabed - Slight  | Seabed - Slight  | Seabed - Slight  |

| Potential impact  | Potential likely significant effect – Project Option 1                                       | Potential likely significant effect – Project Option 2                                       | Residual effect – Project Option 1   |
|---|--|--|--|
| <b>Operation</b>  |  |  |  |
| Impact 9 – Physical changes to the coastline from a modification in storm waves due to array-scale blockage           | Seabed - Slight  | Seabed - Slight  | Seabed - Slight  |
| Impact 10 – Physical changes from increased suspended sediment concentration from cable repairs                       | Water column, seabed marine processes, seabed within Rockabill to Dalkey Island SAC - Slight | Water column, seabed marine processes, seabed within Rockabill to Dalkey Island SAC - Slight | Water column, seabed marine processes, seabed within Rockabill to Dalkey Island SAC - Slight |
| Impact 11 – Physical changes from cable protection  | Seabed - Slight  | Seabed - Slight  | Seabed - Slight  |
| Impact 12 – Physical changes to the coastline from a modification in storm waves due to array-scale blockage          | Beaches – Slight (adverse)- Slight (beneficial)<br>Annex 1 Reef features - Slight            | Beaches – Slight (adverse)- Slight (beneficial)<br>Annex 1 Reef features - Slight            | Beaches – Slight (adverse)- Slight (beneficial)<br>Annex 1 Reef features - Slight            |
| Impact 13 – Physical changes to marine processes receptors from modification of the tides due to array-scale blockage | Water column – Slight<br>Seabed – Imperceptible  | Water column – Slight<br>Seabed – Imperceptible  | Water column – Slight<br>Seabed – Imperceptible  |
| <b>Decommissioning</b>  |  |  |  |
| Impact 12 – Physical changes to marine processes receptors from decommissioning activities                            | Water column and seabed – Slight<br>Coastline – Slight<br>Water column -Slight (beneficial)  | Water column and seabed – Slight<br>Coastline – Slight<br>Water column -Slight (beneficial)  | Water column and seabed – Slight<br>Coastline – Slight<br>Water column -Slight (beneficial)  |

## 10.8 Transboundary Effects

There are no changes to the section. Refer to Section 10.8 of Chapter 10 of the 2024 EIAR.

## 10.9 Cumulative Effects

**The key changes to this section are the updating of text to reflect the minor change in cumulative assessment methodology to follow the Nationally Significant Infrastructure Projects (NSIP) (2024) guidance as per RFI Section 5.**

**The second paragraph shall be deleted;**

*“The Cumulative and Inter-Related Effects Chapter contains the outcome of Stage 1 Establishing the list of ‘Other Existing and/or Approved Projects’; and Stage 2 ‘Screening of ‘Other Existing and/or Approved Projects’’. This section presents Stage 3, an assessment of whether the proposed development in combination with other projects, grouped in tiers, would be likely to have significant cumulative effects.”*

**And replaced with:**

Chapter 38: Cumulative and Inter-Related Effects contains the outcome of Stage 1 Establishing the list of ‘Other Existing and/or Approved Projects’; Stage 2 ‘Screening of ‘Other Existing and/or Approved Projects’; and provides the Cumulative Effect Assessment (CEA) conclusions in the NSIP Appendix 2: Matrix 1 – Assessment matrix. This section presents the full Stage 3 and Stage 4 assessment, which assesses the proposed development in combination with other projects, grouped in tiers, would be likely to have significant cumulative effects.

**The sixth paragraph should be deleted;**

*“Given the location and nature of the proposed development, a tiered approach to establishing the list of other existing and/or approved projects has been undertaken in Stage 1 of the cumulative effects assessment.*

*The tiering of projects is based on project relevance to the proposed development and it is not a hierarchical approach nor based on weighting. Further information on the tiers is provided in Section 11.10 and in the Cumulative and Inter-Related Effects Chapter.”*

**And replaced with:**

Given the location and nature of the proposed development, a tiered approach to establishing the list of other existing and/or approved projects has been undertaken in Stage 1 of the cumulative effects assessment. The tiering of projects is based on the NSIP 2024 guidance. Further information on the tiers is provided in Section 10.9.2 and in Chapter 38.

