

Addendum to the  
Environmental Impact  
Assessment Report

**NISA**  
*North Irish Sea Array*

Volume 3 - Offshore Chapters

# Chapter 11

## Marine Water and Sediment Quality





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# 11. Marine Water and Sediment Quality

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 11 Marine Water and Sediment Quality of the 2024 Environmental Impact Assessment Report (EIAR). Full details of consultation undertaken can be found in Appendix A1.2 in the Addendum to the EIAR.

For the purposes of clarity, this document shall be read in conjunction with Chapter 11 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 what is subsequently driving them. 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.

Tables which have been updated from the 2024 EIAR, or entirely new tables, have been included in the Addendum to the EIAR. These can be identified by the “A” prefix in the table caption. Any changes within an 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.

This sections relevant to Chapter 11 in the RFI are included below.

RFI Section	RFI	Relevance to Chapter 11
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. Chapter ensures that the assessment remains valid and representative of up-to-date information.
1 (c)	The applicant is requested to confirm whether any on-going or additional surveying has been carried out since the application was lodged and, if so, the applicant is invited to submit any further survey data results and analysis and update the planning application documentation, as appropriate.	Additional benthic ecology surveys have been undertaken since submission of the application, as detailed in Appendix A12.3: Benthic Ecology Survey Report 2025. Relevant outputs, including Particle Size Analysis (PSA) and physicochemical data, have been incorporated into the Chapter 11 assessment. These data have informed an updated characterisation of sediment quality and baseline conditions.
4	The documentation submitted does not provide specific detail, assessment, or review of the range of ecosystem functions and services which could be impacted by the proposed development. The National Marine Planning Framework (NMPF) states that proposals to protect, maintain, restore, and enhance coastal habitats for ecosystem functioning and provision of ecosystem services will be supported, subject to the outcome of statutory environmental assessment processes.	A synopsis report of ecosystem functions and services has been provided in Appendix A3.3 Ecosystem Functions and Services Assessment, which considers the full range of ecosystem services set out in the report Valuing Ireland’s Blue Ecosystem Services’ (SEMROU of NUI Galway, 2018).

RFI Section	RFI	Relevance to Chapter 11
	<p>Seafloor and Water Column Integrity Policy 3 of the NMPF also requires proposals to take account of the space required for coastal habitats, for ecosystem functioning and the provision of ecosystem services and to demonstrate that they will, in order of preference, avoid, minimise or mitigate for net loss of coastal habitats.</p> <p>The applicant is requested to update the EIAR to include an assessment of impacts (both positive and negative) on relevant ecosystem functions and services and include mitigation measures, as appropriate. The applicant is also requested to submit a synopsis report of the relevant impacts on ecosystem functions and services. In identifying the relevant ecosystem services for assessment, including those services classified as provisioning, regulation and maintenance, and cultural services, the applicant is advised to consider the full range of ecosystem services set out in the report ‘Valuing Ireland’s Blue Ecosystem Services’ (SEMURU of NUI Galway, 2018), as referenced in the NMPF. The report should also consider the need for an adaptive management framework for ongoing assessment and should include provision for appropriate monitoring of any mitigation measures and operational management strategies, as well as provision for decommissioning.</p>	<p>The outcome of individual receptor assessments concluded no material impact on ecosystem services, and no impediment to the ability of normal ecosystem functions and services to function, resulting from the proposed development.</p> <p>The Developer has not included a separate ecosystem function assessments in the respective Chapters of the EIAR, as the conclusions of the EIAR are already directly linked to the assessment of ecosystem functions and services. This includes assessment of decommissioning impacts, the need for adaptive management, ongoing monitoring and/or other mitigations.</p>
5	<p>The Board notes that cumulative assessment was addressed under each topic specific chapter in the EIAR and addressed within Chapter 38 Cumulative and Inter related Effects Assessment (CEA) (and associated Appendices 38.1 and 38.2).</p> <p>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.</p> <p>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). 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. 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 cumulative effects assessment has been revised in line with NSIP (2024) and relevant sections of Chapter 11: Marine Water and Sediment Quality have been updated.</p>

RFI Section	RFI	Relevance to Chapter 11
	<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 (r)	<p>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 &amp; 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”).</p>	<p>Updated numerical modelling (as reported in detail in Chapter 10: Marine Geology, Oceanography and Physical Processes) has been reviewed in the context of marine water and sediment quality. The results provide additional validation of the impact assessment presented in Chapter 11 and do not alter the significance of effects previously reported. No further revisions to the Chapter 11 conclusions are required.</p>

## 11.1 Introduction

**The required change to this section is the inclusion of cross-references to ensure that all relevant EIAR chapters where sediment-related effects are assessed are identified, reflecting the consideration of impact pathways within this chapter. In addition to the EIAR chapters referenced in Section 11.1 of Chapter 11 in the 2024 EIAR, the following documents, and associated addendums, should also be read alongside this assessment, given their consideration of potential sediment effects:**

- Chapter 14: Marine Mammal Ecology;
- Chapter 15: Offshore Ornithology; and
- Natura Impact Statement.

**There are no other changes to this section. Refer to 11.1 of Chapter 11 in the 2024 EIAR.**

## 11.2 Methodology

### 11.2.1 Introduction

There are no changes to this section. Refer to Section 11.2.1 of Chapter 11 in the 2024 EIAR.

### 11.2.2 Study Area

There are no changes to this section. Refer to Section 11.2.2 of Chapter 11 in the 2024 EIAR.

#### 11.2.2.1 Source-Pathway-Receptor

There are no changes to this section. Refer to Section 11.2.2.1 of Chapter 11 in the 2024 EIAR.

### 11.2.3 Relevant Legislation, Policy and Guidance

There are no changes to this section. Refer to Section 11.2.3 of Chapter 11 in the 2024 EIAR.

#### 11.2.3.1 Water Framework Directive

There are no changes to this section. Refer to Section 11.2.3.1 of Chapter 11 in the 2024 EIAR.

### *11.2.3.2 Bathing Waters*

There are no changes to this section. Refer to Section 11.2.3.2 of Chapter 11 in the 2024 EIAR.

### *11.2.3.3 Priority Substances*

There are no changes to this section. Refer to Section 11.2.3.3 of Chapter 11 in the 2024 EIAR.

### *11.2.3.4 Marine Strategy Framework Directive*

There are no changes to this section. Refer to Section 11.2.3.4 of Chapter 11 in the 2024 EIAR.

### *11.2.3.5 Urban Wastewater Treatment Directive*

There are no changes to this section. Refer to Section 11.2.3.5 of Chapter 11 in the 2024 EIAR.

### *11.2.3.6 Nitrates Directive*

There are no changes to this section. Refer to Section 11.2.3.6 of Chapter 11 in the 2024 EIAR.

## **11.2.4 Data Collection and Collation**

### *11.2.4.1 Site-specific Surveys*

**In response to RFI Section 1 (c), the key change required in this section is the inclusion of additional new site-specific benthic surveys (undertaken in 2025) to validate the earlier site-specific benthic surveys (undertaken in 2022) used to characterise the baseline. These 2025 surveys included Particle Size Analysis (PSA) and sediment contamination assessments, which supplement the data presented in the 2024 EIAR. In addition to the documents referenced in Section 11.2.4.1 of Chapter 11 in the 2024 EIAR, the following documents have also been considered in this Addendum:**

- Appendix A12.3: Benthic Ecology Survey Report 2025;
- N-Sea (2024). North Irish Sea Array Windfarm Ltd. Geotechnical Site Investigation Survey. Factual Geotechnical Report. Doc No: PJ00326-NSEA-SUR-FR-22501; and
- SEP Hydrographic (2024). North Irish Sea Array (NISA). Nearshore and Intertidal Geophysical Survey. Operations & Results Report. Ref; 2023-031.

**There are no other changes to this section. Refer to 11.2.4.1 of Chapter 11 in the 2024 EIAR.**

### *11.2.4.2 Desk-based Review*

**In response to RFI Section 1 (b), the change required in this section is the inclusion of an additional desk-based report on designated Bathing Water Quality in Ireland, published by the EPA (EPA, 2024) following the submission of the 2024 EIAR. In addition to the sources referenced in Section 11.2.4.2 of Chapter 11 in the 2024 EIAR, the following sources have also been considered in this Addendum:**

- Bathing water quality in Ireland in 2024 (EPA, 2025);
- Water Quality in 2023 – An Indicators Report (EPA, 2024a);
- Water Quality Monitoring Report on Nitrogen and Phosphorus Concentrations in Irish Waters in 2024 (EPA, 2024b).

**There are no other changes to this section. Refer to 11.2.4.1 of Chapter 11 in the 2024 EIAR.**

### *11.2.4.3 Data Limitations*

There are no changes to this section. Refer to Section 11.2.4.3 of Chapter 11 in the 2024 EIAR.

### *11.2.4.4 Methodology for Assessment of Effects*

There are no changes to this section. Refer to Section 11.2.4.4 of Chapter 11 in the 2024 EIAR.

## 11.3 Baseline Environment

### 11.3.1 Introduction

There are no changes to this section. Refer to Section 11.3.1 of Chapter 11 in the 2024 EIAR.

### 11.3.2 Sediment Characterisation

There are no changes to this section. Refer to Section 11.3.2 of Chapter 11 in the 2024 EIAR.

#### 11.3.2.1 ECC (including intertidal area)

**In response to RFI Section 1 (c), the key changes to this section include the incorporation of PSA from samples collected across the ECC during additional site-specific benthic surveys undertaken in 2025 (Appendix A12.3). These 2025 survey results supplement, rather than replace, the data presented in the 2024 EIAR, thereby providing a broader and more robust dataset. In addition to the information presented in Section 11.3.2.1 of Chapter 11 of the 2024 EIAR, the following information shall be included at the end of Section 11.3.2.1:**

PSA conducted on sediment samples collected along the ECC in October 2025 has been used to further characterise the baseline environmental conditions. The PSA and Total Organic Carbon (TOC) results are presented in Table A11.1. The results (Appendix A12.3: Benthic Ecology Survey Report 2025) indicate that the ECC is characterised predominantly by Slightly Gravelly Muddy Sand, with sediments dominated by sand and a variable mud fraction and trace gravel.

This sediment characterisation is consistent with the findings of previous PSA undertaken from site-specific benthic surveys in September 2022 (Appendix 12.2: Cable Route Benthic Survey Report of the 2024 EIAR), which similarly identified sand-dominated sediments with localised increases in mud content. Minor differences in Folk sediment classification between the 2022 and 2025 datasets may reflect natural spatial variability in sediment composition along the ECC and the sensitivity of Folk classification to small variations in relative sand and mud content, rather than a material change in seabed character.

Reported TOC values differ between surveys due to methodological differences, with TOC in the 2022 survey expressed as loss-on-ignition (LOI), which includes non-organic volatile components, and TOC in the 2025 survey reported as % m/m following direct carbon analysis. These differences do not indicate a change in baseline sediment quality.

The inclusion of the 2025 PSA and TOC data along the ECC does not materially alter the Marine Water and Sediment Quality (MW&SQ) assessment.

**Table A11.1 PSA and TOC analysis results for the ECC from site-specific benthic surveys in October 2025 (% of each particle size and TOC)**

Station	Major Sediment Fractions			PSA Folk Classification	TOC % m/m
	Gravel (%)	Sand (%)	Mud (%)		
ECR-1	0.10	77.20	22.69	Slightly Gravelly Muddy Sand	0.24
ECR-3	0.29	68.57	31.14	Slightly Gravelly Muddy Sand	0.31
ECR-8	0.23	66.00	33.77	Slightly Gravelly Muddy Sand	0.35
ECR-10	0.44	74.12	25.43	Slightly Gravelly Muddy Sand	0.33
ECR-24	0.90	70.03	29.06	Slightly Gravelly Muddy Sand	0.44
ECR-26	0.40	69.09	30.51	Slightly Gravelly Muddy Sand	0.36
ECR-28	0.00	56.87	43.13	Slightly Gravelly Muddy Sand	0.53
ECR-29	0.04	61.47	38.49	Slightly Gravelly Muddy Sand	0.64
ECR-MI1	0.13	85.51	14.36	Slightly Gravelly Muddy Sand	0.20
ECR-MI2	0.33	65.75	33.92	Slightly Gravelly Muddy Sand	0.36

**There are no other changes required to this section. Refer to Section 11.3.2.1 of Chapter 11 in the 2024 EIAR.**

### 11.3.2.2 Array area

In response to RFI Section 1 (c), the key changes to this section include the incorporation of PSA from samples collected across the array area during additional site-specific benthic surveys undertaken in 2025 (Appendix A12.3). These 2025 survey results supplement, rather than replace, the data presented in the 2024 EIAR, thereby providing a broader and more robust dataset. In addition to the information presented in Section 11.3.2.2 of Chapter 11 in the 2024 EIAR, the following information shall be included at the end of Section 11.3.2.2:

PSA conducted on sediment samples collected along the array area in October 2025 has been used to further characterise the baseline environmental conditions. The PSA and TOC results are presented in Table A11.2. The results (Appendix A12.3: Benthic Ecology Survey Report 2025) indicate that the array area is characterised predominantly by Sandy Mud and Muddy Sand, which is consistent with the findings of previous PSA undertaken from site-specific benthic surveys in September 2022 (Appendix 12.1: Array Area Benthic Survey Report of the 2024 EIAR).

The inclusion of the 2025 PSA and TOC data along the array area does not materially alter the MW&SQ assessment.

**Table A11.2 PSA and TOC analysis results for the array area from site-specific benthic surveys in October 2025 (% of each particle size and TOC)**

Station	Major Sediment Fractions			PSA Folk Classification	TOC % m/m
	Gravel (%)	Sand (%)	Mud (%)		
AR-0	0.00	46.69	53.31	Sandy Mud	0.56
AR-5	0.00	28.02	71.98	Sandy Mud	0.68
AR-6	0.00	49.77	50.23	Sandy Mud	0.56
AR-7	0.00	34.86	65.14	Sandy Mud	0.62
AR-8	0.00	23.03	76.97	Sandy Mud	0.69
AR-10	0.00	43.47	56.53	Sandy Mud	0.55
AR-12	0.00	48.84	51.16	Sandy Mud	0.53
AR-15	0.00	44.21	55.79	Sandy Mud	0.56
AR-16	0.00	46.22	53.78	Sandy Mud	0.55
AR-17	0.00	59.24	40.76	Muddy Sand	0.40
AR-18	0.00	53.65	46.35	Muddy Sand	0.46
AR-MI1	0.00	44.84	55.16	Sandy Mud	0.55

**There are no other changes required to this section. Refer to Section 11.3.2.2 of Chapter 11 in the 2024 EIAR.**

### 11.3.3 Seabed Chemistry and Contaminants

There are no changes to this section. Refer to Section 11.3.3 of Chapter 11 in the 2024 EIAR.

#### 11.3.3.1 ECC (including intertidal area)

In response to RFI Section 1 (c), the key change to this section is to incorporate sediment contamination results from samples collected across the ECC during additional site-specific benthic surveys undertaken in 2025, with results assessed against the Irish Action Levels (ALs) (Appendix A12.3: Benthic Ecology Survey Report 2025). These 2025 survey results supplement, rather than replace, the data presented in the 2024 EIAR, thereby providing a broader and more robust dataset. In addition to the information presented in Section 11.3.3.1 of Chapter 11 in the 2024 EIAR, the following information shall be included at the end of Section 11.3.3.1:

Sediment samples collected along the ECC in October 2025 were analysed for the Marine Institute full suite of determinants, with results compared against the Irish ALs.

Analytes included heavy metals, organochlorine compounds and polychlorinated biphenyls (PCBs), total extractable hydrocarbons (TEHs), polycyclic aromatic hydrocarbons (PAHs), and tributyltin (TBT) and dibutyltin (DBT). Full analytical results, presented alongside the applicable Irish ALs, are provided in Appendix A12.3: Benthic Ecology Survey Report 2025 and are summarised below:

- All sediment contamination samples collected along the ECC were below the applicable Lower and Upper Irish ALs.

These results indicate that sediments along the ECC do not present a significant risk to the marine environment when disturbed, suspended, or made bioavailable.

Accordingly, the 2025 benthic sediment contamination results do not identify any new or elevated contaminant concentrations relative to the existing baseline. The understanding of baseline sediment contamination levels remains unchanged, and the MW&SQ assessment is not materially altered.

**There are no other changes required to this section. Refer to Section 11.3.3.1 of Chapter 11 in the 2024 EIAR.**

#### *11.3.3.2 Array area*

**In response to RFI Section 1 (c), the key change to this section is to incorporate sediment contamination results from samples collected across the array area during additional site-specific benthic surveys undertaken in 2025, with results assessed against the Irish ALs (Appendix A12.3: Benthic Ecology Survey Report 2025). These 2025 survey results supplement, rather than replace, the data presented in the 2024 EIAR, thereby providing a broader and more robust dataset. In addition to the information presented in Section 11.3.3.2 of Chapter 11 in the 2024 EIAR, the following information shall be included at the end of Section 11.3.3.2:**

Sediment samples collected within the array area in October 2025 were analysed for the Marine Institute full suite of determinants (as listed above), with results compared against the Irish ALs. Full analytical results, presented alongside the applicable Irish Action Levels, are provided in Appendix A12.3: Benthic Ecology Survey Report 2025 and are summarised below:

- All sediment contamination samples collected within the array area were below the applicable Lower and Upper Irish ALs.

These results indicate that sediments within the array area do not present a significant risk to the marine environment when disturbed, suspended, or made bioavailable.

Accordingly, the 2025 benthic sediment contamination results do not identify any new or elevated contaminant concentrations relative to the existing baseline. The understanding of baseline sediment contamination levels remains unchanged, and the MW&SQ assessment is not materially altered.

**There are no other changes required to this section. Refer to Section 11.3.3.2 of Chapter 11 in the 2024 EIAR.**

#### *11.3.4 Suspended Sediments*

There are no changes to this section. Refer to Section 11.3.4 of Chapter 11 in the 2024 EIAR.

##### *11.3.4.1 ECC (including intertidal area)*

There are no changes to this section. Refer to Section 11.3.4.1 of Chapter 11 in the 2024 EIAR.

##### *11.3.4.2 Array area*

There are no changes to this section. Refer to Section 11.3.4.2 of Chapter 11 in the 2024 EIAR.

#### *11.3.5 Water Column Characteristics*

There are no changes to this section. Refer to Section 11.3.5 of Chapter 11 in the 2024 EIAR.

#### 11.3.5.1 ECC (including intertidal area)

There are no changes to this section. Refer to Section 11.3.5.1 of Chapter 11 in the 2024 EIAR.

#### 11.3.5.2 Array area

There are no changes to this section. Refer to Section 11.3.5.2 of Chapter 11 in the 2024 EIAR.

#### 11.3.5.3 Water Column Chemistry and Contaminants

There are no changes to this section. Refer to Section 11.3.5.3 of Chapter 11 in the 2024 EIAR.

#### 11.3.5.4 ECC (including intertidal area)

**In response to RFI Section 1 (b), the key change to this section is the incorporation of more recent EPA reports on water quality in estuarine and coastal water bodies, with particular focus on nitrate and phosphate levels. In addition to the information presented in Section 11.3.5.4 of Chapter 11 in the 2024 EIAR, the following information shall be included at the end of Section 11.3.5.4:**

The EPA subsequently published ‘Water Quality in 2023 - An Indicators Report’ (EPA, 2024a), which reported results consistent with the 2022 assessment, with minor improvements. Of the 117 estuarine and coastal water bodies assessed, 20 (17%) were in unsatisfactory condition for DIN, primarily along the eastern, south-eastern and southern coastlines. This represents an apparent improvement since 2022, although this is likely attributable to the inclusion of a greater number of coastal water bodies, which are generally less impacted. Nearly all (98%) estuarine and coastal waters were in satisfactory condition for phosphate, reflecting a marginal (1%) improvement compared to 2022.

A further report, ‘Water Quality Monitoring Report on Nitrogen and Phosphorus Concentrations in Irish Waters 2024’ (EPA, 2024b), assessed 119 estuarine and coastal water bodies. Of these, 23 (19%) were in unsatisfactory condition for DIN, while 97.5% were in satisfactory condition for phosphate.