**There are no other changes required to this section. Refer to Section 10.9 of Chapter 10 of the 2024 EIAR.**

**10.9.1 Marine Geology, Oceanography and Physical Processes cumulative screening exercise**

There are no changes to the section. Refer to Section 10.9.1 of Chapter 10 of the 2024 EIAR.

**10.9.2 Projects considered within the cumulative effect assessment**

**The key changes to this section are the updating of text to reflect the minor change in cumulative assessment methodology to follow the NSIP 2024 guidance, as per RFI Section 5.**

**The entire section shall be deleted and replaced with:**

The planned, existing and/or approved projects selected through the screening exercise as potentially relevant to the assessment of impacts to marine geology, oceanography and physical processes are presented in Table A10.4. The tiers for the assessment are:

- Tier 1 is all existing submitted and approved projects (not yet in operation/part of baseline), including the OMF option being considered which involves the adaption and leasing part of an existing port facility at Greenore (further detail is provided in the Chapter 6) and the East Coast Phase One Projects.
- Tier 2 is all projects that have scoping reports or have a MAC.
- Tier 3 is all other projects that have been identified in the relevant Development Plans and other plans and programmes as appropriate

The tiering structure is intended to provide an understanding of the potential for likely significant effects of the proposed development with the construction tier one projects; followed by a cumulative assessment of the likely significant effect of that scenario combined with tier two projects; and lastly the combination of tier one and tier two with tier three, which is all other projects that have been identified in the relevant Development Plans and other plans and programmes which have been screened in.

There are no impact pathways identified with the Phase One OWF projects to the south of the study area since the prevailing wave directions and net transport pathways for tidal advection and sediments are to the north. The only Phase One OWF linked by a potential pathway of impact is Oriel Wind Park and due to a cumulative effect on prevailing south-south-easterly waves reaching the leeward coastline. The potential tidal advection pathways from the proposed development array area includes an initial northerly passage which subsequently moves to the north-east following the alignment of the coastline which avoids the Oriel Wind Park array area.

If the construction phase of both projects overlaps then there may be limited occasions when plumes / settlement from the proposed development and Oriel Wind Park overlap in the far-field, although this would not expect to occur during periods of neap tides and be limited to low values of impact.

**Table A10.4 Projects and plans considered within the cumulative impact assessment (replaces Table 10.6 in Chapter 10 of the 2024 EIAR)**

| Development Type             | Project  | Status               | Data confidence | Distance to proposed development |        | Justification for screening into the cumulative effects assessment   |
|------------------------------|--|----------------------|-----------------|----------------------------------|--------|--|
|                              |  |                      |                 | Array area                       | ECC    |  |
| <b>Tier 1</b>                |  |                      |                 |                                  |        |  |
| Phase One Offshore Wind Farm | Oriel Wind Park                                  | Planning application | High            | 16.9km                           | 21.6km | Location of Oriel Wind Park in the lee of array-scale wave blockage from NISA for prevailing wave direction. Overlap in construction period, Oriel Wind Park due to construct during 2028-2030 |
| Subsea Cables                | Oriel Wind Park ECC                              | Planning application | High            | 18.1km                           | 22.6km |  |
|                              | Havhingsten Telecoms Cable                       | Active               | High            | 0.7km                            | 9.7km  | Subsea cable may require maintenance activities which may result in short-term, temporary seabed disturbance.  |
|                              | Rockabill Telecoms Cable                         | Active               | High            | 4.9km                            | 12.9km |  |
|                              | East West Interconnector Power Cable             | Active               | High            | 5.6km                            | 11.6km |  |
|                              | HIBERNIA 'C' Telecoms Cable                      | Active               | High            | 8.0km                            | 17.1km |  |
|                              | SIRIUS SOUTH Telecom Cable                       | Active               | High            | 9.4km                            | 18.8km |  |
|                              | CeltixConnect - Sea Fibre Networks Telecom Cable | Active               | High            | 11.3km                           | 20.1km |  |
|                              | Zayo Emerald Bridge ONE Telecom Cable            | Active               | High            | 12.1km                           | 20.2km |  |
| Dumping at Sea               | Drogheda Port Company – Dumping Site A1          | Active               | High            | 11.7km                           | 10.3km | Ongoing dumping at sea activities within the ZoI and within the proposed development construction phase may result in a cumulative increase in SSC   |
|                              | Drogheda Port Company – Dumping Site A2          | Active               | High            | 15.3km                           | 14.3km |  |