Overall, these findings are consistent with the existing baseline assessment and therefore the MW&SQ assessment is not materially altered.

**There are no other changes required to this section. Refer to Section 11.3.5.4 of Chapter 11 in the 2024 EIAR.**

#### 11.3.5.5 Array area

There are no changes to this section. Refer to Section 11.3.5.5 of Chapter 11 in the 2024 EIAR.

#### 11.3.6 Designated Sites

**In response to RFI Section 1 (b), the changes in this section are required following the publication of updated Bathing Water classifications in 2024 and 2025. Data for previous years has also been revised to incorporate the Annual Water Quality classification, derived from monitoring results over a four-year period and assessed against stringent bacterial thresholds. To ensure the Marine Water and Sediment Quality (MW&SQ) assessment remains relevant and up to date, and to reflect recent improvements or deteriorations in Bathing Water status, the updated classifications have been considered further within this section. Therefore, Table 11.16 within Section 11.3.6 of Chapter 11 in the 2024 EIAR shall be deleted and replaced with the text below and Table A11.3:**

Bathing Water status for the 2025 annual classification shows an overall improvement across the study area, as reported by the EPA (Table 11.2; EPA, 2024).

Portrane, the Brook Beach declined from ‘Excellent’ in 2022 to ‘Sufficient’ in 2024, likely due to wastewater overflows, septic tank discharges, animal fouling, and stormwater or agricultural run-off during heavy rainfall. However, Portrane, the Brook Beach is classified as achieving ‘Good’ in 2025, based on the assessment of bacteriological results for the period 2022 to 2024

Balbriggan, Front Strand was recorded as ‘Not Classified’ in 2024 and assigned a transitional ‘Changes’ status following improvement works by Fingal County Council.

Under this designation, previously ‘Poor’ waters showing significant improvement may be reclassified once 16 new Bathing Water samples have been collected. Therefore, in 2025, Balbriggan, Front Strand is classified as achieving ‘Sufficient’ status based on assessment of bacteriological results for the period 2024 and 2025.

**There are no other changes required to this section. Refer to Section 11.3.6 of Chapter 11 in the 2024 EIAR.**

**Table A11.3 Bathing Waters included within the MW&SQ assessment (Source: EPA, 2024) (Replaces Table 11.16 in Chapter 11 of the 2024 EIAR)**

Name (from north to south)	ID	Distance (km) to			Bathing Water Status <sup>(a)</sup>			
		Array Area	ECC	Offshore development area	2025	2024	2023	2022
Mornington <sup>(b)</sup>	n/a	9.9	16.9	-	Excellent	Excellent	Poor	Excellent
Laytown/ Bettystown	IEEABWC020_0000_0700	16.8	7.7	16.8	Excellent	Excellent	Excellent	Excellent
Balbriggan, Front Strand Beach <sup>(c)</sup>	IEEABWC020_0000_0600	15.4	0.9	15.8	Sufficient	Not Classified/ Changes	Poor	Poor
Skerries, South Beach	IEEABWC020_0000_0500	9.3	4.9	11.7	Excellent	Good	Sufficient	Sufficient
Loughshinny Beach	IEEABWC020_0000_0400	7.7	9.1	12.9	Good	Sufficient	Poor	Sufficient
Rush, North Beach	IEEABWC020_0000_0350	7.8	11.3	14.7	Excellent	Excellent	Good	Excellent
Rush, South Beach	IEEABWC020_0000_0300	8.6	12.4	16.1	Good	Good	Good	Excellent
Portrane, the Brook Beach	IEEABWC020_0000_0200	9.4	14.5	18.4	Good	Sufficient	Good	Excellent

Blue Shaded cells represent those within 1nm/ 2km of the ECC.

(a) Annual water quality ratings are generally calculated using monitoring results over a four-year period and are assessed against stringent bacterial limits.

(b) Mornington: site is not a designated Bathing Water and is listed by the EPA as an Other Monitored Water. Included on request of Meath County Council’s Scoping Response.

(c) Balbriggan, Front Strand is recorded as ‘Not Classified’ for 2024 and assigned a ‘Changes’ status following improvement works by Fingal County Council; a standard classification will be available once sufficient new monitoring results are collected.

### 11.3.6.1 Dumping at Sea Sites

There are no changes to this section. Refer to Section 11.3.6.1 of Chapter 11 in the 2024 EIAR.

## 11.4 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. In the 2024 EIAR, Wind Turbine Generator (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 WTGs are now proposed with Suction Bucket Jacket (SBJ) foundations, and OSPs with jacket foundations installed with either drilled pin piles or suction buckets, as indicated by the grey shading in Table A11.4 below (further information is provided in Appendix A5.1). Therefore, Table 11.20 within Section 11.4 in the 2024 EIAR shall be deleted and replaced with Table A11.4:

**Table A11.4 Key characteristics of Project Option 1 and Project Option 2 (Replaces Table 11.20 in Chapter 11 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
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 bucket caissons	35 three- or four-legged jacket structures secured into the seabed with suction bucket caissons
OSP Foundations (array area)	One OSP, with a four -legged jacket foundation secured into the seabed with either pin piles or suction bucket caissons	One OSP, with a four -legged jacket foundation secured into the seabed with either pin piles or suction bucket caissons
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

**There are no other changes required to this section. Refer to Section 11.4 of Chapter 11 of the 2024 EIAR.**

### 11.4.1 Parameters for assessment

There are no changes to this section. Refer to Section 11.4.1 of Chapter 11 in the 2024 EIAR.

### 11.4.2 Construction

There are no changes to this section. Refer to Section 11.4.2 of Chapter 11 in the 2024 EIAR.

### 11.4.3 Operational Phase

There are no changes to this section. Refer to Section 11.4.3 of Chapter 11 in the 2024 EIAR.

### 11.4.4 Decommissioning

There are no changes to this section. Refer to Section 11.4.4 of Chapter 11 in the 2024 EIAR.

### 11.4.5 Embedded Mitigation Measures

There are no changes to this section. Refer to Section 11.4.5 of Chapter 11 in the 2024 EIAR.

### 11.4.6 Potential Impacts

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: Marine Processes Review of Project Options). In the 2024 EIAR, WTG monopile foundations and OSP monopile and jacket foundations with pin piles were considered. Following design development in response to the RFI, monopiles have been removed and WTGs are now proposed with Suction Bucket Jacket (SBJ) foundations, and OSPs with jacket foundations installed with either drilled pin piles or suction buckets. This change has also affected other design parameters, which have been updated accordingly, as indicated by the grey shading in Table A11.5. Therefore, Table 11.22 in the 2024 EIAR shall be deleted and replaced with Table A11.5:

**Table A11.5 Potential impacts per project option. The project option that has the greatest magnitude of impact is identified in blue (Replaces Table 11.22 in Chapter 11 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
<b>Construction</b>			
<p>1. Deterioration in water quality due to sediment suspension.</p> <p>Temporary increases may occur as a result of construction (i.e. seabed levelling). This in turn may result in a reduction of water clarity and potentially the resuspension of nutrients and contaminants (see Impact 4).</p>	<p><b>Total volume of suspended sediment and sediment deposition 455,139m<sup>3</sup>.</b></p> <p><b>OSP jacket foundations:</b></p> <p>One OSP four-legged foundation installed via suction or drilled pin pile, requiring:</p> <ul style="list-style-type: none"> <li>• Drill cutting volume per pin pile (with 1.5 bulking factor): 2,545m<sup>3</sup></li> <li>• Drill cutting volume all pin piles (with 1.5 bulking factor): 10,179m<sup>3</sup></li> </ul> <p><b>WTG jacket foundations:</b></p> <p>49 three- or four-legged jacket foundations installed via lifting, suction installation.</p> <p>Installation involves controlled pumping of water from within the caissons during penetration, resulting in localised release of suspended sediment.</p> <p>Penetration is expected to occur over approximately 4 to 10 hours per foundation.</p> <p><b>Cable trenching:</b></p> <p>Installation of 111km of array cables = 333,000m<sup>3</sup></p> <p>Installation of two (18 km) export cables resulting in the suspension of 108,000m<sup>3</sup> of sediment (excluding the part of the export cable within the array area).</p> <p><b>Subtidal HDD:</b></p> <p>Exit pits total volume = 3,960m<sup>3</sup>.</p> <p>Drilling fluid (i.e. bentonite) discharge rate - Punch out = 10 tonnes</p> <p>Drilling fluid (i.e. bentonite) discharge rate – Pull back = 20 tonnes</p>	<p><b>Total volume of suspended sediment and sediment deposition 395,139m<sup>3</sup>.</b></p> <p><b>OSP jacket foundations:</b></p> <p>One OSP four-legged foundation installed via suction or drilled pin pile, requiring:</p> <ul style="list-style-type: none"> <li>• Drill cutting volume per pin pile (with 1.5 bulking factor): 2,545 m<sup>3</sup></li> <li>• Drill cutting volume (all pin piles): 10,179m<sup>3</sup></li> </ul> <p><b>WTG jacket foundations:</b></p> <p>35 three- or four-legged jacket foundations installed via lifting, suction installation.</p> <p>Installation involves controlled pumping of water from within the caissons during penetration, resulting in localised release of suspended sediment.</p> <p>Penetration is expected to occur over approximately 4 to 10 hours per foundation.</p> <p><b>Cable Trenching:</b></p> <p>Installation of 91km of array cables resulting in the suspension of 273,000m<sup>3</sup> of sediment.</p> <p>Installation of two (18km) export cables resulting in the suspension of 108,000m<sup>3</sup> of sediment (excluding the part of the export cable within the array).</p> <p><b>Subtidal HDD:</b></p> <p>Exit pits total volume = 3,960m<sup>3</sup>.</p> <p>Drilling fluid (i.e. bentonite) discharge rate - Punch out = 10 tonnes</p> <p>Drilling fluid (i.e. bentonite) discharge rate – Pull back = 20 tonnes</p>	<p><b>Project Option 1 represents the greatest magnitude of impact in relation to this impact.</b></p> <p>Project Option 1 results in the greatest volume of sediment being disturbed due to the larger volume of infrastructure in the array area. However, the ECC for both Project Design Options is considered equal.</p> <p>The activities resulting in the most energetic sediment release into the water column are listed below, along with their corresponding modelled scenario references:</p> <ul style="list-style-type: none"> <li>• Drilling for OSP foundation installation (C-02);</li> <li>• Cable installation in the array area (C-03);</li> <li>• Cable installation in the ECC (C-04);</li> <li>• HDD at exit pits (C-05).</li> </ul>

Potential impact	Project Option 1 (49 WTG)	Project Option 2 (35 WTG)	Rationale for the project option with the greatest magnitude of impact
<p>2. Accidental releases or spills of materials or chemicals.</p> <p>The proposed development has the potential to result in accidental spills during all phases, including construction. If an accidental spill were to occur, this may lower the water quality in the study area.</p>	<p><b>Construction component substances and materials:</b></p> <p>Each WTG will contain components that require lubricating oils, hydraulic oils and coolants for operations such as grease, synthetic oil, nitrogen, transformer oil, sulphur hexafluoride (SF6) and glycerol. The volume of oils and fluids will vary depending on the WTG design.</p> <p>The OSP will contain diesel for the emergency diesel generators contained in tanks, oil for transformers, deionised water for cooling systems, glycol, lead acid for UPS and batteries, engine oil and SF6.</p> <p><b>WTGs:</b></p> <p>49 turbines, each with the potential for accidental spills/releases.</p> <p><b>OSP:</b></p> <p>One OSP, with potential for accidental spills/releases.</p> <p><b>Construction vessels:</b></p> <p>Total number of construction vessel return trips: 3032.</p> <p>A maximum of:</p> <ul style="list-style-type: none"> <li>• 50 vessels simultaneously onsite during construction;</li> <li>• 10 helicopter return trips for WTG installation;</li> <li>• 660 vessel return trips for WTG installation;</li> <li>• 570 vessel return trips for WTG commissioning works;</li> <li>• 361 vessel return trips for foundation installation;</li> <li>• 556 vessel return trips for OSP installation;</li> <li>• 136 vessel return trips for cable installation in the array area;</li> <li>• 83 vessel return trips for cable installation in the ECC; and</li> <li>• 666 guard vessel return trips.</li> </ul> <p><b>Dry grout mix for foundation installation:</b></p> <ul style="list-style-type: none"> <li>• Grout will be cementitious in nature, typically based on ordinary Portland cement (OPC) or equivalent formulations;</li> <li>• Maximum quantity carried per vessel at any one time: 1,000 tonnes; and</li> </ul>	<p><b>Construction component substances:</b></p> <p>Each WTG will contain components that require lubricating oils, hydraulic oils and coolants for operations such as grease, synthetic oil, nitrogen, transformer oil, sulphur hexafluoride (SF6) and glycerol. The volume of oils and fluids will vary depending on the WTG design.</p> <p>The OSP will contain diesel for the emergency diesel generators contained in tanks, oil for transformers, deionised water for cooling systems, glycol, lead acid for UPS and batteries, engine oil and SF6.</p> <p><b>WTGs:</b></p> <p>35 turbines, each with the potential for accidental spills/releases.</p> <p><b>OSP:</b></p> <p>One OSP, with potential for accidental spills/releases.</p> <p><b>Construction vessels:</b></p> <p>Total number of construction vessel return trips: 2504.</p> <p>A maximum of:</p> <ul style="list-style-type: none"> <li>• 47 vessels simultaneously onsite during construction;</li> <li>• 7 helicopter return trips for WTG installation;</li> <li>• 500 vessel return trips for WTG installation;</li> <li>• 440 vessel return trips for WTG commissioning works;</li> <li>• 253 vessel return trips for foundation installation;</li> <li>• 556 vessel return trips for OSP installation;</li> <li>• 114 vessel return trips for cable installation in the array area;</li> <li>• 83 vessel return trips for cable installation in the ECC; and</li> <li>• 558 guard vessel return trips.</li> </ul> <p><b>Dry grout mix for foundation installation:</b></p> <ul style="list-style-type: none"> <li>• Grout will be cementitious in nature, typically based on ordinary Portland cement (OPC) or equivalent formulations;</li> <li>• Maximum quantity carried per vessel at any one time: 1,000 tonnes; and</li> </ul>	<p><b>Project Option 1 represents the greatest magnitude of impact in relation to this impact.</b></p> <p>Project Option 1 presents the design with the greatest potential for accidental spills or releases (due to WTG/OSP presence, and number of vessel movement) during the construction period.</p> <p>These parameters present the greatest volumes of compounds which could be associated with the proposed development infrastructure.</p>

Potential impact	Project Option 1 (49 WTG)	Project Option 2 (35 WTG)	Rationale for the project option with the greatest magnitude of impact
	<ul style="list-style-type: none"> <li>Total quantity required during construction: 100,000 tonnes.</li> </ul>	Total quantity required during construction: 100,000 tonnes	
3. Deterioration in water clarity due to the release of drilling mud.	<p>Two offshore HDD subtidal exit pits require excavation of 3,960m<sup>3</sup> via Mass Flow Excavation (MFE).</p> <p>Drilling mud loss of 30 tonnes as associated release rates of bentonite are 4,000g/s (for 100 seconds) followed by a release rate of 19g/s (for 24 hours) per trench.</p> <p>Cable punch out will occur instantaneously for both export cables. Cable pull back will occur over 24 hours.</p>	<p>Two offshore HDD subtidal exit pits require excavation of 3,960m<sup>3</sup> via MFE.</p> <p>Drilling mud loss of 30 tonnes as associated release rates of bentonite are 4,000g/s (for 100 seconds) followed by a release rate of 19g/s (for 24 hours) per trench.</p> <p>Cable punch out will occur instantaneously for both export cables. Cable pull back will occur over 24 hours.</p>	<p><b>Both project options represent the same magnitude of impact in relation to this impact.</b></p> <p>Project Option 1 and Project Option 2 both present the same excavation and drilling mud volumes, due to the identical HDD methodologies between the two options.</p> <p>The bentonite volume of which could be released as part of the HDD cable pull in at the subtidal exit pit is considered. Further detail is provided in scenarios C-05 and C-06 within the marine processes model. The method is assumed to not allow for the capture of bentonite and as such it is released directly into the marine environment.</p>
4. Release of sediment-bound contaminants from disturbed sediments.	Impact 1 represents sediment disturbance volume associated with construction activities. The greatest release of sediment bound contaminants will be associated with this greatest release of suspended sediment (due to the partitioning of contaminants into the water column from the disturbed sediment). As Project Option 1 represents the greatest sediment disturbance scenario, it will also represent the greatest potential release of sediment bound contaminants.	Impact 1 represents sediment disturbance volume associated with construction activities. The greatest release of sediment bound contaminants will be associated with this greatest release of suspended sediment (due to the partitioning of contaminants into the water column from the disturbed sediment). As Project Option 1 represents the greatest sediment disturbance scenario, it will also represent the greatest potential release of sediment bound contaminants.	<p><b>Project Option 1 represents the greatest magnitude of impact in relation to this impact.</b></p> <p>Project Option 1 results in the greatest volume of sediment being disturbed due to the larger volume of infrastructure in the array area. However, the ECC for both Project Design Options is considered equal.</p> <p>The activities resulting in the most energetic sediment release into the water column are listed below, along with their corresponding modelled scenario references:</p> <ul style="list-style-type: none"> <li>Drilling for OSP foundation installation (C-02);</li> <li>Cable installation in the array area (C-03);</li> <li>Cable installation in the ECC (C-04); and</li> <li>HDD at exit pits (C-05).</li> </ul>
<b>Operation</b>			
5. Deterioration in water quality due to sediment suspension.	<p>Increases in SSC due to activities causing seabed disturbance.</p> <p><b>Total temporary habitat disturbance: 675,134m<sup>2</sup>.</b></p> <p><b>Array area:</b></p> <p>JUV operations - Major WTG component repair/replacement = 646,540m<sup>2</sup>.</p>	<p>Increases in SSC due to activities causing seabed disturbance.</p> <p><b>Total temporary habitat disturbance: 490,409m<sup>2</sup>.</b></p> <p><b>Array area:</b></p> <p>JUV operations - Major WTG component repair/replacement = 461,814.00m<sup>2</sup>.</p>	<p><b>Project Option 1 represents the greatest magnitude of impact in relation to this impact.</b></p> <p>Project Option 1 presents the design with the largest potential for temporary habitat disturbance during the operational phase.</p>