| Development Type   | Project  | Status | Data confidence | Distance to proposed development |        | Justification for screening into the cumulative effects assessment   |
|--|--|--------|-----------------|----------------------------------|--------|--|
|  |  |        |                 | Array area                       | ECC    |  |
| Oil & Gas Pipelines  | PL1890: Interconnector Scotland to Ireland IC2 | Active | High            | 0.5km                            | 2.7km  | Pipelines may require maintenance activities which may result in short term, temporary seabed disturbance. |
|  | PL938: Interconnector Scotland to Ireland IC1  | Active | High            | 4.2km                            | 10.6km |  |
| <b>Tier 2</b>  |  |        |                 |                                  |        |  |
| In Stage 2: Screening, there were no projects identified with the potential for interaction between effects with the proposed development. |  |        |                 |                                  |        |  |
| <b>Tier 3</b>  |  |        |                 |                                  |        |  |
| In Stage 2: Screening, there were no projects identified with the potential for interaction between effects with the proposed development. |  |        |                 |                                  |        |  |

**There are no other changes required to this section. Refer to Section 10.9.2 of Chapter 10 of the 2024 EIAR.**

### 10.9.3 Project impacts and options included in the assessment

**The change in this section is limited to the update replacing Table 10.7 of Chapter 10 of the 2024 EIAR with A10.5, this table reflects the update to impacts considered within this Chapter and the updated cumulative effects assessment that has been undertaken in response to RFI Section 5.**

**Table A10.5 Potential cumulative impacts and tiers for assessment (replaces Table 10.7 of Chapter 10 of the 2024 EIAR)**

| Potential cumulative impact   | Phase                      | Tiers and Projects   | Justification for inclusion in cumulative effects assessment   |
|---|----------------------------|--|--|
| Impact 1 - Physical changes to marine processes receptors from cumulative increase in suspended sediment concentration and deposition | Construction and operation | Tier 1 – Phase One Projects – Oriel Wind Park; Subsea cables; O&G pipelines; Dumping at sea. | There is the potential for activities to temporally overlap with the construction phase and potential for cumulative SSC and sediment deposition to occur within the modelled plume footprint. |
| Impact 2 - Physical changes to the coastline from modification in storm waves due to cumulative blockage from infrastructure          | Operation                  | Tier 1 – Phase One Projects – Oriel Wind Park.   | Potential for cumulative changes to hydrodynamics, waves and sediment transport.   |

**There are no other changes required to this section. Refer to Section 10.9.3 of Chapter 10 of the 2024 EIAR.**

#### 10.9.4 Cumulative Impact 1 - Physical changes to marine processes receptors from cumulative increase in suspended sediment concentration and deposition during construction and operation

**The key changes to this section are the updating of text to reflect the minor change in cumulative assessment methodology to follow the NSIP 2024 guidance, as per RFI Section 5. Therefore, the entire Section 10.9.4 of Chapter 11 of the 2024 EIAR should be deleted and replaced with:**

##### 10.9.4.1 Tier 1

The interaction of sediment plumes from the proposed development with activities from Oriel Wind Park is considered unlikely, even if construction activities occurred at the same time. Impact pathways are likely to be mutually exclusive and not overlap.