Potential impact	Project Option 1 (49 WTG)	Project Option 2 (35 WTG)	Rationale for the project option with the greatest magnitude of impact
Temporary increases may occur as a result of operational activities (i.e. cable protection remediation). This in turn may result in a reduction of water clarity and potentially the resuspension of nutrients and contaminants.	JUV - Major OSP component replacement = 13,195m <sup>2</sup> . Inter array cable repair and/or replacement of cabling = 7,000m <sup>2</sup> . Inter array cable reburial of any section of the offshore export cable which has become exposed = 700m <sup>2</sup> . <b>ECC</b> Export Cable - Repair and/or replacement of cabling = 7,000m <sup>2</sup> . Export Cable - Reburial of any section of the offshore export cable which has become exposed = 700m <sup>2</sup> .	JUV - Major OSP component replacement = 13,195m <sup>2</sup> . Inter array cable repair and/or replacement of cabling = 7,000m <sup>2</sup> . Inter array cable reburial of any section of the offshore export cable which has become exposed = 700m <sup>2</sup> . <b>ECC</b> Export Cable - Repair and/or replacement of cabling = 7,000m <sup>2</sup> . Export Cable - Reburial of any section of the offshore export cable which has become exposed = 700m <sup>2</sup> .	
6. Accidental releases or spills of materials or chemicals.  The proposed development has the potential to result in accidental spills during all phases, including the operational phase. If an accidental spill were to occur, this may lower the water quality in the study area.	<b>Operational component substances:</b>  Each WTG will contain components that require lubricating oils, hydraulic oils and coolants for operations such as grease, synthetic oil, nitrogen, transformer oil, sulphur hexafluoride (SF6) and glycerol.  The volume of oils and fluids will vary depending on the WTG design.  The OSP will contain diesel for the emergency diesel generators contained in tanks, oil for transformers, deionised water for cooling systems, glycol, lead acid for UPS and batteries, engine oil and SF6.  <b>WTGs:</b>  49 turbines, each with potential for accidental spills/releases.  <b>OSP:</b>  One OSP, with potential for accidental spills/releases.  <b>Vessels:</b>  Total number of annual return trips during operational phase: 1261  Maximum vessels simultaneously onsite during operational phase: 12	<b>Operational component substances:</b>  Each WTG will contain components that require lubricating oils, hydraulic oils and coolants for operations such as grease, synthetic oil, nitrogen, transformer oil, sulphur hexafluoride (SF6) and glycerol.  The volume of oils and fluids will vary depending on the WTG design.  The OSP will contain diesel for the emergency diesel generators contained in tanks, oil for transformers, deionised water for cooling systems, glycol, lead acid for UPS and batteries, engine oil and SF6.  <b>WTGs:</b>  35 turbines, each with potential for accidental spills/releases.  <b>OSP:</b>  One OSP, with potential for accidental spills/releases.  <b>Vessels:</b>  Total number of annual return trips during operational phase: 1055  Maximum vessels simultaneously onsite during operational phase: 12	<b>Project Option 1 represents the greatest magnitude of impact in relation to this impact.</b>  Project Option 1 presents the design with the higher number of proposed vessel movement during the operational period.  These parameters present the largest volumes of compounds which could be associated with the proposed development infrastructure.
<b>Decommissioning</b>			
7. Deterioration in water quality due to sediment suspension.	The decommissioning policy for the proposed development infrastructure is not yet defined however it is anticipated that structures above the seabed would be removed.	The decommissioning policy for the proposed development infrastructure is not yet defined however it is anticipated that structures above the seabed would be removed.	<b>Project Option 1 represents the greatest magnitude of impact in relation to this impact.</b>

Potential impact	Project Option 1 (49 WTG)	Project Option 2 (35 WTG)	Rationale for the project option with the greatest magnitude of impact
Temporary increases may occur as a result of decommissioning (i.e. removal of proposed development infrastructure). This in turn may result in a reduction of water clarity and potentially the resuspension of nutrients and contaminants.	<p>The following infrastructure is likely to be removed, reused, or recycled where practicable: WTG s and SBJs; and OSP including topsides and SBJs</p> <p>The following infrastructure is likely to be decommissioned and could be left in situ depending on available information at the time of decommissioning:</p> <ul style="list-style-type: none"> <li>- Inter-array cables;</li> <li>- Scour protection; and</li> <li>- Cable protection;</li> </ul> <p>In the absence of detailed methodologies and schedules, decommissioning works and associated implications for I&amp;OU are considered analogous with those assessed for the construction phase.</p>	<p>The following infrastructure is likely to be removed, reused, or recycled where practicable: WTGs and SBJ and OSP including topsides and SBJs</p> <p>The following infrastructure is likely to be decommissioned and could be left in situ depending on available information at the time of decommissioning:</p> <ul style="list-style-type: none"> <li>- Inter-array cables;</li> <li>- Scour protection; and</li> <li>- Cable protection.</li> </ul> <p>In the absence of detailed methodologies and schedules, decommissioning works and associated implications for I&amp;OU are considered analogous with those assessed for the construction phase.</p>	Project Option 1 represents the design with the most impactful decommissioning parameters, due to the greater amount of infrastructure that may require removal.
<p>8. Accidental releases or spills of materials or chemicals.</p> <p>The proposed development has the potential to result in accidental spills during all phases, including decommissioning . If an accidental spill were to occur, this may lower the water quality in the study area.</p>	<p><b>Decommissioning component substances:</b></p> <p>Each WTG will contain components that require lubricating oils, hydraulic oils and coolants for operations such as grease, synthetic oil, nitrogen, transformer oil, sulphur hexafluoride (SF6) and glycerol. The volume of oils and fluids will vary depending on the WTG design.</p> <p>The OSP will contain diesel for the emergency diesel generators contained in tanks, oil for transformers, deionised water for cooling systems, glycol, lead acid for UPS and batteries, engine oil and SF6.</p> <p>The number of decommissioning vessels will be the same as construction stage or lower (Impact 2)</p>	<p><b>Decommissioning component substances:</b></p> <p>Each WTG will contain components that require lubricating oils, hydraulic oils and coolants for operations such as grease, synthetic oil, nitrogen, transformer oil, sulphur hexafluoride (SF6) and glycerol. The volume of oils and fluids will vary depending on the WTG design.</p> <p>The OSP will contain diesel for the emergency diesel generators contained in tanks, oil for transformers, deionised water for cooling systems, glycol, lead acid for UPS and batteries, engine oil and SF6.</p> <p>The number of decommissioning vessels will be the same as construction stage or lower (Impact 2)</p>	<p><b>Project Option 1 represents the greatest magnitude of impact in relation to this impact.</b></p> <p>Project Option 1 presents the design with the greatest potential for vessel movement during the construction period. These parameters present the greatest volumes of compounds which could be associated with the proposed development infrastructure.</p>

## 11.5 Potential Effects

There are no changes to this section. Refer to Section 11.5 of Chapter 11 in the 2024 EIAR.

### 11.5.1 Do-Nothing Scenario

There are no changes to this section. Refer to Section 11.5.1 of Chapter 11 in the 2024 EIAR.

#### 11.5.1.1 Development Scenario

There are no changes to this section. Refer to Section 11.5.1.1 of Chapter 11 in the 2024 EIAR.

### 11.5.2 Construction Phase

**The changes in this section reflect updates to the key characteristics of Project Option 1 and Project Option 2 (see Appendix A5.1: Design Refinements), and a revised assessment of impacts arising from the construction phase of the proposed development, based on the updated modelling presented in Chapter 10.**

**The assessment of bentonite release remains unchanged; however, it has been included below for completeness and to consolidate all construction activities in one location and to clarify that subtidal bentonite release will occur consecutively rather than concurrently. Therefore, the introductory text in Section 11.5.2 of the 2024 EIAR shall be deleted and replaced by:**

This section presents the assessment of impacts arising from the construction phase of the proposed development. The effects of construction of the proposed development have been assessed upon MW&SQ receptors. The potential impacts arising from construction of the proposed development are listed in Table A11.3 along with the project option with the greatest magnitude of impact against which each construction phase impact has been assessed. A description of the likely significant effects upon MW&SQ receptors caused by each identified impact is given below.

The different construction activities have been numerically assessed and reported in detail within the Physical Processes chapter. The results have been used to inform the MW&SQ assessments, for which a summary of these assessments is provided below:

- Foundation installation using drill techniques (Figure A10.5). 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:
  - 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 whole process is 10,179m<sup>3</sup>.
  - The full drilling period for is estimated to take around 106 hours.
  - Highest concentrations above 500mg/l are confined close to the point of discharge
  - All occasions with an increased SSCs above background > 10mg/l remain within the study area.
  - The longevity of the sediment plume fully expires at around 144 hours when all cuttings are expected to have settled out onto the seabed.
  - Outside the study area, SSCs are <10mg/l and equivalent to background levels
- Cable installation using jetting (inter-array cable and export cable):
  - For the jetting option, the finer sediments have the potential to be raised into suspension above the seabed. For the purpose of modelling sediment plumes, the release height of sediment is conservatively taken to be equal to the depth of excavation, i.e. 3 m above the seabed, with settlement occurring thereafter.
  - Inter-array cables (Figure A10.7): elevated SSC resulting from inter-array cable construction activities result in sediment plumes aligned to the tidal flow, predominately in a northerly direction with no advection towards the coast. Once trenching activities are completed, the plume advects with the tide, increasing in size, which in turn lowers concentrations. Specifically:
    - The highest SSC (in the range of 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.
    - The sediment plume for this modelled section of inter-array cable is expected to be fully dispersed and settled out on the seabed 48 hours after the initial release
    - Only low concentrations below 2mg/l (equivalent to normal variations in turbidity) are predicted to exceed the study area.

- For the northerly high flow scenario (flood spring tide release), tidal advection has the potential to extend the plume to reach UK territorial waters for a short period, but with a very low concentration equivalent to around 1mg/l (trace level).
- Export cables (Figure A10.9; Figure A11.1): once the activity is completed, the sediment plume advects away from the source with the tide. In doing so, it increases in size due to spreading and dispersing which in turn lowers the SSC:
  - The highest SSCs (in the range of 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.
  - The sediment plume for this section of the ECC is expected to be fully dispersed and settled out on the seabed 48 hours after the initial release.
  - Only spring southerly ebb flows 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 and for a short period however these concentrations are regarded as equivalent to ambient concentrations.
- Subtidal HDD exit pit excavation and cable installation:
  - Subtidal HDD exit pits (Figure A10.11; Figure A11.2):
    - The method of excavation considered to develop the most seabed disturbance into the local water column is the Mass Flow Excavator (MFE) option of two adjacent HDD exit pits simultaneously.
    - Spring tide releases indicate a maximum excursion distance of the sediment plume along the coast of around 2.2km to the north-west (flood) and to the south-east (ebb) for concentrations greater than 1mg/l equivalent to trace levels.
    - Neap releases travel a shorter distance along the coast of around 1.3km on both 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 (less than 10mg/l) and for a short duration (less than four hours).
    - The highest elevated concentrations remain close to the exit pits with levels up to 1,120mg/l.
  - Subtidal bentonite release (Figure 10.21; Figure A11.3):
    - Each of the two HDD punch-out events will emerge in nearshore exit pits in sequence from the landward direction with an initial punch out event when drilling muds (i.e., bentonite) will be released under pressure for a short period (around 10 tonnes of drilling muds over a period of around 200 seconds).
    - This will be followed by a longer reaming period (around 20 tonnes over around 24 hours) when there will be a further volume of bentonite emerging under lower pressure.
    - Spring tide releases indicate a maximum excursion distance of around 1.1km to the north-west (flood) and 0.8km to the south-east (ebb) for concentrations greater than 1mg/l
    - Neap releases travel a shorter distance along the coast
    - Concentrations greater than 1mg/l do not reach Balbriggan Bay (around 1.5km south of the exit pits). The highest elevated concentrations remain close the exit pits with levels up to 29mg/l.
    - This activity will only occur consecutively, so consideration of a concurrent scenario is not relevant to this assessment.

### 11.5.2.1 Impact 1: Deterioration in water quality due to sediment suspension

**The key change to this section is the inclusion of the updated sediment plume modelling of the design parameters which have been outlined in Table A11.5 and summarised in the introduction to Section 11.5.2 of this document, and the updating of cross-references to the relevant updated figures.**

**Therefore, the following text within Section 11.5.2 of the 2024 EIAR shall be deleted:**

*“The maximum concentration at the centre of the plume anticipated after one day of cessation of jetting or the disposal of spoil will be less than 270mg/l (40\* ambient levels; Table 11.23). This would be classified as ‘medium turbidity’ in the UKTAG (2014) water turbidity ranking. Less than a week following the completion of activities, the sediment plumes would be immeasurable in practice beyond ambient levels (Table 11.23) and classified as ‘clear’ (UKTAG, 2014).”*

**And be replaced with:**

The maximum SSCs predicted during activities are highest in the near-field, with levels exceeding 500 mg/l (and up to approximately 1,800 mg/l for export cable installation) confined to areas close to the source of disturbance (e.g. drilling locations, trenching lines, and HDD exit pits). These concentrations correspond to ‘high turbidity’ (greater than 100× ambient levels) as defined by UKTAG (2014) but occur only for short durations during active works.

Away from the source, SSCs reduce rapidly due to dispersion and tidal advection, with concentrations typically decreasing to below 10 mg/l (i.e. within 2× ambient levels) and remaining within the study area. Beyond the study area, SSCs are generally less than 2 mg/l, equivalent to normal variation or trace levels.

Following cessation of activities, sediment plumes are predicted to disperse and settle relatively quickly, with jetting-related plumes dissipating within approximately 48 hours and drilling-related plumes within approximately 144 hours. Within these timeframes, SSCs return to levels comparable to ambient conditions and would be classified as ‘clear’ in accordance with UKTAG (2014).

**In addition, the following text from Section 11.5.2.1 of Chapter 11 in the 2024 EIAR shall also be deleted:**

*“Activities disturbing sediment undertaken in the array area are not anticipated to impact on the designated WFD waterbodies. The project-specific modelling indicates that no works undertaken in the array area (Figures 10.15, 10.17, and 10.19 in the Physical Processes chapter) have measurable changes in SSC within the WFD water bodies.”*

**And be replaced with:**

Sediment plumes arising from SBJ installation are not expected to constitute a significant impact pathway for deterioration of water quality through the suspension of sediments. Although both fast and slow installation scenarios are recognised, suction pumping would be undertaken at a controlled rate (typically with penetration occurring over 4 to 10 hours), thereby limiting sediment mobilisation. Displaced seawater would be returned directly to the surrounding water column, and no thermal or chemical effects on water quality are anticipated.

For activities in the array area considered more likely to generate a more energetic release of sediment into the water column (i.e. installation of OSP four-legged jacket foundations using drilled pin piles), sediment plumes are not anticipated to impact designated WFD waterbodies. Project-specific modelling indicates that no works in the array area (Figures A10.5 and A10.7 in the Physical Processes chapter) result in measurable changes in SSC within these waterbodies.

For activities in the ECC considered likely to generate an energetic release of sediment into the water column (i.e. jetting along the ECC or MFE at HDD exit pits), the modelling indicates that works within the ECC may result in sediment plumes being advected into coastal waterbodies (Figure A11.1 and Figure A11.2). However, as described above, these effects are spatially limited, temporary, and short-lived, with SSCs generally at or near ambient background levels.

**There are no other changes to this section. Refer to Section 11.5.2.1 of Chapter 11 of the 2024 EIAR.**

**For clarity, the significance of effect remains unchanged and could result in an imperceptible to not significant effect, which is not significant in EIA terms.**

### *11.5.2.2 Impact 2: Accidental releases or spills of materials or chemicals*

**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). The revised installation activities associated with the change in foundation types have been considered in the assessment of accidental spill or release of materials or chemicals. Therefore, in addition to the text under Section 11.5.2.2 of Chapter 11 of the 2024 EIAR, the following text should be added:**

During SBJ foundation installation, following completion of suction installation, any residual void beneath the bucket lid interface will be filled with low-strength grout (or equivalent material) to ensure full contact between the foundation and the seabed. The grout will be cementitious in nature, typically based on ordinary Portland cement (OPC) or equivalent formulations. Seawater or freshwater may be used as mix water, with final grout composition to be confirmed during detailed design.

It is anticipated that grout constituents will comply with relevant offshore environmental standards, including the OSPAR list of substances that are considered Pose Little or No Risk to the Environment (PLONOR), where applicable. Grout materials will be selected, handled and managed in accordance with industry best practice and established environmental mitigation measures to minimise the risk of accidental release.

The maximum quantity of dry grout mix stored on board a vessel at a given time is expected to be limited to 1000 tonnes (dry weight). In addition, all grout handling operations will be undertaken within contained systems, with appropriate control and containment measures in place to prevent release to the marine environment. No discharge of unmixed grout is proposed. In the unlikely event of an accidental release of dry grout to the marine environment, localised and temporary increases in turbidity and pH may occur upon contact with seawater, however, the material is considered to present low environmental hazard, and once hydrated, it forms a stable, low-solubility solid with limited potential for dispersion or long-term impact.

**There are no other changes to this section. Refer to Section 11.5.2.2 of the 2024 EIAR. For clarity this design refinement does not introduce any new impact pathways and does not materially alter the conclusions of the accidental spill and release assessment presented in the 2024 EIAR which notes no significant effects arising due to accidental releases or spills of materials or chemicals.**

### *11.5.2.3 Impact 3: Deterioration in water quality due to the release of drilling mud*

There are no changes to this section. Refer to Section 11.5.2.3 of Chapter 11 in the 2024 EIAR. For clarity, the significance of effect remains unchanged and is considered imperceptible to slight, reflecting the low magnitude, temporary and localised nature of the impact, which remains within natural variability and is therefore not significant in EIA terms.

### *11.5.2.4 Impact 4: Release of sediment-bound contaminants from disturbed sediments*

**In response to RFI Section 1 (c), the key change required to this section is the inclusion of new site-specific benthic surveys conducted in 2025 which included a full suite of sediment contamination analyses, which provide validation of earlier site-specific benthic surveys conducted in 2022, which were used to characterise the baseline. Therefore, under Section 11.5.2.4 of Chapter 11 in the 2024 EIA, the following text should be added:**

Sediment samples collected during a site-specific benthic survey across the proposed development in October 2025 were analysed for a Marine Institute full suite of contaminants (Appendix A12.1: Benthic Ecology Survey Report 2025). All sediment contamination samples collected along the array area and ECC were below the applicable Lower and Upper Irish ALs.

Accordingly, the 2025 survey results do not identify any new or elevated contaminant concentrations. The understanding of baseline sediment contamination levels therefore remains unchanged, and the water quality assessment is not materially affected.

**There are no other changes to this section. Refer to Section 11.5.2.4 of Chapter 11 of the 2024 EIAR. For clarity, the significance of effect remains unchanged and could result in an imperceptible to moderate effect, which is not significant in EIA terms.**

### 11.5.3 Operational Phase

There are no changes to the introductory text of this section. Refer to Section 11.5.3 of Chapter 11 in the 2024 EIAR.

#### 11.5.3.1 *Impact 5: Deterioration in water quality due to sediment suspension*

There are no changes to this section. Refer to Section 11.5.3.1 of Chapter 11 in the 2024 EIAR. For clarity, the significance of effect remains unchanged and is considered imperceptible to not significant, reflecting the negligible magnitude of sediment suspension associated with infrequent and localised cable maintenance activities, which would be of shorter duration and extent than construction-phase activities; therefore, the effect is not significant in EIA terms.

#### 11.5.3.2 *Impact 6: Accidental releases or spills of materials or chemicals*

There are no changes to this section. Refer to Section 11.5.3.2 of Chapter 11 in the 2024 EIAR. For clarity, the significance of effect remains unchanged and is considered imperceptible to not significant, reflecting the negligible magnitude of potential accidental releases or spills during operation, their temporary and localised nature, rapid dilution and dispersion, and the implementation of embedded pollution prevention measures; therefore, the effect is not significant in EIA terms.

### 11.5.4 Decommissioning Phase

There are no changes to this section. Refer to Section 11.5.4 of Chapter 11 in the 2024 EIAR.

#### 11.5.4.1 *Impact 7: Deterioration in water quality due to sediment suspension*

There are no changes to this section. Refer to Section 11.5.4.1 of Chapter 11 in the 2024 EIAR. Therefore, the significance of effect remains unchanged and is considered imperceptible to not significant, reflecting the negligible magnitude of sediment suspension during decommissioning, with impacts expected to be similar to or less than those assessed during construction; therefore, the effect is not significant in EIA terms.

#### 11.5.4.2 *Impact 8: Accidental releases or spills of materials or chemicals*

There are no changes to this section. Refer to Section 11.5.4.2 of Chapter 11 in the 2024 EIAR. Therefore, the significance of effect remains unchanged and is considered imperceptible to not significant, reflecting the negligible magnitude of potential accidental releases or spills during decommissioning, their temporary nature, the implementation of embedded pollution prevention and control measures, and the expectation that waterbody Environmental Quality Standard would not be affected; therefore, the effect is not significant in EIA terms.

## 11.6 Mitigation and Monitoring Measures

There are no changes to this section. Refer to Section 11.6 of Chapter 11 in the 2024 EIAR.

## 11.7 Residual Effects

There are no changes to this section. Refer to Section 11.7 of Chapter 11 in the 2024 EIAR.

## 11.8 Transboundary Effects

There are no changes to this section. Refer to Section 11.8 of Chapter 11 in the 2024 EIAR.

## 11.9 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, in response to RFI Section 5.**

**The second paragraph should 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 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 CEA conclusions in the NSIP Appendix 2: Matrix 1 – Assessment matrix. This section presents the full Stage 3 and Stage 4 assessment, which steps through whether the proposed development in combination with other projects, grouped in tiers, would be likely to have significant cumulative effects.