The interaction of sediment plumes from the proposed development with other Tier 1 projects including subsea cables; dumping at sea and activities within the screening range (such as spoil disposal at the nearshore DAS site north of the ECC) with Tier 2 is considered unlikely, even if construction activities occurred at the same time.

The sensitivity of receptors within the ZoI are considered to be low to increased SSC and deposition and the magnitude of impact is assessed to be negligible for Project Option 1 and Project Option 2. The significance of the cumulative effects is determined to be imperceptible for Project Option 1 and Project Option 2, which is not significant in EIA terms.

##### 10.9.4.2 Tier 1 and 2

No Tier 2 projects have been screened into the assessment of Cumulative Impact 1.

##### 10.9.4.3 Tier 1, 2 and 3 (All tiers)

No Tier 3 projects have been screened into the assessment of Cumulative Impact 1.

The sensitivity of receptors within the ZoI are considered to be low. The magnitude of impact from physical changes to marine processes receptors from cumulative increase in suspended sediment concentration and deposition during construction and operation, is assessed to be negligible for Project Option 1 and Project Option 2. The significance of the cumulative effect for all tiers is assessed to be imperceptible for Project Option 1 and Project Option 2, which is not significant in EIA terms.

#### 10.9.5 Cumulative Impact 2 – Physical changes to the coastline from modification in storm waves due to cumulative blockage from infrastructure

**The key changes to this section are the updating of text to reflect the minor change in cumulative assessment methodology to follow the NSIP 2024 guidance, as per RFI Section 5. Therefore, the entire Section 10.9.5 of Chapter 11 of the 2024 EIAR should be deleted and replaced with:**

##### 10.9.5.1 Tier 1

There is a small chance that wave blockage effects propagating from the proposed development (limited to times of peak storm events from the prevailing south-south-east wave direction) to interact with similar effects occurring across Oriel Wind Park to develop a greater level of wave height reduction along the southeasterly part of the Cooley Peninsula. As these waves approach the leeward coastline and move into shallower water then wave shoaling would expect to dominate to further reduce wave heights. The local shoreline is described as a gravel beach fronting upland and is considered not to be sensitive to any small (in the order of 0.05 to 0.10m), indiscernible changes in wave height.

The sensitivity of receptors within the ZoI are considered to be medium due to the Rockabill to Dalkey Island SAC, and the magnitude of impact is assessed to be negligible for Project Option 1 and Project Option 2. The significance of the cumulative effects is assessed as slight for Project Option 1 and Project Option 2, which is not significant in EIA terms

##### 10.9.5.2 Tier 1 and 2

No Tier 2 projects have been screened into the assessment of Cumulative Impact 1.

### 10.9.5.3 Tier 1, 2 and 3 (All tiers)

No Tier 3 projects have been screened into the assessment of Cumulative Impact 1.

The sensitivity of receptors within the ZoI are considered to be medium due to the Rockabill to Dalkey Island SAC. The magnitude of impact from physical changes to the coastline from modification in storm waves due to cumulative blockage from infrastructure is assessed to be negligible for Project Option 1 and Project Option 2. The significance of the cumulative effects for all tiers is assessed as slight for Project Option 1 and Project Option 2, which is not significant in EIA terms

## 10.10 References

**As a result of new information in response to RFI Section 1(b), the following references are added:**

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Horsburgh, K.J., Hill, A.E., Brown, J., Fernand, L., Garvine, R.W., & Angelico, M.M. (2000). Seasonal evolution of the cold pool gyre in the western Irish Sea. *Progress in Oceanography*, 46(1), 1-58. [https://doi.org/10.1016/S0079-6611\(99\)00054-3](https://doi.org/10.1016/S0079-6611(99)00054-3).

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