**The fifth and 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.*

*The tiering structure is intended to provide an understanding of the potential for likely significant effects of the proposed development with the construction of its Operation and Maintenance Facility (OMF) (tier one); followed by a cumulative assessment of the likely significant effect of that scenario combined with the east coast Phase One OWFs (tier two); and lastly the combination of tier one and tier two with all other existing and/or approved projects that have been screened in (tier three).”*

**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 11.9.2 and in Chapter 38.

The tiering structure is intended to provide an understanding of the potential for likely significant effects of the proposed development with the construction of all existing and submitted projects (tier one); followed by a cumulative assessment of the likely significant effect of that scenario combined with all projects that have a scoping report or Maritime Area Consent (MAC) (tier two); and lastly the combination of tier one and tier two with all other projects include existing and/or approved developments that have been identified in the relevant Development Plans and other plans and programmes as appropriate (tier three).

**There are no other changes required to this section. Refer to Section 11.9 of Chapter 11 of the EIAR.**

**11.9.1 MW&SQ cumulative screening exercise**

There are no changes to this section. Refer to Section 11.9.1 of Chapter 11 in the 2024 EIAR.

**11.9.2 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, in response to RFI Section 5. The entire Section 11.9.2 of Chapter 11 in the 2024 EIAR shall therefore 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 MW&SQ are presented in Table A11.6 and Figure A11.3. 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 Chapter 6: Description of the Proposed Development Offshore) and the East Coast Phase One Projects.
- Tier 2 is all projects that have scoping reports or have a Maritime Area Consent (MAC).

- Tier 3 is all other projects including existing and/or approved development 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 all other projects include existing and/or approved developments that have been identified in the relevant Development Plans and other plans and programmes as (tier three).

**Table A11.6 Projects and plans considered within the cumulative impact assessment (replaces Table 11.25 Of Chapter 11 in 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	16.94km	21.61km	Overlap in construction, operation and maintenance and decommissioning periods. Oriel Wind Park and ECC due to construct during 2027 – 2030.
Subsea Cables	Oriel Wind Park ECC	Planning application	High	18.06km	22.60km	
	Havhingsten Telecoms Cable	Active	High	0.68km	9.73km	Subsea cable may require maintenance activities which may result in short-term, temporary seabed disturbance.
	Rockabill Telecoms Cable	Active	High	4.87km	12.85km	
	East West Interconnector Power Cable	Active	High	5.15km	11.57km	
	HIBERNIA 'C' Telecoms Cable	Active	High	7.79km	17.09km	
	SIRIUS SOUTH Telecom Cable	Active	High	9.41km	18.75km	
	CeltixConnect - Sea Fibre Networks Telecom Cable	Active	High	11.29km	20.07km	
	Zayo Emerald Bridge ONE Telecom Cable	Active	High	12.09km	20.23km	
Dumping at Sea	Drogheda Port Company – Dumping Site A1	Active	High	11.70km	10.25km	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	15.33km	14.28km	

Development Type	Project	Status	Data confidence	Distance to proposed development		Justification for screening into the cumulative effects assessment
				Array area	ECC	
Coastal Assets	Irish Water – Loughshinny (FS005749)	Approved	High	12.75km	9.70km	Emergency discharges from municipal pumping stations can result in intermittent, short-duration releases of untreated or partially treated wastewater, containing organic matter and nutrients, including nitrates.
	Irish Water – Lusk (FS005747)	Approved	High	15.64km	12.98km	
	Fingal County Council – Storm Water Outfall (FS006845)	Completed	High	26.98km	23.02km	
Oil & Gas Pipelines	PL1890: Interconnector Scotland to Ireland IC2	Active	High	0.52km	2.68km	Pipelines may require maintenance activities which may result in short term, temporary seabed disturbance.
	PL938: Interconnector Scotland to Ireland IC1	Active	High	4.24km	10.60km	
Surveys	NISA OWF Site Investigation Surveys (LIC230001)	Approved	High	0.00km	0.0km	Site investigations such as hydrological and geophysical, geotechnical, metocean, ecological, archaeological and water quality surveys may overlap with other construction activities of the proposed development and result in cumulative temporary, short-term seabed disturbance.
	Mares Connect Site Investigation Surveys (FS007635/ MUL240008)	Approved	High	10.35km	17.99km	

Development Type	Project	Status	Data confidence	Distance to proposed development		Justification for screening into the cumulative effects assessment
				Array area	ECC	
<b>Tier 2</b>						
Subsea Cables	Mares Connect Power Cable	Proposed	Medium	6.02km	12.26km	Subsea cables may require construction and maintenance activities which may result in short-term, temporary seabed disturbance.
<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 11.9.2 of Chapter 11 in the 2024 EIAR.**

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

**The change in this section is limited to replacing Table 11.26 with A11.7, 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. Therefore, Table 11.26 in Chapter 11 of the 2024 EIAR shall be deleted and replaced with Table A11.7:**

**Table A11.7 Potential cumulative impacts and tiers for assessment (replaces Table 11.26 of Chapter 11 in the 2024 EIAR)**

Potential cumulative impact	Phase	Tiers and projects	Justification for inclusion in cumulative effects assessment
<p>Impact 1: Deterioration in water quality due to sediment suspension arising from cumulative activities.</p>	<p>Construction/ Operation and Maintenance/ Decommissioning</p>	<p><b>Tier 1:</b> Phase One Offshore Wind Farm:  <ul style="list-style-type: none"> <li>• Oriel Wind Park</li> </ul> Subsea Cables:  <ul style="list-style-type: none"> <li>• Oriel Wind Park ECC</li> <li>• Havhingsten Telecoms Cable</li> <li>• Rockabill Telecoms Cable</li> <li>• East West Interconnector Power Cable</li> <li>• HIBERNIA ‘C’ Telecoms Cable</li> <li>• SIRIUS SOUTH Telecom Cable</li> <li>• CeltixConnect - Sea Fibre Networks Telecom Cable</li> <li>• Zayo Emerald Bridge ONE Telecom Cable</li> <li>• ESAT 2 Telecom Cable</li> </ul> Dumping at Sea:  <ul style="list-style-type: none"> <li>• Drogheda Port Company – Dumping Site A1</li> <li>• Drogheda Port Company – Dumping Site A2</li> </ul> Coastal Assets:  <ul style="list-style-type: none"> <li>• Irish Water – Loughshinny</li> <li>• Irish Water – Lusk</li> <li>• Fingal County Council – Storm Water Outfall</li> </ul> Oil and Gas Pipelines:  <ul style="list-style-type: none"> <li>• PL1890: Interconnector Scotland to Ireland IC2</li> <li>• PL938: Interconnector Scotland to Ireland IC1</li> </ul> <b>Tier 2:</b>  Subsea Cables:  <ul style="list-style-type: none"> <li>• Mares Connect Power Cable</li> </ul> </p>	<p>The projects listed for this impact pathway are understood to involve methods/activities that could result in the energetic release of sediment into the water column or a localised deterioration in water quality.</p> <p>The proposed development activities expected to generate the most significant sediment disturbance are:</p> <p>Construction:</p> <ul style="list-style-type: none"> <li>• Drilling for OSP foundation installation (C-02);</li> <li>• Cable installation in the array area (C-03);</li> <li>• Cable installation in the ECC (C-04); and</li> <li>• HDD at exit pits (C-05).</li> </ul> <p>Operation:</p> <ul style="list-style-type: none"> <li>• Cable repair/ reburial (equal to or less than modelled construction activities).</li> </ul> <p>Decommissioning:</p> <ul style="list-style-type: none"> <li>• Infrastructure removal (equal to or less than modelled construction activities).</li> </ul> <p>If intermittent activities from other plans/projects overlap temporally with the construction, operation, or decommissioning activities above, there is potential for cumulative SSC and sediment deposition to occur.</p>

Potential cumulative impact	Phase	Tiers and projects	Justification for inclusion in cumulative effects assessment
Impact 2: Release of sediment-bound contaminants from disturbed sediments.	Construction/ Operation and Maintenance/ Decommissioning	<p><b>Tier 1:</b></p> <p>Phase One Offshore Wind Farm:</p> <ul style="list-style-type: none"> <li>• Oriel Wind Park</li> </ul> <p>Subsea Cable:</p> <ul style="list-style-type: none"> <li>• Oriel Wind Park ECC</li> <li>• Havhingsten Telecoms Cable</li> <li>• Rockabill Telecoms Cable</li> <li>• East West Interconnector Power Cable</li> <li>• HIBERNIA ‘C’ Telecoms Cable</li> <li>• SIRIUS SOUTH Telecom Cable</li> <li>• CeltixConnect - Sea Fibre Networks Telecom Cable</li> <li>• Zayo Emerald Bridge ONE Telecom Cable</li> <li>• ESAT 2 Telecom Cable</li> </ul> <p>Dumping at Sea:</p> <ul style="list-style-type: none"> <li>• Drogheda Port Company – Dumping Site A1</li> <li>• Drogheda Port Company – Dumping Site A2</li> </ul> <p>Coastal Assets:</p> <ul style="list-style-type: none"> <li>• Irish Water – Loughshinny</li> <li>• Irish Water – Lusk</li> <li>• Fingal County Council – Storm Water Outfall</li> </ul> <p>Oil and Gas Pipelines:</p> <ul style="list-style-type: none"> <li>• PL1890: Interconnector Scotland to Ireland IC2</li> <li>• PL938: Interconnector Scotland to Ireland IC1</li> </ul> <p><b>Tier 2:</b></p> <p>Subsea Cables:</p> <ul style="list-style-type: none"> <li>• Mares Connect Power Cable</li> </ul>	<p>The projects listed for this impact pathway are understood to involve methods/activities that could result in the energetic release of sediment into the water column or a localised deterioration in water quality.</p> <p>The proposed development activities expected to generate the most significant sediment disturbance are:</p> <p>Construction:</p> <ul style="list-style-type: none"> <li>• Drilling for OSP foundation installation (C-02);</li> <li>• Cable installation in the array area (C-03);</li> <li>• Cable installation in the ECC (C-04); and</li> <li>• HDD at exit pits (C-05).</li> </ul> <p>Operation:</p> <ul style="list-style-type: none"> <li>• Cable repair/ reburial (equal to or less than modelled construction activities).</li> </ul> <p>Decommissioning:</p> <ul style="list-style-type: none"> <li>• Infrastructure removal (equal to or less than modelled construction activities).</li> </ul> <p>If intermittent activities from other plans/projects overlap temporally with the construction, operation, or decommissioning activities above, there is potential for any sediment bound contaminants to act cumulatively.</p>

**There are no other changes required to this section. Refer to Section 11.9.3 of Chapter 11 in the 2024 EIAR.**

#### **11.9.4 Cumulative Impact 1 – Deterioration in water quality due to sediment suspension arising from cumulative activities.**

**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, in response to RFI Section 5. Therefore, the entire Section 11.9.4 of Chapter 11 in the 2024 EIAR should be deleted and replaced with:**

##### **11.9.4.1 Tier 1**

The Tier 1 projects within the cumulative screening range (24km) include Oriel Wind Park and its associated ECC, as well as a range of active subsea cables, dumping at sea sites, coastal assets (including emergency discharges from municipal pumping stations and storm overflow sites), and oil and gas interconnector pipelines.

There is potential for temporal overlap between the construction phase of the proposed development and Oriel Wind Park (anticipated 2027 to 2030), as well as with ongoing or intermittent activities associated with other Tier 1 projects (e.g. cable maintenance, dredging, disposal, and emergency discharges).

Oriel Wind Park represents the largest comparable activity due to its overlapping construction, with similar installation methods (e.g. cable installation via jetting). However, despite this potential overlap, the spatial separation between Oriel and the proposed development (greater than 16 km to the array area and ECC) means that interaction between sediment plumes is unlikely. This is supported by Oriel being located outside the tidal excursion envelope (~12 km) of the proposed development, as defined in the project-alone assessment. Sediment plumes would therefore disperse independently with no meaningful overlap at shared receptor locations.

The remaining Tier 1 projects are characterised by smaller-scale, localised and/or intermittent activities. Maintenance of subsea cables and pipelines is infrequent and spatially limited. Licensed disposal and dumping at sea activities may generate elevated SSCs; however, these are spatially defined, regulated, and typically located at distances greater than 10 km from the proposed development. Coastal discharges, including storm overflows and emergency releases, are episodic in nature and subject to regulatory control and monitoring.

Where spatial and temporal overlap does occur, sediment plumes from these activities would behave in a comparable manner to those generated by the proposed development, reflecting similar sediment characteristics and hydrodynamic conditions. However, the scale and duration of disturbance associated with these activities are substantially smaller, such that any increases in SSC would be limited in extent and short-lived.

Overall, given the distances involved, differences in scale, and the dispersive nature of the receiving environment, there is limited potential for meaningful interaction or additive effects between sediment plumes generated by Tier 1 projects and those associated with the proposed development.

When considered cumulatively with Tier 1 projects in combination with the proposed development, any increases in SSC are expected to remain within the range of natural variability identified for the MW&SQ study area. No additional impact pathways are identified beyond those assessed for the proposed development.

The sensitivity of receptors to a deterioration in water quality is assumed to be the same as the project alone assessment for Impact 1, 5 and 7, and the magnitude of impact is assessed to be negligible for Project Option 1 and Project Option 2. Consequently, cumulative effect of Tier 1 projects and the proposed development from a temporary deterioration in water quality due to sediment suspension are expected to be not significant across all receptors, which is not significant in EIA terms. .

##### **11.9.4.2 Tier 1 and 2**

The Tier 2 project within the cumulative screening range comprises the proposed Mares Connect power cable, for which there is currently medium confidence regarding the final design, scale, and programme.

In the absence of confirmed construction activities and timings, a qualitative assessment has been undertaken.

If constructed, the Mares Connect cable would involve installation and burial activities with the potential to generate temporary and localised increases in SSC, similar in nature to those associated with the proposed development. Any sediment plumes generated would be expected to be short-lived and to disperse rapidly under prevailing hydrodynamic conditions.

Where spatial and temporal overlap occurs, sediment plumes generated by Tier 2 activities are anticipated to behave similarly to those associated with the proposed development, reflecting comparable sediment characteristics and hydrodynamic conditions. However, the scale of disturbance associated with Tier 2 activities (particularly subsea cable maintenance) is expected to be substantially smaller than that associated with proposed development construction

When considered cumulatively with Tier 1 and Tier 2 projects in combination with the proposed development, any increases in SSC are expected to remain within the range of natural variability identified for the MW&SQ study area. No additional impact pathways are identified beyond those assessed for the proposed development.

The sensitivity of receptors to a deterioration in water quality is assumed to be the same as the project alone assessment for Impact 1, 5 and 7, and the magnitude of impact is assessed to be negligible for Project Option 1 and Project Option 2. Consequently, cumulative effect of Tier 1 and Tier 2 projects and the proposed development from a temporary deterioration in water quality due to sediment suspension are expected to be not significant across all receptors, which is not significant in EIA terms. .

#### *11.9.4.3 Tier 1, 2 and 3 (all tiers)*

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

When considered cumulatively with Tier 1, Tier 2 and Tier 3 projects and the proposed development, any incremental increases in SSCs are anticipated to remain within the range of natural variability identified for the project-alone assessment.

The sensitivity of receptors to a deterioration in water quality is assumed to be the same as the project alone assessment for Impact 1, 5 and 7, and the magnitude of impact is assessed to be negligible for Project Option 1 and Project Option 2. Consequently, the cumulative effect of Tier 1, Tier 2 and Tier 3 projects (all tiers) and the proposed development from a temporary deterioration in water quality due to sediment suspension are expected to be not significant across all receptors, which is not significant in EIA terms.

#### **11.9.5 Cumulative Impact 2 – Release of sediment-bound contaminants from disturbed sediments.**

**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, in response to RFI Section 5. Therefore, the entire Section 11.9.5 of Chapter 11 in the 2024 EIAR should be deleted and replaced with:**

##### *11.9.5.1 Tier 1*

The Tier 1 projects within the cumulative screening range include Oriel Wind Park and its associated ECC, as well as a range of active subsea cables, dumping at sea sites, coastal assets, and oil and gas interconnector pipelines.

As outlined in Section 11.9.4.1, the suspension of sediments associated with both the Tier 1 projects and the proposed development is predicted to remain within natural variability. Given this, any release of sediment-bound contaminants would behave in a comparable manner to the project-alone assessment, with rapid dispersion, dilution, and limited bioavailability.

The sensitivity of receptors to a release of sediment bound contaminants from disturbed sediment is assumed to be the same as the project alone assessment for Impact 4, and the magnitude of impact is assessed to be low for Project Option 1 and Project Option 2. Consequently, cumulative effects of Tier 1 projects and the proposed development from a release of sediment bound contaminants from disturbed sediment are expected to be not significant across all receptors, which is not significant in EIA term.

### 11.9.5.2 Tier 1 and 2

The Tier 2 project within the cumulative screening range comprises the proposed Mares Connect power cable, for which there is currently medium confidence regarding the final design, scale, and programme. The discussion given within this Tier 2 assessment is qualitative given the uncertainty associated with the exact (day/ month) timings of other plans and projects; there is insufficient data on either project scale or timings on which to undertake a quantitative or semi-quantitative assessment

As established in Section 11.9.4.2, sediment plumes associated with Tier 1 and Tier 2 projects in combination with the proposed development are predicted to remain within natural variability and are spatially separated from the proposed development (greater than 6km). Given the low levels of contamination within sediments and the rapid dispersion and dilution described in the project-alone assessment, any release of contaminants would be temporary, localised, and of low magnitude.

The sensitivity of receptors to a release of sediment bound contaminants from disturbed sediment is assumed to be the same as the project alone assessment for Impact 4, and the magnitude of impact is assessed to be low for Project Option 1 and Project Option 2. Consequently, cumulative effects of Tier 1 and Tier 2 projects in combination with the proposed development from a release of sediment bound contaminants from disturbed sediment are expected to be not significant across all receptors, which is not significant in EIA terms. .

### 11.9.5.3 Tier 1, 2 and 3 (all tiers)

No Tier 3 projects have been screened into the assessment of Cumulative Impact 2.

When considered cumulatively with Tier 1, Tier 2 and Tier 3 projects and the proposed development, any incremental increases in SSCs are anticipated to remain within the range of natural variability identified for the project-alone assessment.

The sensitivity of receptors to a release of sediment bound contaminants from disturbed sediment is assumed to be the same as the project alone assessment for Impact 4, and the magnitude of impact is assessed to be low for Project Option 1 and Project Option 2. Consequently, cumulative effects of Tier 1, Tier 2 and Tier 3 projects in combination with the proposed development from a release of sediment bound contaminants from disturbed sediment are expected to be not significant across all receptors, which is not significant in EIA terms.

## 11.10 References

**As a result of new information, the following references are added to Section 11.10 of Chapter 11 of the 2024 EIAR:**

Environmental Protection Agency (2024a) Water Quality in 2023 – An Indicators Report. Environmental Protection Agency. Available at: <https://www.epa.ie/publications/monitoring--assessment/freshwater--marine/EPA-Water-Quality-Indicator-Report-2023-web-11June2024.pdf> [Accessed December 2025]

Environmental Protection Agency (2024b) Water Quality Monitoring Report on Nitrogen and Phosphorus Concentrations in Irish Waters 2024. Environmental Protection Agency. Available at: <https://www.epa.ie/publications/monitoring--assessment/freshwater--marine/Water-Quality-Nitrogen-and-Phosphorus-Report-2024.pdf> [Accessed December 2025]

Environmental Protection Agency (2025) Bathing water quality in Ireland: 2024. Environmental Protection Agency. Available at: [https://www.epa.ie/publications/monitoring--assessment/freshwater--marine/Bathing-Water-Quality-in-Ireland-2024\\_Final.pdf](https://www.epa.ie/publications/monitoring--assessment/freshwater--marine/Bathing-Water-Quality-in-Ireland-2024_Final.pdf) [Accessed September 2025]

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.

**There are no other changes to this section. Refer to Section 11.10 of Chapter 11 in the 2024 EIAR.**